

Rational Application Developer v7.5

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WebSphere Tools & RAD Chief Architect

RU READY TO
SAVE THE DAY



IBM Rational Software Development Conference 2008

WHERE TEAMS ARE **R-HEROES**



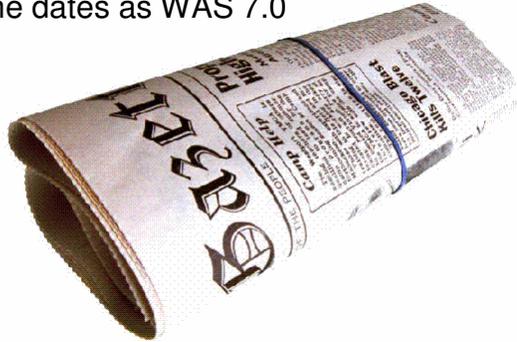
Rational software

Agenda

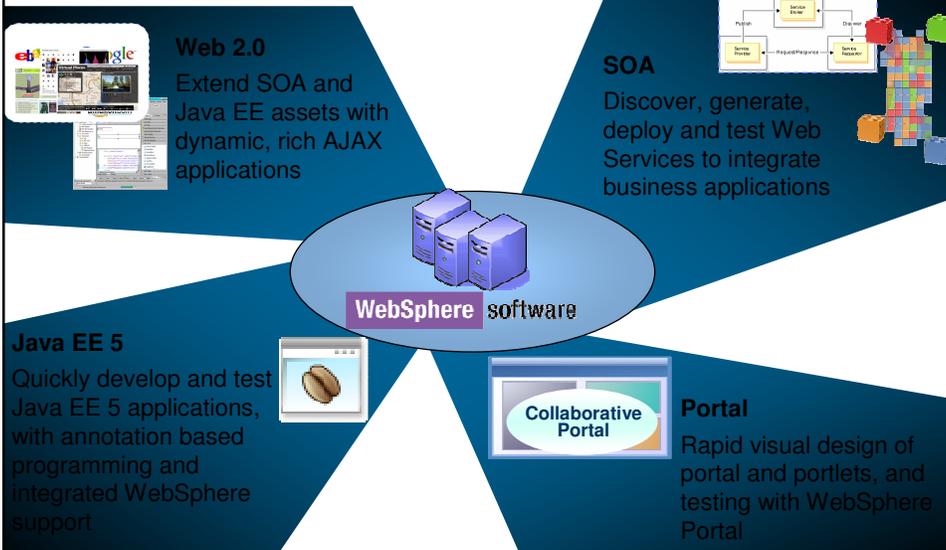
- Rational Software Delivery Platform
 - The value RAD adds to your development lifecycle
- Rational Application Developer 7.5
 - EJB 3.0 and JPA
 - Web Tools & JSF Overview
 - Web 2.0 Support
 - Web Services
 - WebSphere support, Server tools, Problem determination
 - WebSphere Portlet and Portal support
 - EIS Adapters
 - Collaboration with other Rational products (RTC, CC plugin...)
- SCA Feature Pack

First, the news!

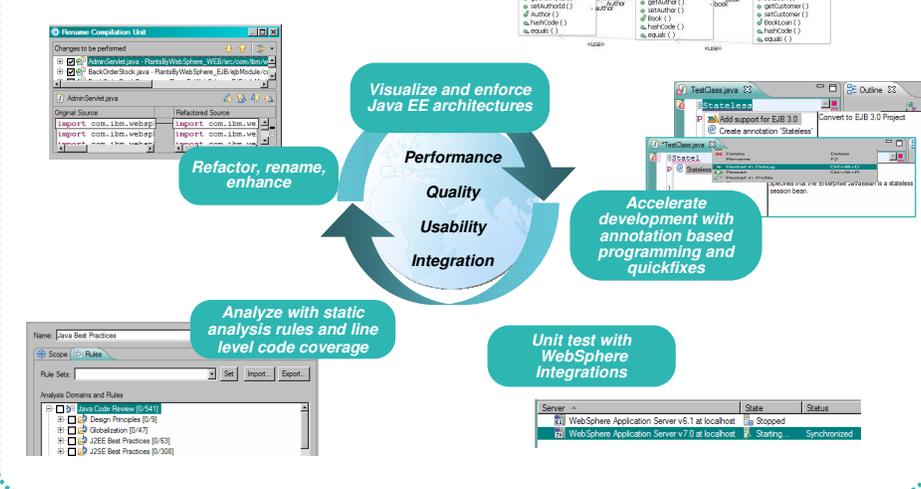
- ▶ RAD 7.5 was formally announced on Sept 9
 - It will be generally available on Sept 26
 - These are the same dates as WAS 7.0



RAD accelerates development for IBM middleware



RAD increases efficiency and shortens the development and test cycle



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Rational Application Developer v7.5 Value Statements

▶ Increased developer productivity

- Improved iterative development – focus on creation, validation, refactoring and deletion of artifacts (exploit the annotation based programming model style)
- Programming model support for WAS V7.0 standards support:
 - JEE5 (EJB3.0, JPA, JSF 1.2, JAX-WS 2.0, JAX-B2.0, JSP 2.1, Servlet 2.5, ..)
- Simplified development of RIA clients to extend and expose services and feeds

▶ Improved application quality

- Line level code coverage, advanced code review and debug capabilities

▶ Integration with other IBM products

- WebSphere test environments for WAS 7.0, WAS 6.1, and WAS 6.0 included
- WebSphere feature pack support (Web 2.0 FEP, Web Services FEP, EJB 3.0 FEP)
- WebSphere Portal 6.1 / 6.0 development (WP 6.1 server included)
- WebSphere adapter Support (SAP, PeopleSoft, Siebel, ..)

▶ Provides governance support

- Install Manager allows flexible installation and maintenance
- Process Advisor guides developers for best of breed practice

▶ IBM support

- 24x7 phone support
- Bug fixes

Flexible Install Options

- ▶ Rational Application Developer uses IBM Install manager technology to simplify and speed up the install process by only installing the install options chosen by the user
- ▶ RAD is built on top of Eclipse 3.4 and uses the IBM JRE 1.6
- ▶ Download & footprint improvements for the WebSphere test environment;
 - Support for “base” servers (WebSphere App server + fix pack level)
 - Support for “enhanced” servers (WebSphere App server + fix pack level + feature packs)
 - Build your own server to match your product environment
- ▶ Ability to shell share with other Rational products which helps developers manage the lifecycle of their applications on their desktop
- ▶ Enterprise install capabilities available to ease the install onto multiple desktops
- ▶ Ability to install documentation on a common web server or use the documentation that is available on the web to have access to the latest updates

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What's new with Java EE 5?

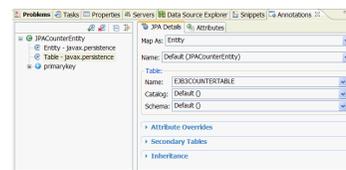
- The Java EE 5 platform introduces a simplified programming model.
- Information is inserted as an *annotation* directly into your Java source file.
- Annotations are generally used to embed in a program data that would otherwise be furnished in a side file.
- With annotations, you put the specification information right in your code next to the program element that it affects. This is a more intuitive and convenient approach. For example:

```
@Stateless
public class AccountBean implements IAccount {
}
```
- Developers can use annotations instead of XML deployment descriptors
 - Annotations are better during application development
 - The separate "Deployment Descriptor" side files are now optional, and are better for production deployment (allowing changes without source updates)

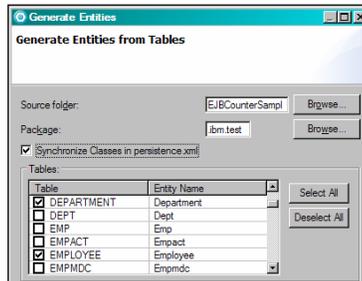
RAD helps with: Java EE 5 development

RAD helps simplify and accelerate Java EE 5 development

- ▶ Content assist and as you type validation
- ▶ Quickfixes for code and project configuration
- ▶ Advanced refactoring options to allow you to modify and maintain code in an iterative manner.
- ▶ Annotation view to manage and modify annotation properties

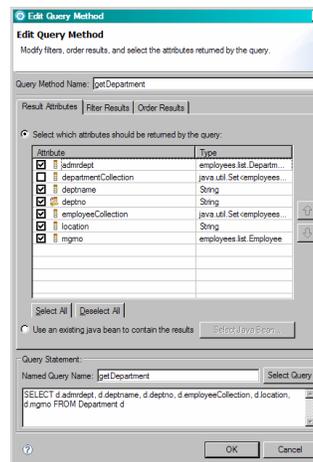
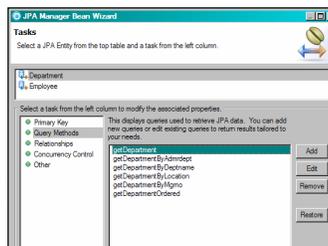


RAD helps with: tools to map data to a JPA bean



Generate entities

Create Manager Beans

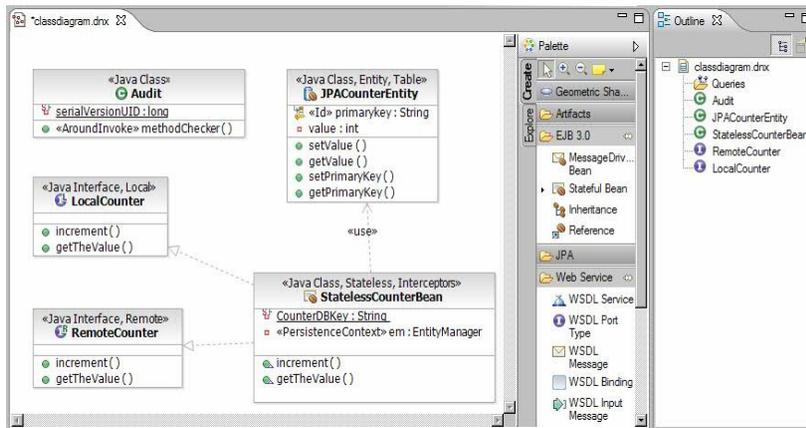


Filter results

RAD helps with: Visualizing your EJB 3.0 beans

EJB Visualizer updated to view & edit EJB 3.0 beans

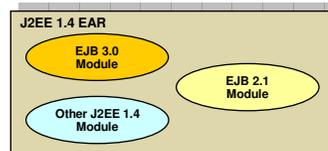
- Beans can be annotation based, or use XML deployment descriptors



RAD helps with: Supported runtime configurations for EJB3

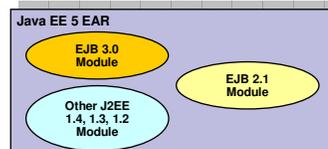
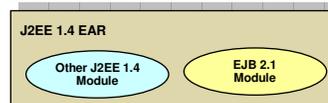
WebSphere Application Server 6.1

- Feature Pack for EJB 3.0
 - Supports EJB 3.0 and JPA specifications
 - EARs can contain EJB 3.0 and J2EE 1.4 modules
 - EAR without a DD can be deployed
 - No EE 5 Web or application client modules



WebSphere Application Server 7.0

- J2EE 1.4 EARs can not contain Java EE 5 modules
- Java EE 5 EARs can contain legacy J2EE (1.4, 1.3, 1.2) modules.



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What's new - Web Tools

- ▶ JPA consumption in Web Applications
- ▶ Page Designer
 - Source page includes Significantly enhanced JavaScript support
 - Split view option
 - Ability to split the page designer into a designer and source view
 - Can split view Horizontally or vertically
 - Absolute positioning
 - Positioning elements to an absolute position, via the design page.
 - The tool will apply the CSS style "position:absolute" to layout elements on the page.
- ▶ Support for Struts 1.2, 1.3
- ▶ JSF 1.2 support
- ▶ Integration of third party JSF libraries.
 - Tools to import/manage libraries and add to the Page Designer palette
- ▶ Custom Component Library Builder.
 - Allow users to build a JSF component library from existing components and integrate into the tools.
- ▶ JWL widget library: enhancements to make library compatible with dojo

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WAS Feature Pack for Web 2.0 Highlights

Web 2.0 to SOA Connectivity
 For enabling connectivity from Ajax clients to SOA services and other JEE assets. Extends enterprise data to customers and partners through web feeds.



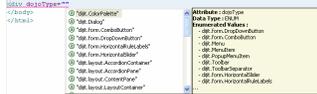
AJAX Messaging
 For connecting Ajax clients to real-time updated data like stock quotes or instant messaging.



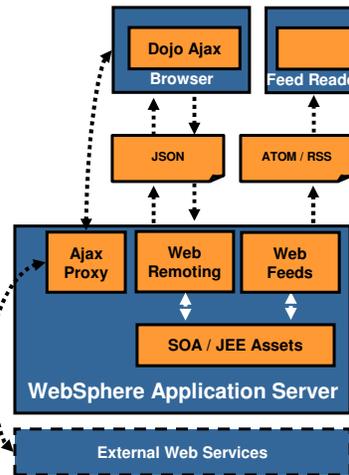
Ajax Development
 Based on Dojo (dojotoolkit.org) with IBM extensions. Reduces time to market and helps lower Ajax adoption costs.

RAD helps create Web 2.0 to SOA Connectivity

- ▶ Build AJAX and Dojo clients with rich source level content assist, validation and refactoring

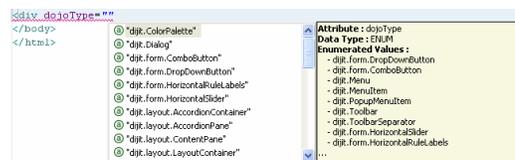
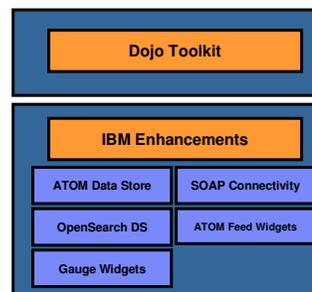


- ▶ Visually lay out your client with Page Designer
- ▶ Wizards to expose server side SOA / Java EE / POJOs with endpoints as REST style services
- ▶ Javascript debugging and integration with Firebug



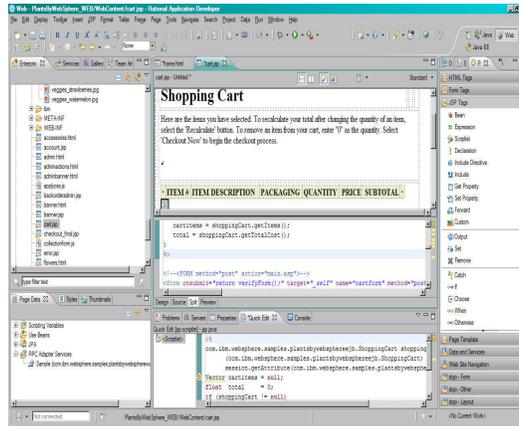
RAD helps with RIA client side development

- ▶ JavaScript is tricky!
- ▶ RAD provides a world class JavaScript source level development environment
 - JavaScript editor with code assist, validation, refactoring, outline view
 - Integration & support for Dojo
 - Dojo specific code assist, validation, refactoring of Dojo tags
 - Based on OpenAJAX IDE Working Group metadata



RAD helps with RIA Client side Development

- ▶ Support for visual construction of RIA pages with Dojo Widgets on Palette for easy drag-and-drop to page
- ▶ DOJO property views for setting widget attributes
- ▶ Access to REST services, web remoting interfaces and feeds

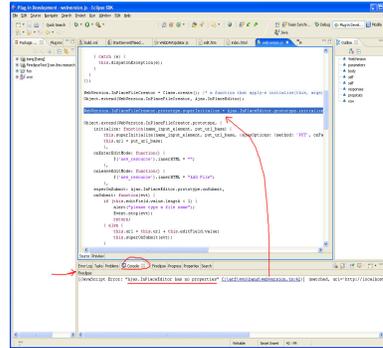


RAD helps with RIA server side development

- ▶ **Support for exposing methods of Java objects (EJB's, PoJo's, web service proxies) via the Web Remoting framework**
 - Endpoints can be used as REST-style Services
- ▶ **Support for the Ajax Proxy to allow secure access to internet based services and mashups for external services not in your domain**
- ▶ **Server tools support – recognize Web 2.0 feature pack when available**

RAD helps with RIA debugging and testing

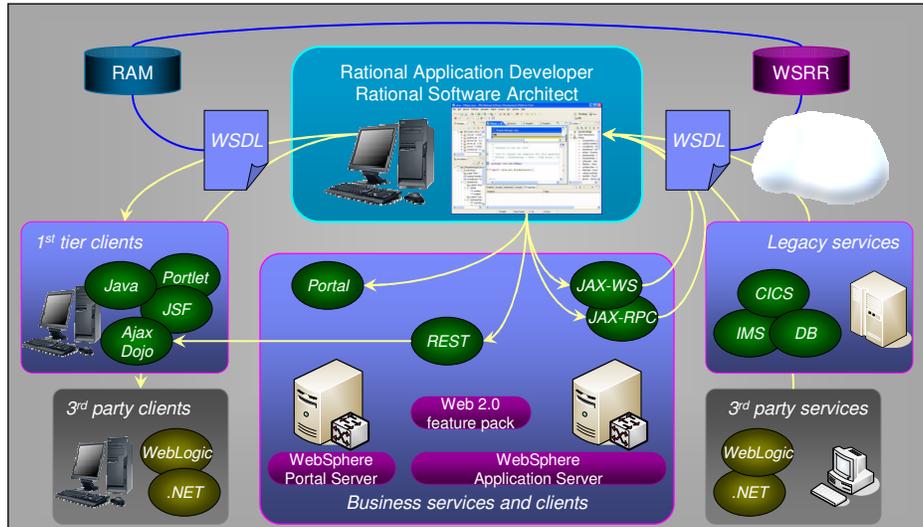
- ▶ JavaScript debugging
 - Integration with Firebug browser-based debugger
 - AJAX Request Monitor & View
 - DOM inspector
- ▶ REST service interaction, JSON data (construct, receive, view) XML data & RSS/Atom Feeds
 - Asynchronous requests



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RAD and RSA for Heterogeneous SOA



Building out IBM's SOA capabilities



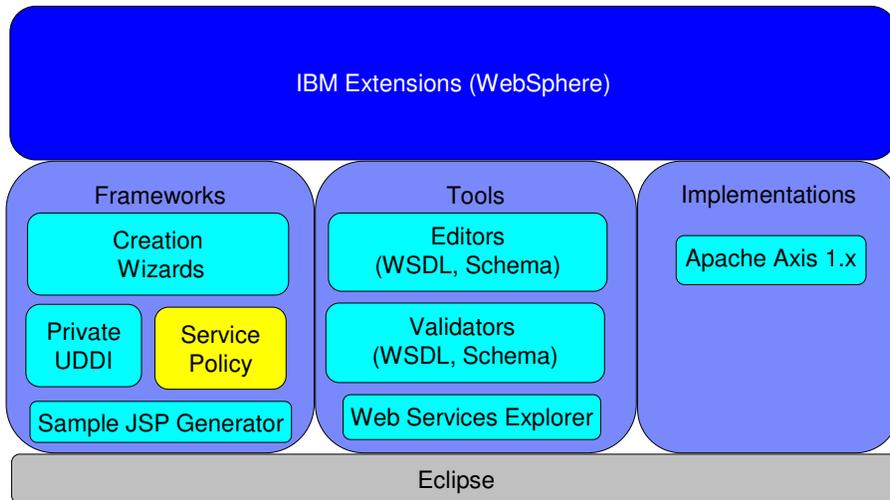
RAD helps realize SOA

- Service creation and reuse
- Service connectivity
- Interaction and collaboration services
- Information as a service

Web Services Development

- ▶ What do businesses want next from Web Services?
 - Reliability over HTTP.
 - Asynchronous message exchange.
 - Asynchronous programming model.
 - Conversational security.
 - Binary Data Exchange.
 - Faster XML Parsing.
 - Support for complex XML Schema.
 - A better, and simpler, programming model than JAX-RPC.
- ▶ Oh yeah – Keep it Interoperable!

Overview of RAD Web Services Tools



Overview of IBM Extensions for WebSphere

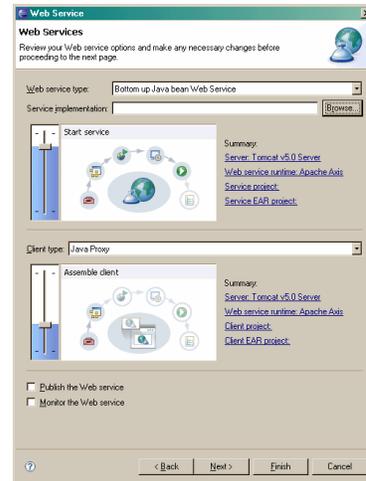
- ▶ WebSphere UDDI Registry Configuration Wizard
- ▶ Web Service runtimes (Wizard extensions)
- ▶ Support for Editing JAX-WS Annotations 
- ▶ JAX-WS Annotations Processor
- ▶ Quickfixes 
- ▶ JAXB Schema to Java Wizard
- ▶ Schema Library 
- ▶ JSR-109 1.2 Support 
- ▶ Service Policy Integration 
- ▶ Manage Policy Attachments Wizard 

What RAD supports - Web Services Development

- ▶ Java EE 5 Web Services
 - Web Services Annotations, a new Java programming model (JSR-181)
 - JAX-B Schema to Java customizations using JAX-B 2.0 (JSR-222)
 - JAX-WS (Replacement for JAX-RPC) (JSR-224)
 - SOAP 1.2 Bindings in WSDL
- ▶ Utilize Sun Reference Implementation for Java EE 5 (JAX-WS and JAX-B)
 - Asynchrony
 - Binary attachment Optimization (MTOM)
- ▶ Policy Set simplified/shared configuration for Qualities of Service
 - RM- Reliable Messaging
 - WS-Addressing
 - WS-Security
 - Secure Conversation

Web Services Development

- ▶ Discovery of Web services in Page Designer palette
- ▶ Simplified WSDL/Schema views in the editor
- ▶ Better (performing) validators in WSDL and XML schema validation
- ▶ Deployment and testing of Web Services into WebSphere Application server
- ▶ Test Web Service client with Universal Test client



Web Service Metadata Annotations (JSR 181)

Sample JAX-WS Web Service:

```
import javax.jws.WebService;
import javax.jws.WebMethod;

@WebService
public class Echo {
    @WebMethod
    public String echoString(String input) {
        return input;
    }

    public int echoInt(int input) {
        return input;
    }
}
```

Only echoString() will appear as a WSDL operation.

JAX-B Schema to Java Bean Generation (JSR 222)

- ▶ JAXB 2.0 provides full support of all XML Schema features, significantly fewer generated classes, generated classes that are easier to manipulate, and a more flexible validation mechanism
- ▶ RAD wizard that takes your schema file and generates JAXB classes
- ▶ RAD wizard includes schema library support
 - If selected, by default, each schema will have a project created for it or user can change this to whatever project grouping makes sense for their usage pattern

Web Services: Quality of Service support

Quality of service (QOS):

- The ability to provide different priority to different applications, users, or data flows, or to guarantee a certain level of performance to a data flow

Policy Sets:

- Use policy sets to simplify configuring the qualities of service for Web services and clients.
- Policy sets are assertions about how Web Services are defined.
- Using policy sets, you can combine policy types.
- Policy Sets can be defined at the global level or on a specific project

Policy Sets were first introduced to the WebSphere Application Server in the Web Services Feature Pack

Web Services: RAD support for QOS

- ▶ Developers can use the WebSphere Admin console to create custom Policy Sets and then import them to RAD (or vice versa)
- ▶ Developers can modify the custom binding associated with a policy type within RAD.
 - RAD will validate any changes made to the custom binding files

Example of Policy Sets and Policy Types within them:

- ▶ **WS-Security default:**
 - WS-Security, WS-Addressing
- ▶ **Reliable Asynchronous Messaging Profile (RAMP) default:**
 - WS-Security, WS-Addressing, WS-Reliable Messaging.
- ▶ **WS HTTPS default:**
 - HTTP Transport, SSL Transport, WS-Addressing
- ▶ **Reliable Messaging:**
 - WS-Reliable Messaging.

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WebSphere Test Environment support

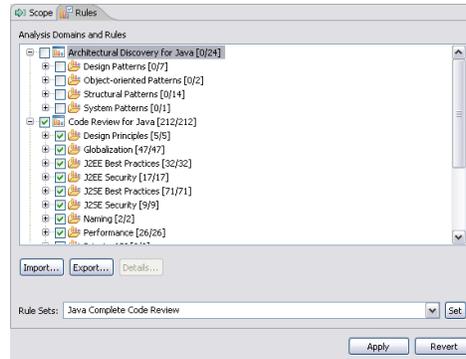
- ▶ **WebSphere Application Server 6.0**
 - Includes support for Web 2.0 feature pack
- ▶ **WebSphere Application Server 6.1**
 - Includes support for EJB 3.0, Web Services and Web 2.0 feature pack
- ▶ **WebSphere Application Server 7.0**
 - Includes support for Web 2.0 feature pack
- ▶ Remote deployment to all WebSphere platforms above
- ▶ Incremental publish
- ▶ Integrated debugging, menu items for admin console, ability launch WSADMIN, application client launcher
- ▶ Universal test client to dynamically test your applications

RAD helps with improving Quality of applications

- ▶ **Line Level Code Coverage**
 - Code coverage of class/method/block/line for package/class/methods
 - Filtering to include/exclude packages, classes, methods
 - Eclipse (Java editor integration) and HTML (portable/BIRT) reports.
 - Enables code coverage from Ant
 - Support for generating code coverage statistics for web applications
- ▶ **Application profiling**
 - Running an application in profiling mode allows the performance of the application to be traced and improve
 - Aids in program understanding by showing execution patterns

Code Quality Assurance

- ▶ Analyze Project/Workspace to find problems of various types:
 - Design Principles
 - Globalization
 - J2EE & J2SE Best Practices
 - J2EE & J2SE Security
 - Naming
 - Performance
 - Private API
- ▶ 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)



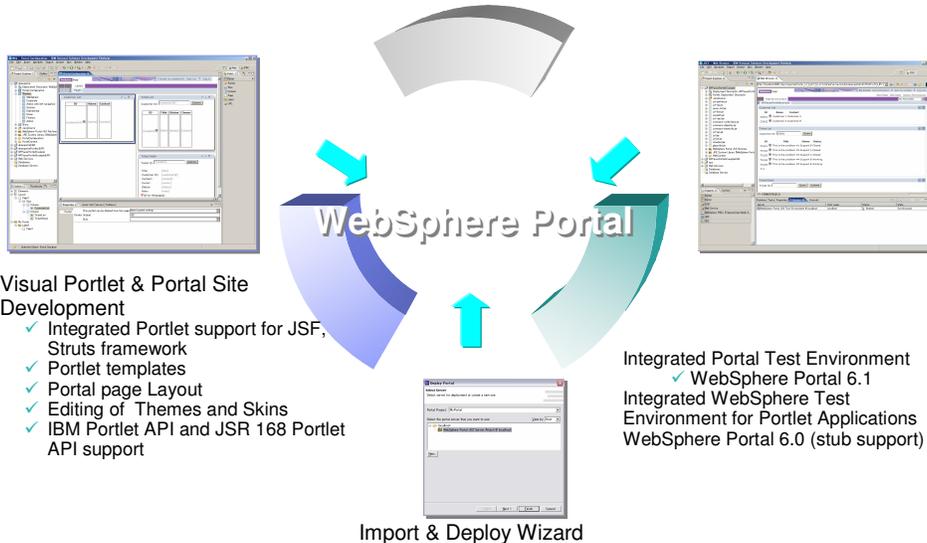
Debug Tools

- ▶ Java and mixed language debugger
 - Seamless integration when debugging application that calls other languages from Java and vice versa
- ▶ J2EE/Web application debugging
 - Advanced debug support for Websphere Application Server, including EJBs, JSP pages, and servlets.
- ▶ Debugger for Jython based WebSphere Administration Scripts
- ▶ Support for DB2 V9 Stored Procedure Debug
 - Java and SQL Stored procedures
- ▶ Step-by-Step Debugging
 - Control debugging at a higher level. Provide user the ability to stop on entry to every object loaded by the JVM or server.
- ▶ XSLT debugger
 - Allows users to detect and diagnose errors in XSLT Transformations
- ▶ Logical display of complex variable types
 - Display variables in a logical manner, allowing the user to examine variables more easily.

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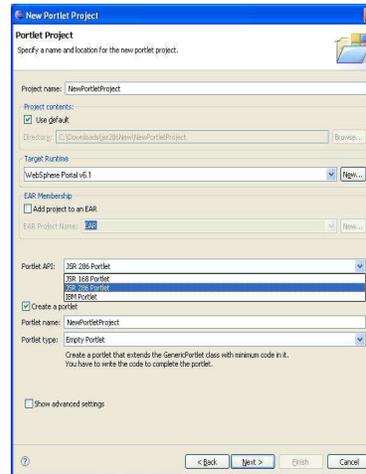
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1st Class Support for Portal App Development



JSR 286 Support

- ▶ Creation of JSR 286 Portlet Project
- ▶ Support for Portlet Events:
 - JSR 286 allows the Portlets to declare events it wants to publish (send), and events it wants to process (receive).
- ▶ Support for Resource Serving: JSR 286 allows Portlets to serve resources.
 - The resources may be images, jsp and so on. The Portlet can serve resource using resource URLs.
 - The Portlet tooling will address the code generation done as a result of adding <portlet:resourceURL> tag in the Portlet JSP.



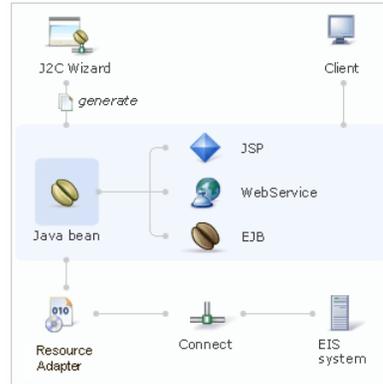
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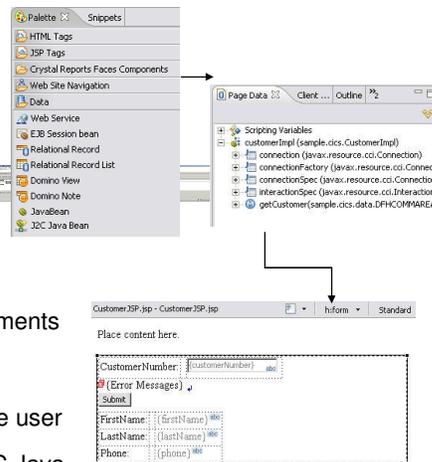
What's new - WebSphere Application Adapters

- ▶ Tools supporting development time adapters for:
 - SAP
 - PeopleSoft Enterprise
 - Siebel
 - Oracle E-Business Suite
 - JD Edwards
- ▶ Outbound support for WAS Adapters
 - J2C Java bean wizard
 - Live connection to discover objects and methods
- ▶ Edit data type's schema
 - Refactoring and regeneration of Java data binding and J2C bean
- ▶ Support deploy options for new adapters in the existing deploy wizard
 - Simple JSP, Faces JSP, EJB, Web Services



J2C Tools

- ▶ **Support for CICS ECI and IMS resource adapters**
- ▶ **CICS Transaction Gateway included (developer use)**
- ▶ **Page Designer integration**
 - Palette entry for J2C Java beans for drag and drop
- ▶ **Enhanced Editing Support**
 - Wizard based guidance to expose J2C InteractionSpec properties as input arguments
 - E.g.. User name, password
- ▶ **Wizard Session Recording**
 - Creates an Ant build file that captures the user interaction with the J2C Wizards to allow command line based regeneration of J2C Java Beans and the Language Data Beans
- ▶ **COBOL, C, MFS and PL/I as supported native languages**



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Introducing IBM Rational Team Concert

Software innovation through collaboration

- ▶ Enables “real-time, in-context” collaboration for distributed project teams – making software development more automated, transparent and predictive
- ▶ Integrates source control, work item, reporting and build capabilities which “think and work in unison”
- ▶ Provides real-time project health information and transparency of status through automated data gathering
- ▶ Allows choice of client tools and extends the value of ClearQuest & ClearCase in enterprise deployments

Open and extensible on

- ✓ Collaborate in context
- ✓ Right-size governance
- ✓ Day one productivity

transparent wikis
integrated presence
OPEN real-time reporting
chat automated hand-offs
Web 2.0
custom dashboards automated data gathering
EXTENSIBILITY Eclipse plug-ins Services
architecture FREEDOM TO CREATE

RTC Views Integrated into RAD / RSA

Develop in RAD and RSA perspectives (Modeling, Java EE, ...)

Manage your workload in the 'Team Central' and 'My Work' views

Work with your development artifacts in the 'Team Artifacts' view

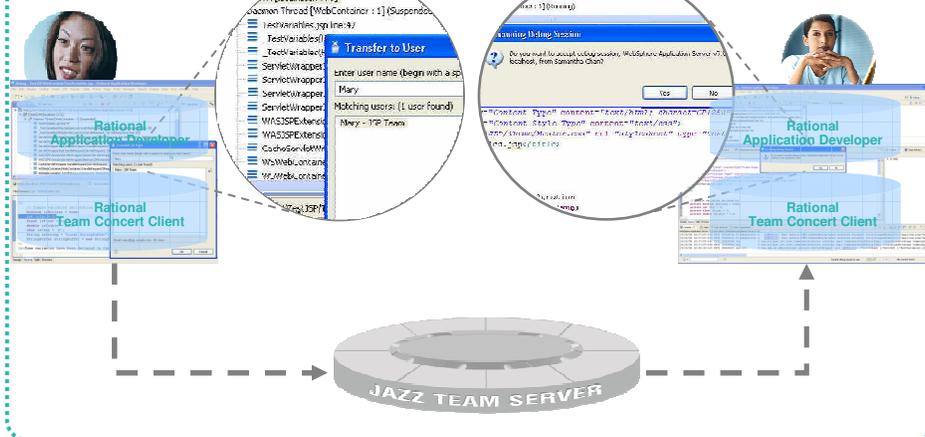
- code
- diagrams
- metadata
- ...

Use Jazz change management constructs and work flows

- change sets
- suspend/resume
- server workspaces, ...

Leveraging Rational Team Concert for Collaborative Debugging

With RAD/RSA and RTC you can share live debug sessions between team members





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