IBM Software Group

What's New in IBM Rational Application Developer

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Senior IT Architect – IBM Rational

Rational. software

ON DEMAND BUSINESS

Agenda

Rational Application Developer

- Using RAD in your agile development lifecycle

Rational Application Developer – V7.5.3

- Getting Started quickly
- Web Client Development
  - Web 2.0 & JSF
- Building Distributed Services
  - Java EE & Web Services
  - Service Component Architecture
  - WAS Deployment
- Verifying the quality of the code
  - Problem determination & Debugging
- Team Collaboration / Product Integration

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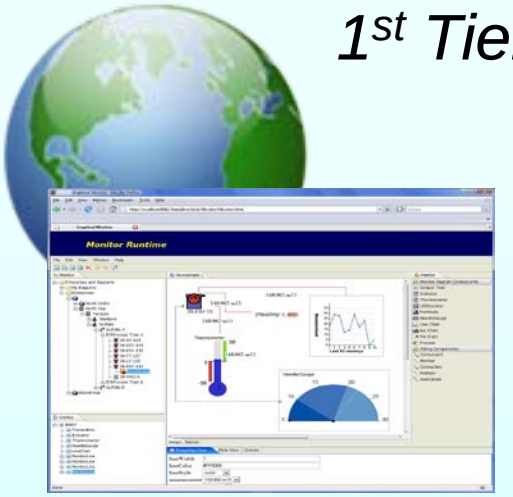
Use RAD to build Enterprise Java IT applications

1st Tier



Web Client

JavaScript

JSF

Portal Client

Rich Java GUI Client

2nd Tier

REST style Services

Web Services

EJB
JPA
POJO

WebSphere Application Server

Tomcat | JBoss

InfoSphere MashupHub

WebSphere Portal Server

3rd Tier

- IBM CICS Transaction Server

- IBM InfoSphere DB2
- Oracle

- IBM InfoSphere IMS
- SAP
- PeopleSoft

...

RAD helps with Agile Development

Facilitates the principles of high-performance teams

Simplification of complex implementations

Working Software

- Wizards, visual design tools and assistive source level tools, get you to your first iteration, faster
- Integrated test and debug capabilities let you unit test every step of the way

Individuals Interactions

- RTC integration
  - Collaborative Debug
- Automated static code analysis
- Process awareness

Respond to Change

- Iterative development support
- Comprehensive refactoring,

RAD Accelerates SOA, Java EE, Web 2.0, Portal Development for IBM Middleware

Team Collaboration

Rational Team Concert: Collaborate, Automate, Report

Web 2.0

Extend SOA and Java EE assets to the glass via dynamic, rich JSF and AJAX applications

SOA

Assemble Web services and SCA components into heterogeneous business applications

Quick Fix
Validate
Refactor
Annotate
Refine

Visualize
Analyze
Deploy
Test
Debug

Java EE 5

Develop and test Java EE 5 applications with annotation based programming

Portal

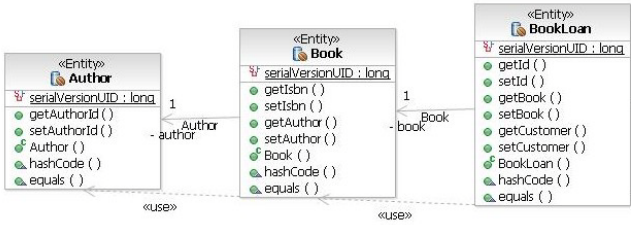
Visually design portal sites and portlets for WebSphere Portal Server

WAS Integration

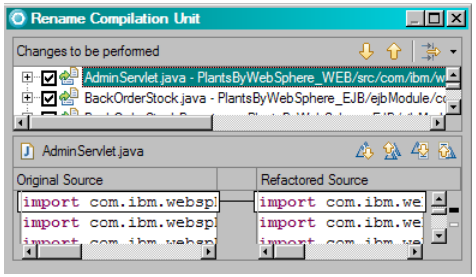
Hot deploy incremental changes to WAS

RAD Increases Efficiency and Shortens the Development and Test Cycle

Visualize and enforce Java EE, SOA and Web 2.0 architectures



Refactor… Rename… Enhance…



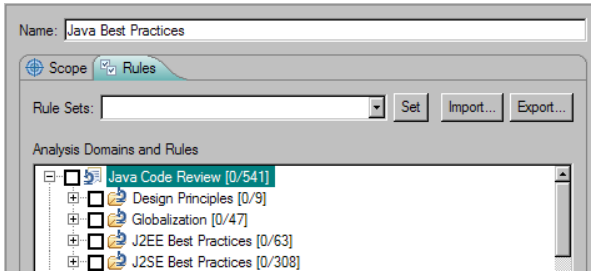
Performance

Quality

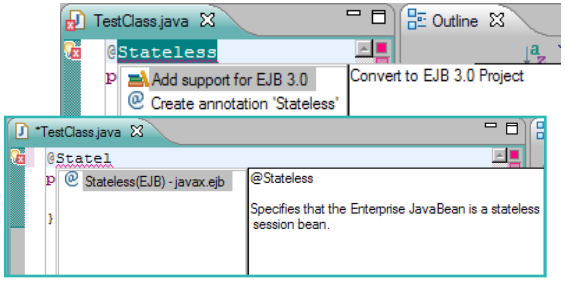
Usability

Integration

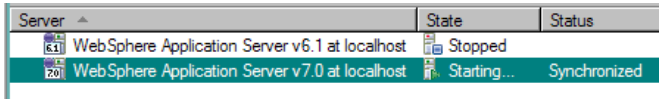
Analyze with static analysis rules and dynamic line level code coverage



Accelerate development with annotation based programming and quick fixes



Unit test with WebSphere Integrations



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RAD Value Statements

RAD features and function bring value to your organization by:

- **Increased developer productivity**
  - Iterative creation, validation, revision and deletion of artifacts.
  - Simplified business logic programming models via Java annotations.
  - Support for WAS V7 – Java EE 5, EJB 3, JPA, JSF 1.2, JAX-WS 2.1, JAXB 2.0, 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, SCA 1.0.0 FeP.
  - WebSphere Portal 6.1 / 6.0 development – WP 6.1 Server included.
  - WebSphere adapter Support – SAP, PeopleSoft, Siebel…
  - Rational Team Concert integration – Software development is a team sport.
- **Governance support**
  - Install Manager – Flexible installation and maintenance.
  - Process Advisor – Guides developers for best of breed practice.
- **IBM support**

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Flexible Install Options – get set up quickly

- Built on Eclipse 3.4.
- Uses IBM JRE 1.6.
- Install RAD…
  - As a complete offering with its own Eclipse platform, or
  - Into an existing Eclipse, if both are on the same Eclipse levels.

- IBM Installation Manager simplifies and optimizes your install…
  - Minimize footprint – Install just what you need.
  - Shell share with other Rational products to help developers more easily manage their desktop.
  - Enterprise install capabilities for simple maintenance and provisioning of your own standardized install configurations.
    - Create response files for what install configuration you need.

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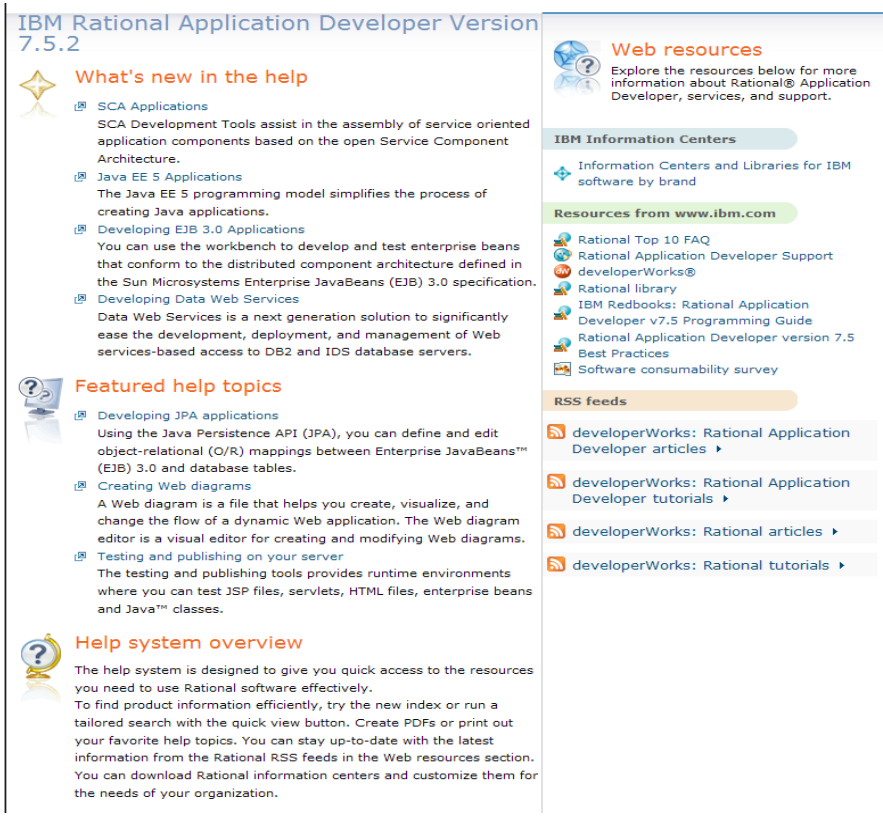
Learning resources in RAD – get up to speed quickly

- **Detailed and comprehensive documentation**
  - Scenario based documentation to provide a seamless flow from topic to topic
  - Install it on your machine, on an intranet server or browse online
- **Tutorials**
  - Watch as the tutorial is performed.
  - Do the steps of the tutorial.
- **Samples**
  - Learn how to do application tasks in RAD.
  - Get a better understanding of the underlying technology.
- **Online resouces**
  - developerWorks: Rational zone
    - White papers, demos, web casts



http://publib.boulder.ibm.com/infocenter/radhelp/v7r5/index.jsp

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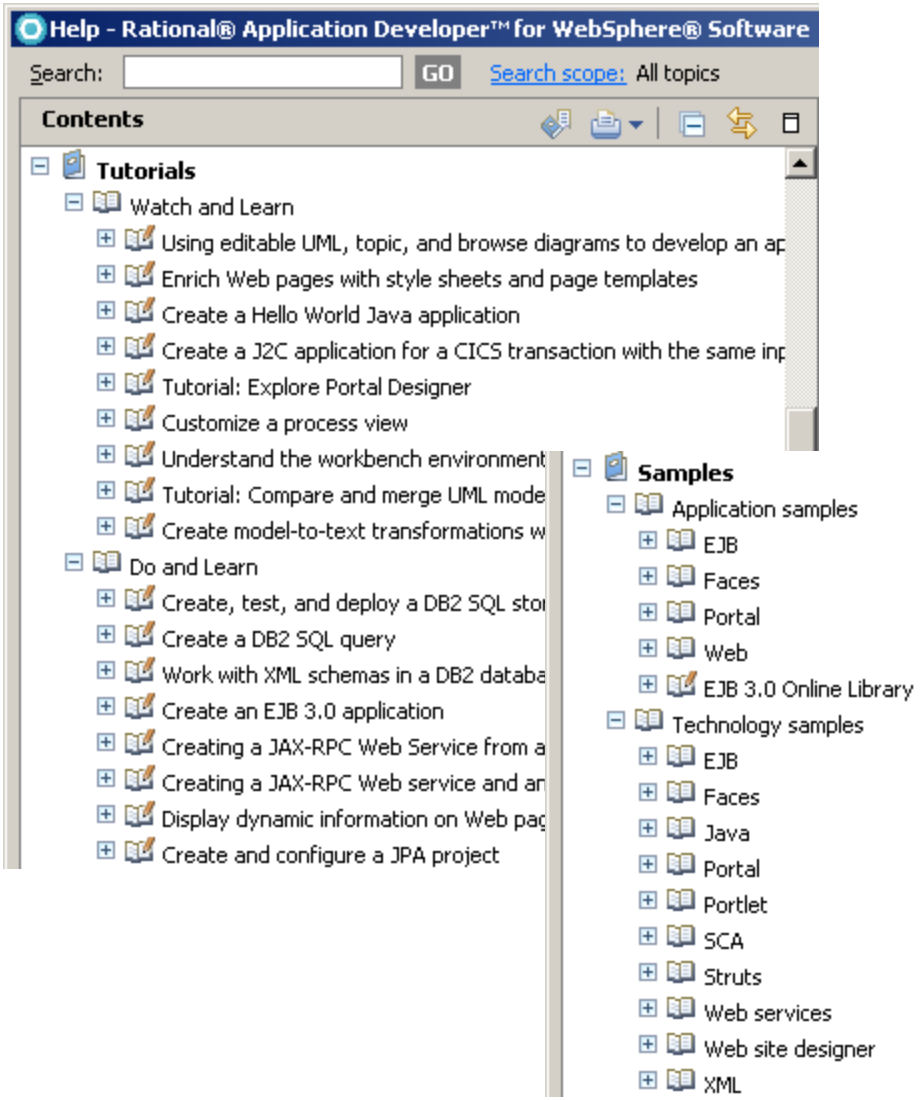
Building skills quickly: Wide Range of Help

Tutorials come in two flavors:

- **Watch and Learn**
  Watch as the tutorial is performed.
- **Do and Learn**
  Do the steps of the tutorial.

Samples come in two flavors:

- **Application Samples**
  Learn how to do application tasks in RAD.
- **Technology Samples**
  Get a better understanding of the underlying technology.



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Migration

- **Ability to migrate from RAD 6.0.0.x or RAD 7.0.0.x via**
  - Import projects using Project Interchange.
  - Import projects shared in a source code management (SCM) system.
  - Open a version 6.0.x or version 7.0.x workspace with the current version of the product.

- **Workspace Migration wizard**
  - Select the projects that you want to migrate
  - Highlights which files in the workspace will be modified
  - Identifies projects which target a runtime environment that is not available in current RAD release.
  - Enables the user to optionally remove ‘no longer needed’ project files from the workspace
  - Upon migration completion, the Migration Validation window opens and the user can see the messages generated during the validation of the migration.

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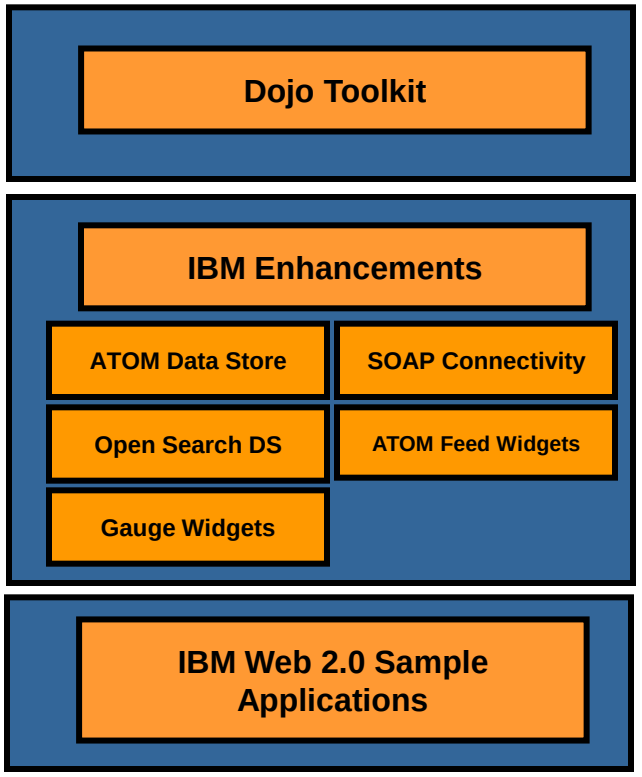
Dojo Toolkit

- JavaScript open source toolkit with IBM extensions.
- Rich set of interactive widgets
- Provides core functionality for event handling, localization, accessibility
- Eliminates many browser inconsistencies with JavaScript
- Reduces time to market and helps lower Ajax adoption costs.
- IBM is an active contributor to the Dojo Foundation.
- Dojo is part of the OpenAJAX Alliance



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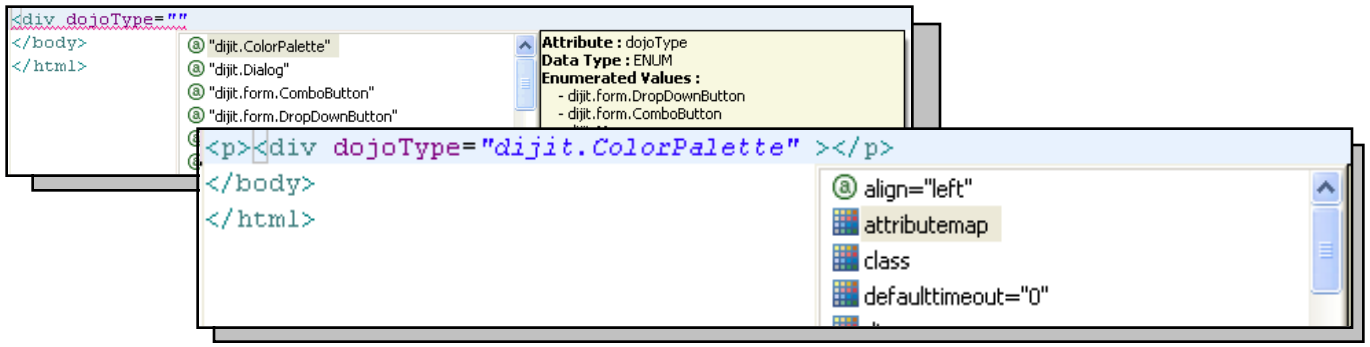
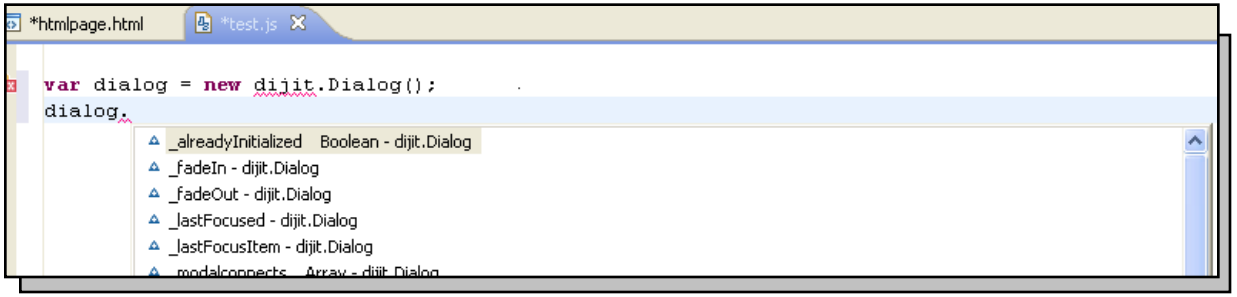
RAD helps with RIA Clients – JavaScript Editing

- Provides a world class JavaScript source level development environment
  - JavaScript editor with content assist, validation, refactoring, outline view
  - Integration & support for Dojo
    - Dojo specific content assist, validation, refactoring

– In HTML



– In JavaScript



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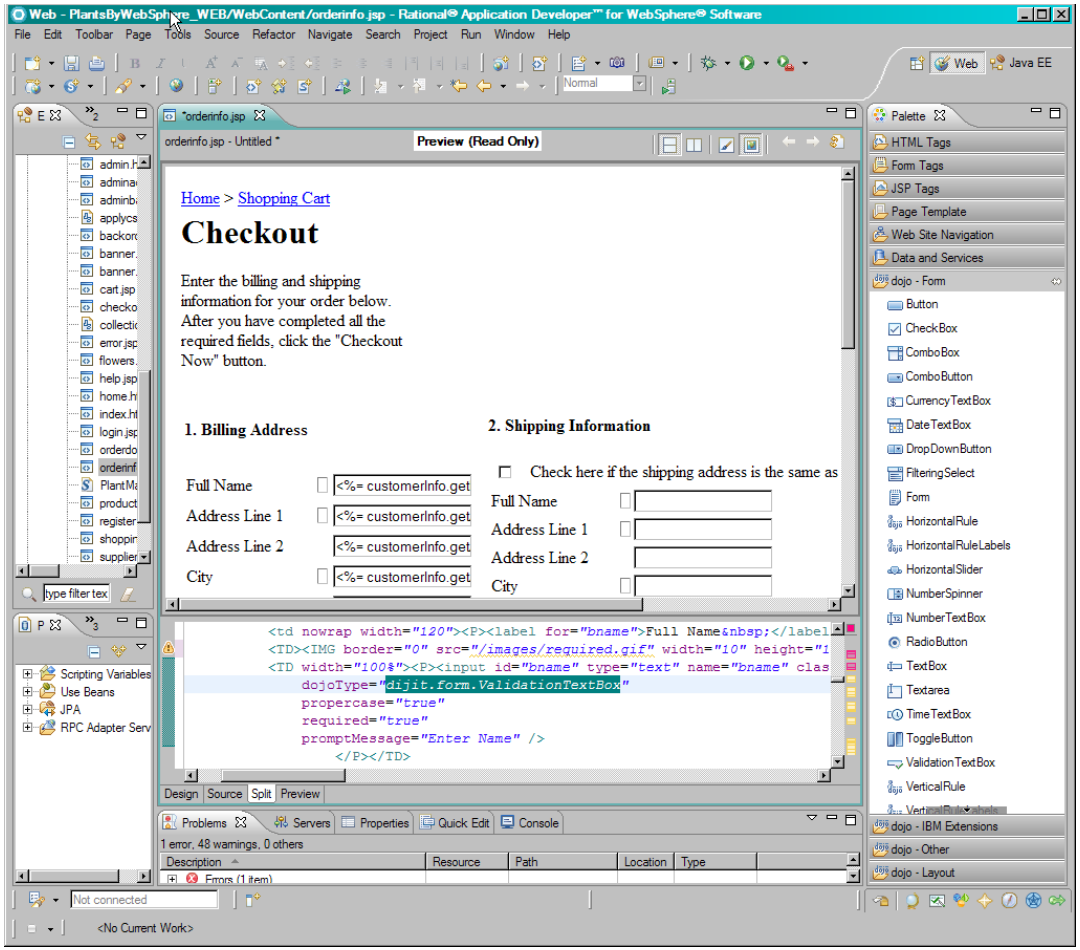
RAD helps with RIA Clients – Visual Editing

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



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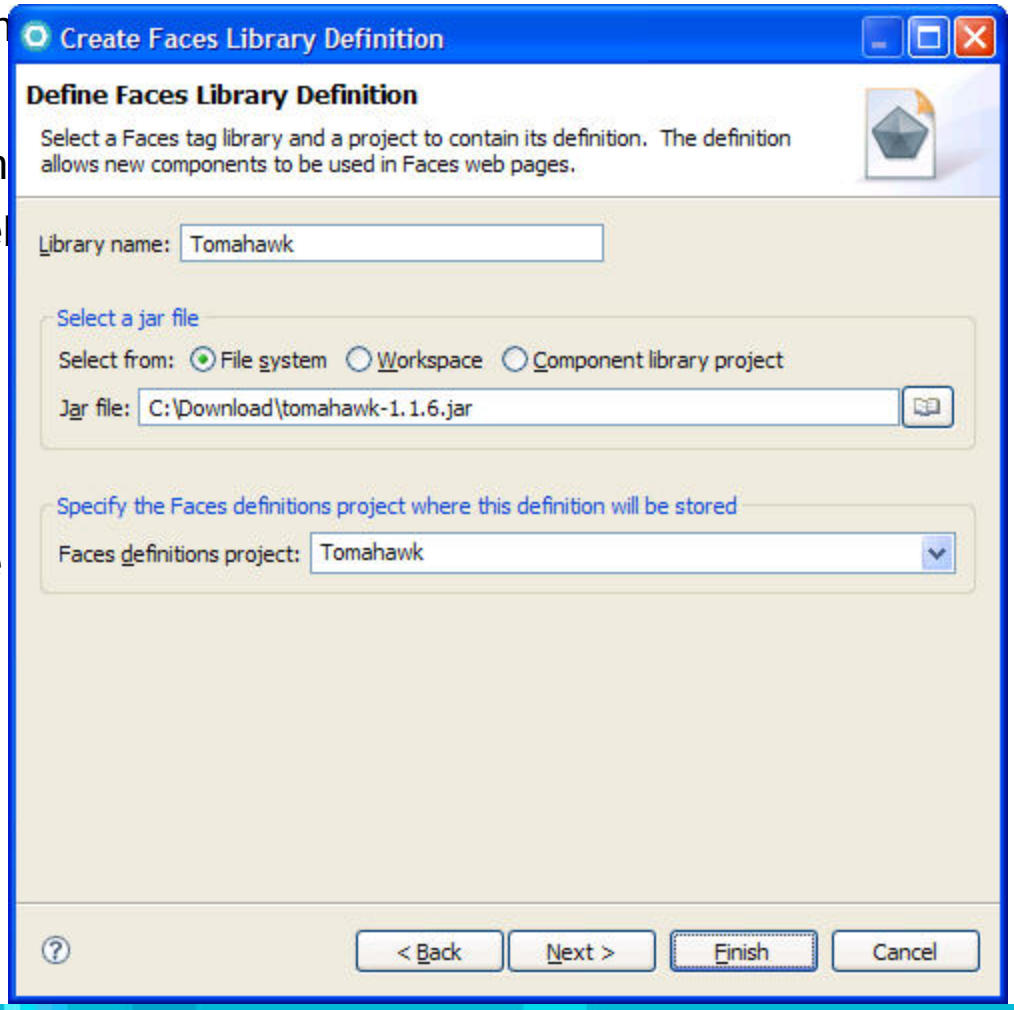
Enhanced 3rd Party JSF Component Library support

Faces Library Definition Project - defin

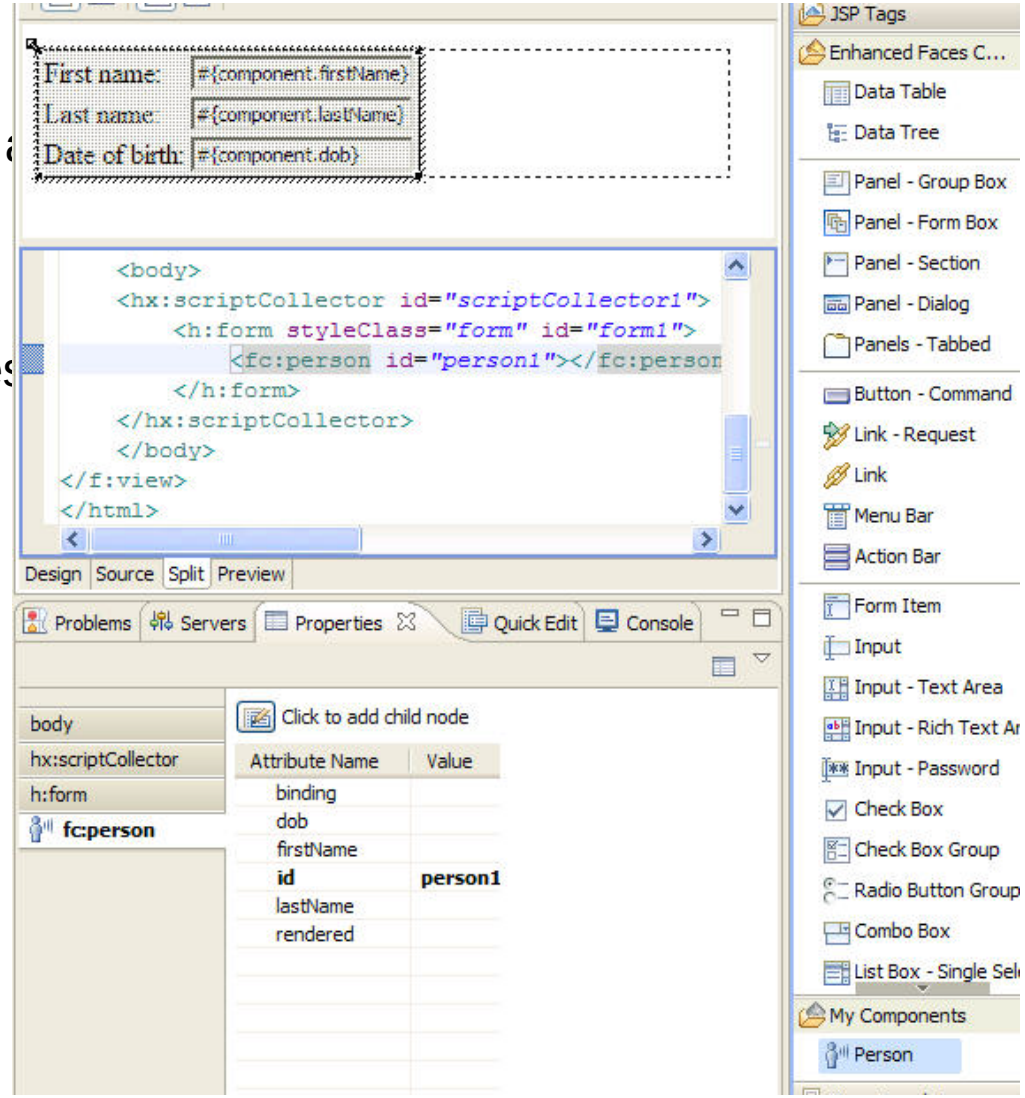
- Initialize content from introspectin
- Holds artifacts to be copied to wel
- Defines:
  - Palette
  - Visualization
  - Tag usage information
- Presence of project in workspace



Custom Component Building - Visual layout

Custom component used in a web a

- On palette
- Visualized
- Properties shown in Properties



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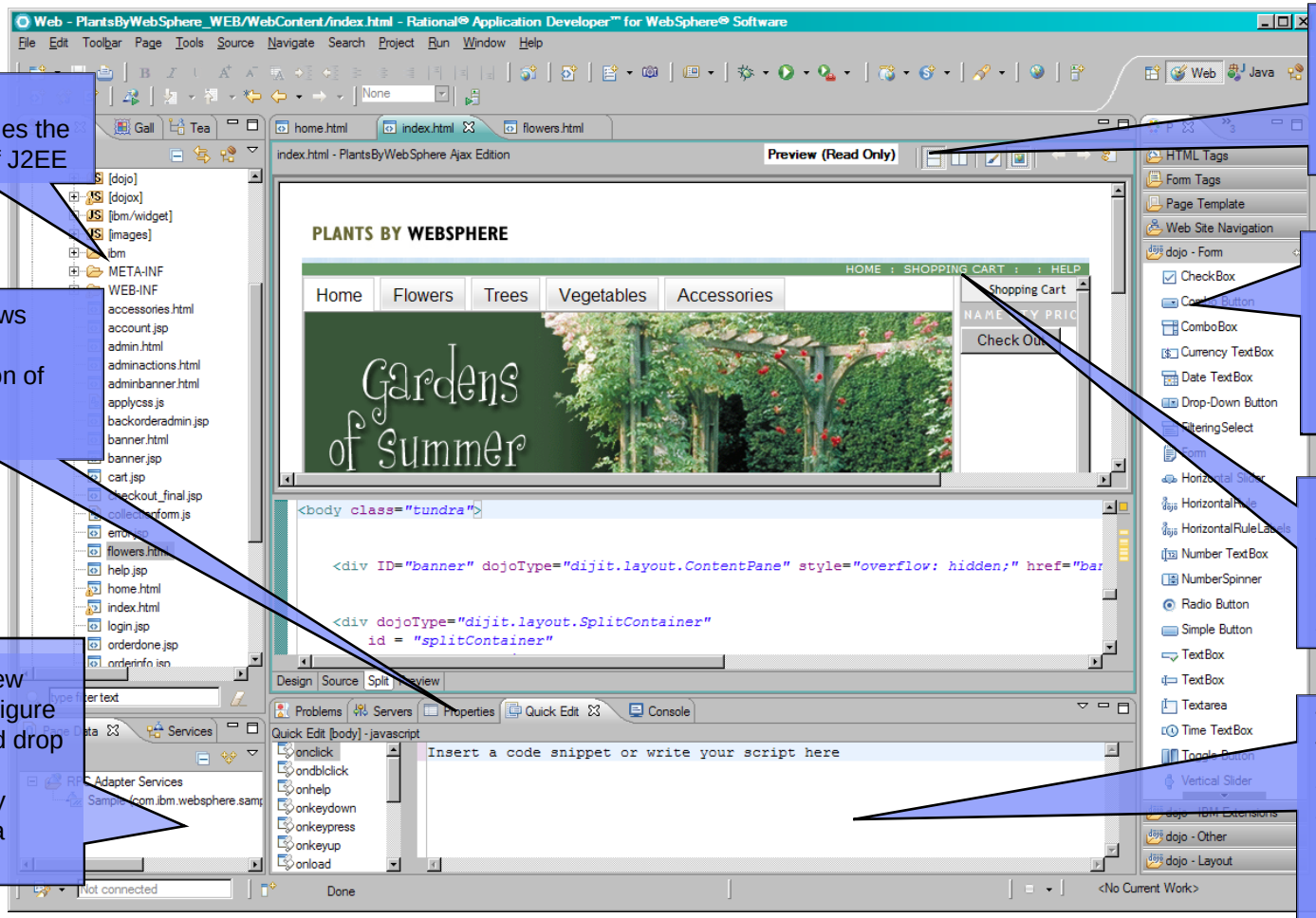
Design Dynamic Pages with Rational page Designer



Simplified Navigator hides the complexity of J2EE

Property views allow easy customization of the selected component

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

Split pane view allows you to see a synchronized source and design (or preview) view.

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!

- **Web Application Development is Drag and Drop Simple!**
  - Rapid UI Creation
  - Simple Data Access via JPA
  - Instant binding of UI to Data
  - Quick Server-side event scripting (with Java Server Faces)

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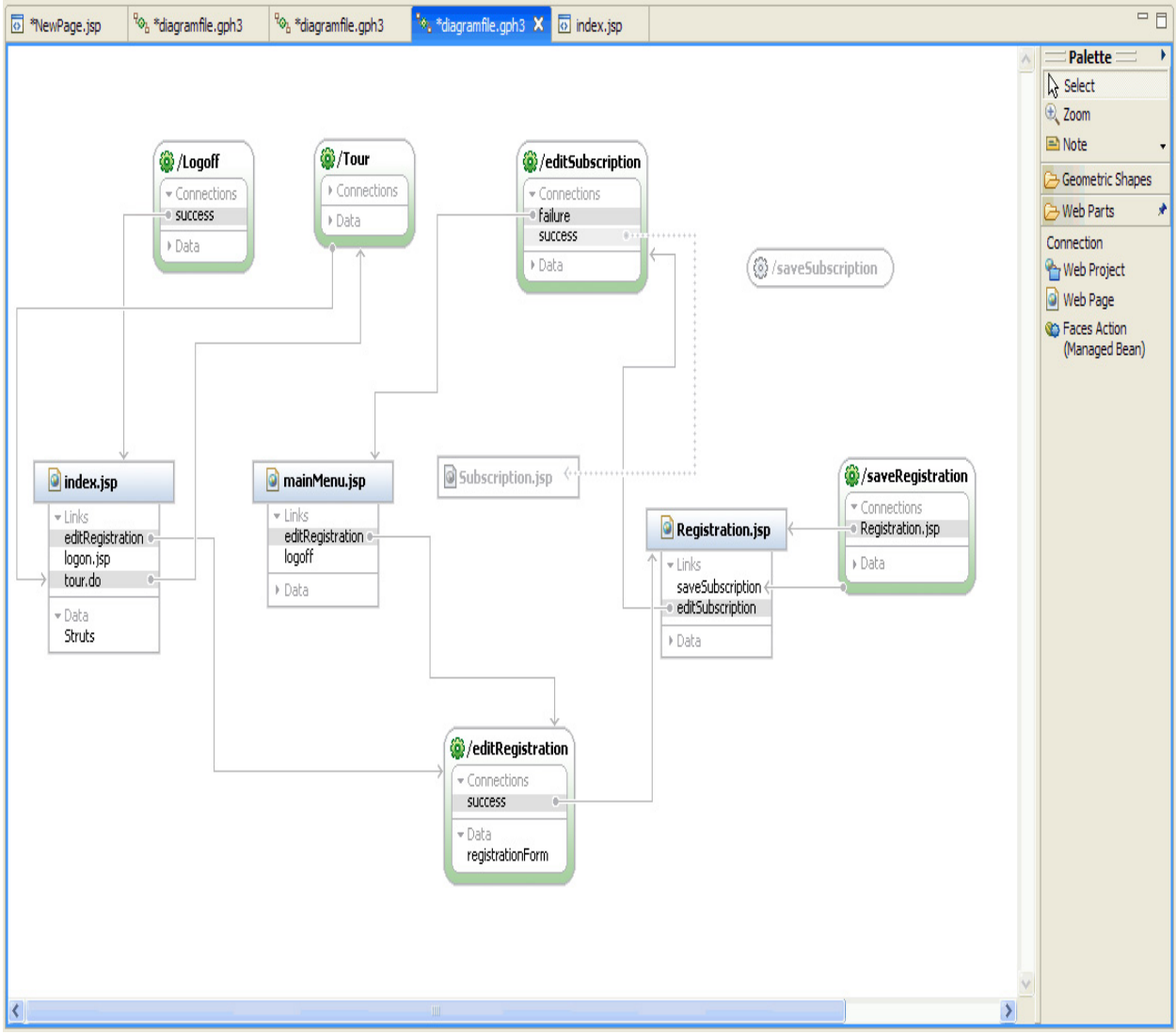
Web Diagram Editor

- **Create a complete data/service driven application completely within the Web Diagram Editor**
  - Visualize complete or part of application page flows
  - Visualize Data and Service consumption
  - Improves application understanding and application maintenance overhead
  - Existing or new applications
- **Supports Struts and Faces applications**



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What's new with Java EE 5?

- Java EE 5 – A simplified programming model.

- Annotations
  - Part of the Java 5 programming language and the Java editing experience.
  - Inject information into plain old Java objects (POJOs).
  - Specify information in the source instead of in side files.
  - Separate concerns between business logic and infrastructure.
  - Java EE Deployment Descriptors become optional.
  - Tie business logic to programming models non-invasively.
  - More intuitive and convenient.

- Examples:
  - @Stateless – Enables a POJO to be a Stateless Session Bean.
  - @Stateful – Enables a POJO to be a Stateful Session Bean.
  - @WebService – Enables a POJO to be a Message Driven Bean.
  - @Entity – Enables a POJO to be a JPA Entity Bean.

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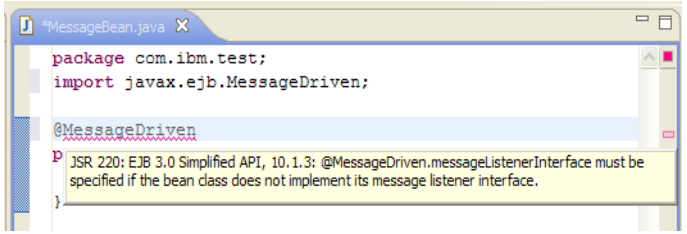
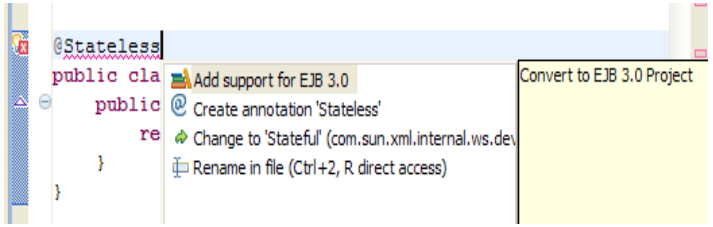
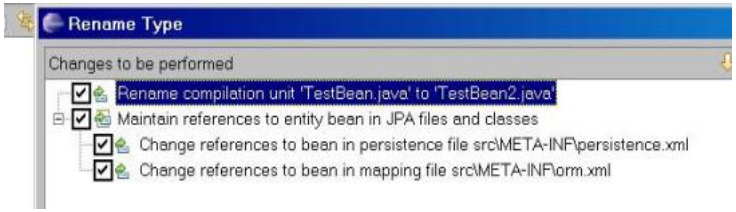
RAD helps with – Java EE 5 development

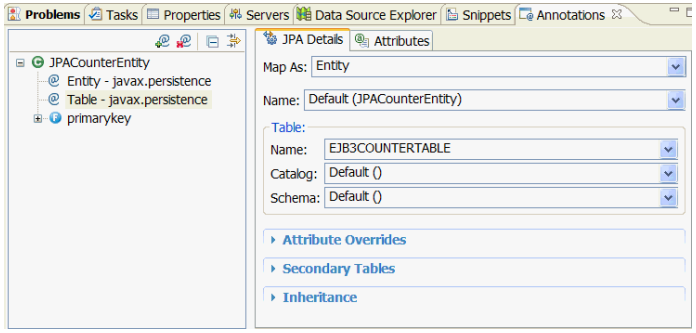
RAD helps simplify and accelerate Java EE 5 development

- 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









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RAD helps with – Java Persistence Architecture tools

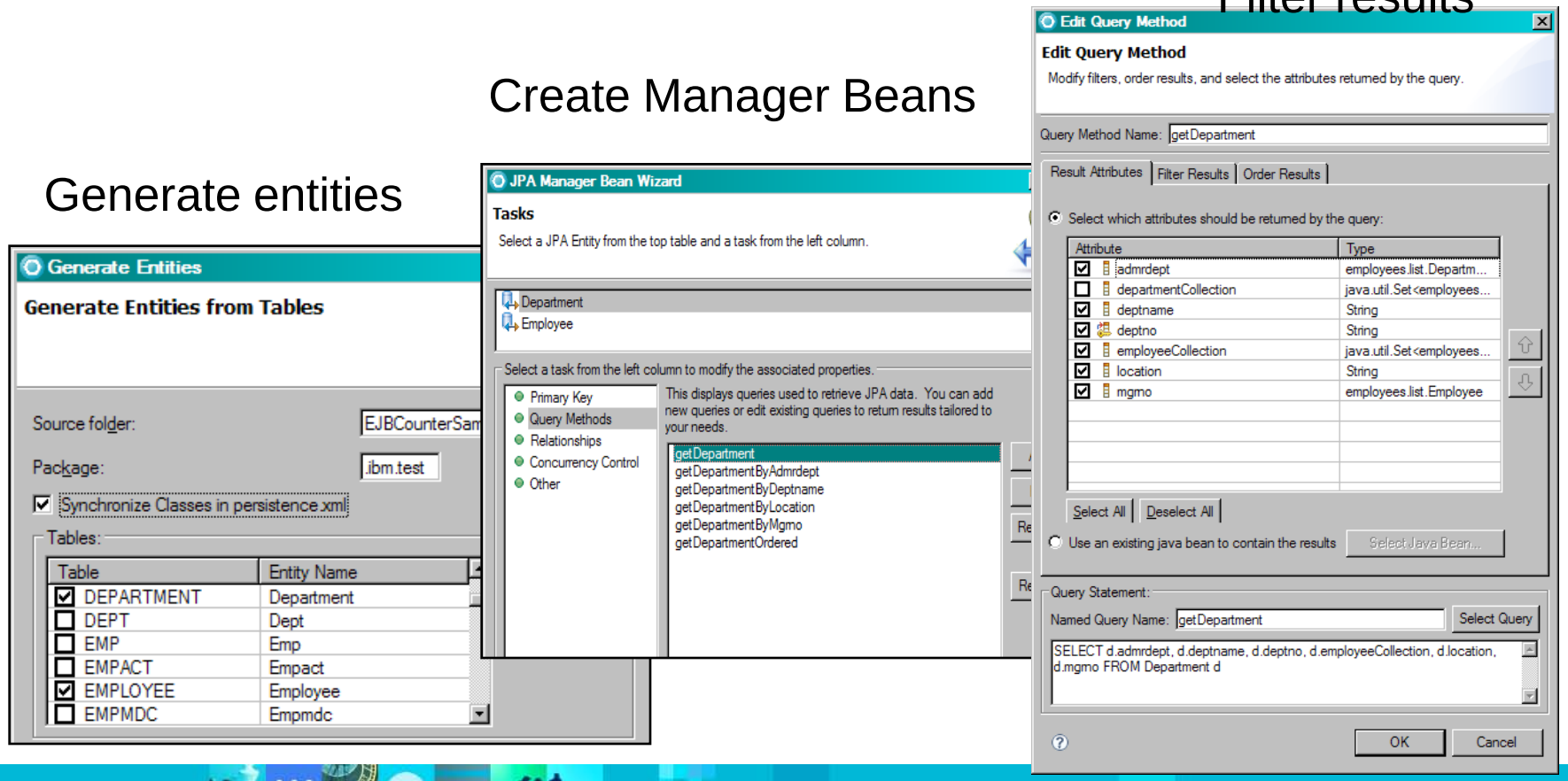
Create and automatically initialize mappings:

- Top-down**:** Create new database tables from existing entity beans.
- Bottom-up: Create new entity beans from existing database tables.
- Meet-in-the-middle: Define mappings between existing database tables and entity beans.

Filter results

Create Manager Beans

Generate entities



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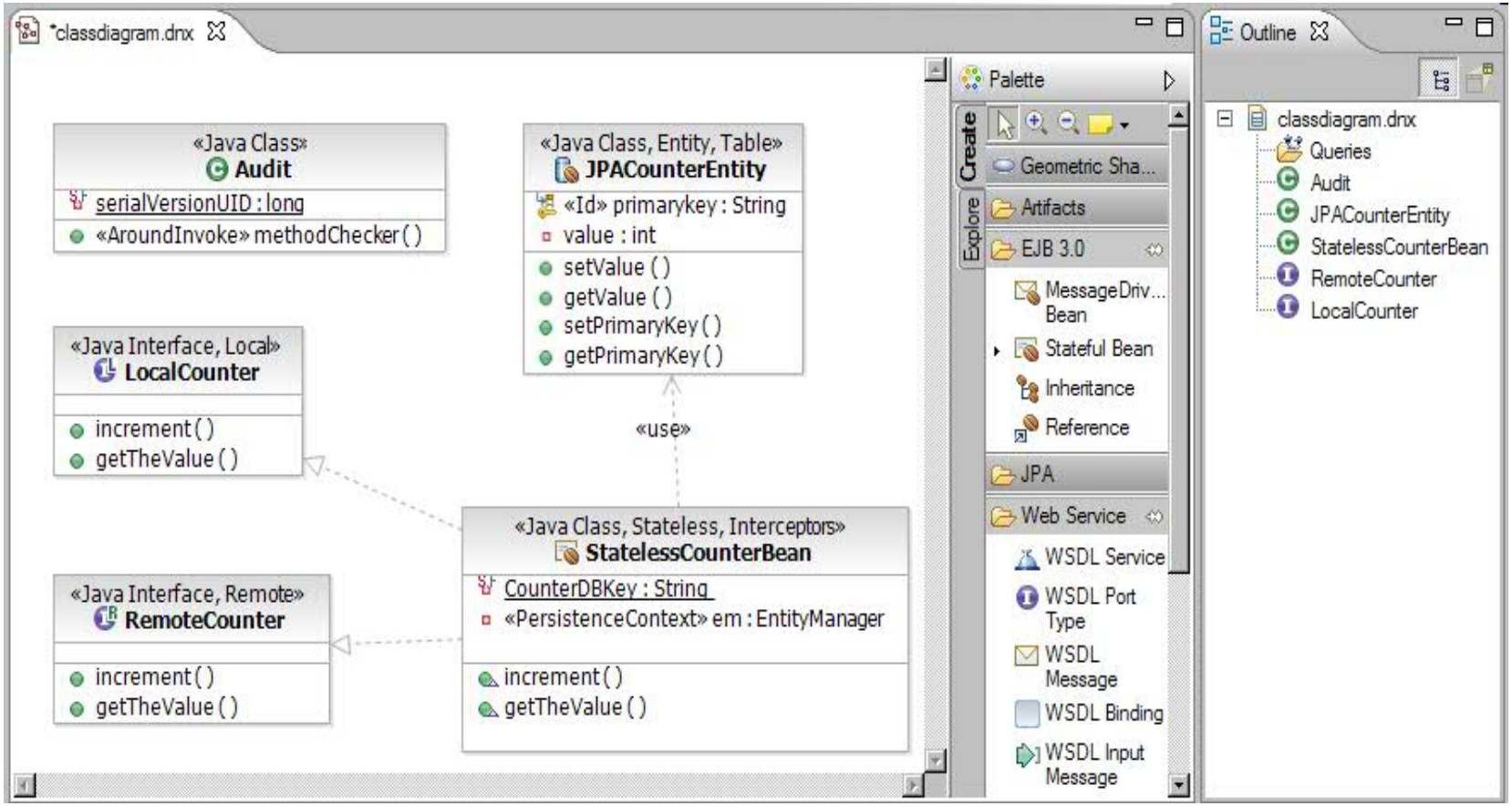
RAD helps with - Visualizing your EJB & JPA beans

EJB Visualizer updated to view & edit EJB 3.0 & JPA beans

- Beans can be annotation or XML deployment descriptor based



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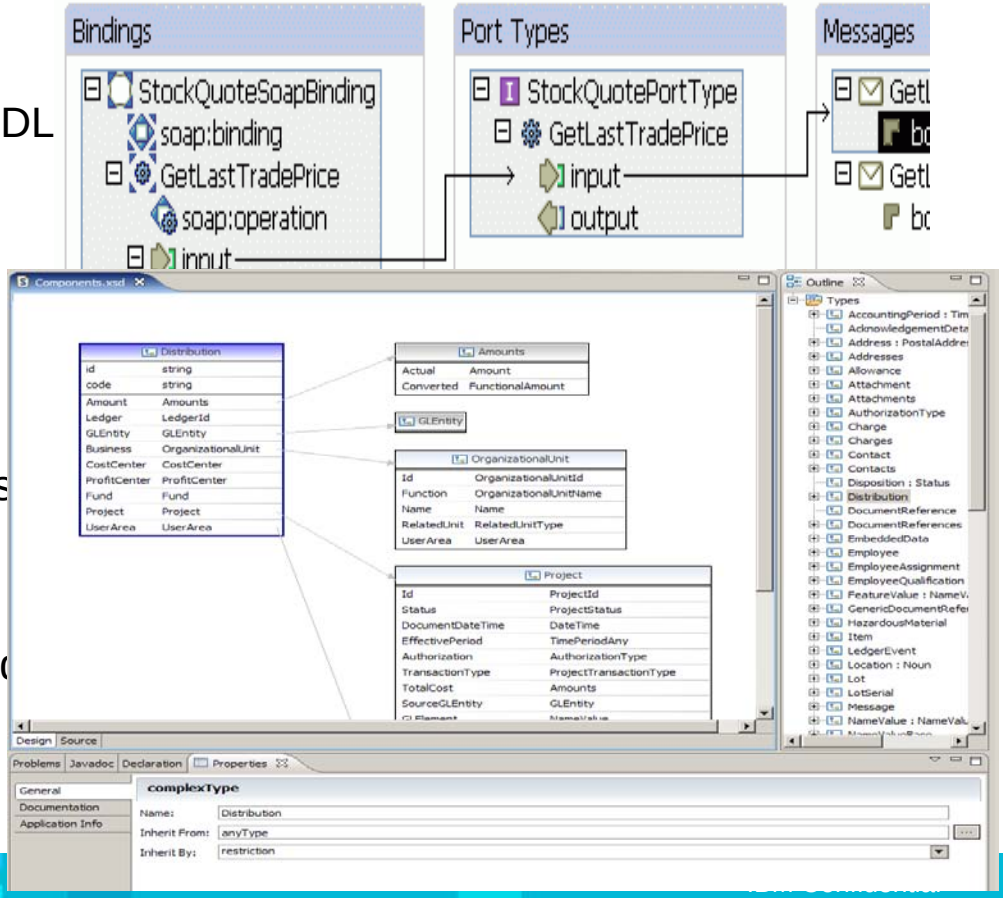
RAD Helps with Web Services Development

- 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 Univers Test client
- JAX-WS and JAXB annotation base programming models



RAD helps with – JSR 181 (Web Service Metadata Annotations)

- 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.

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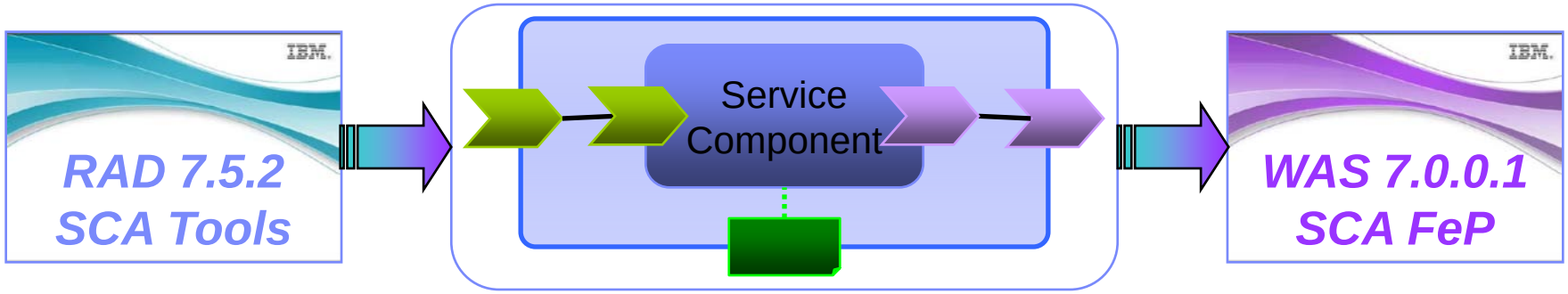
Service Component Architecture

SCA is an open programming model
for assembling SOA solutions
from flexible, reusable service components
based on diverse business IT assets.

RAD 7.5.2 SCA Tools
- GA available now

WAS 7.0 SCA Feature Pack
- GA available now



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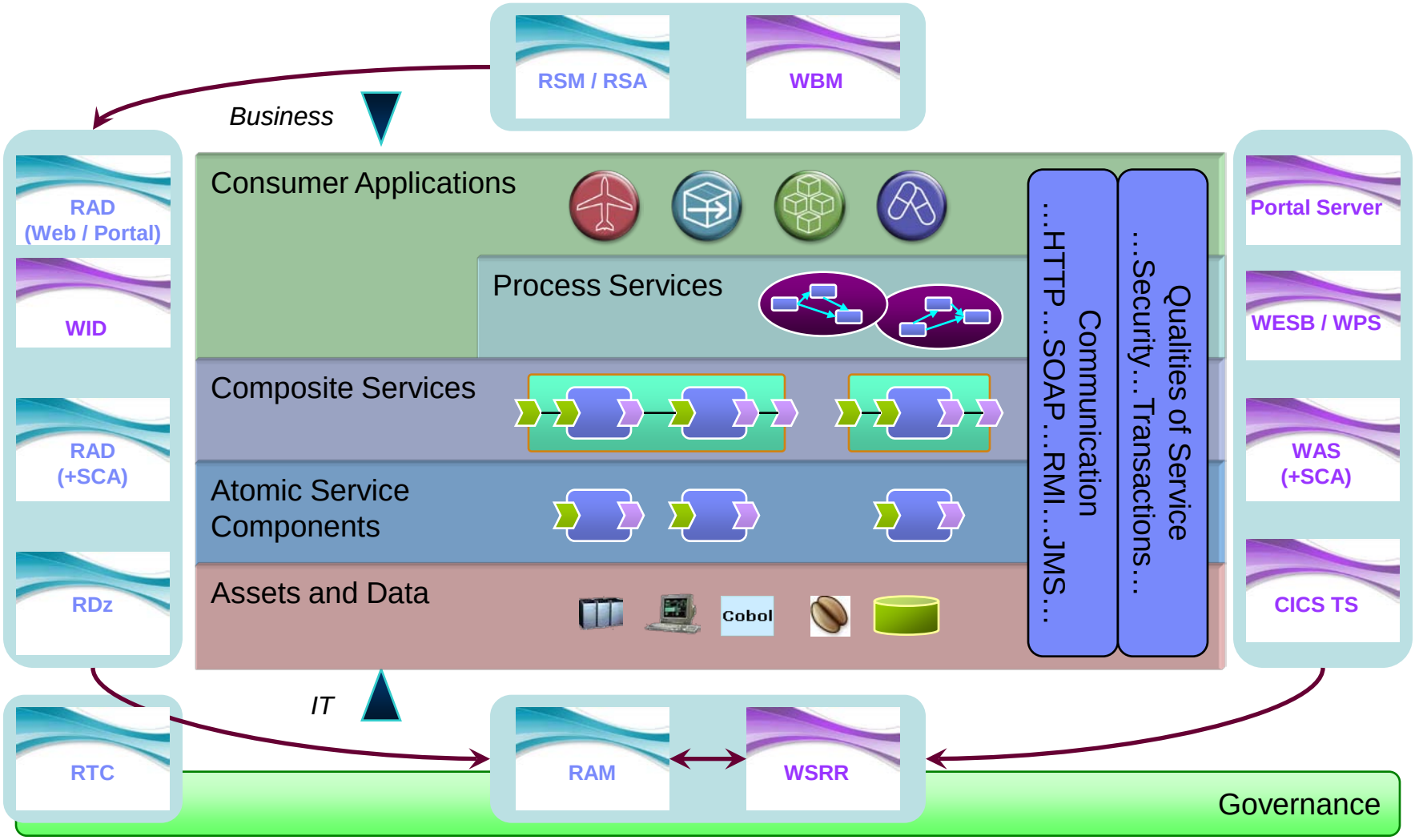
SOA Solution Layering



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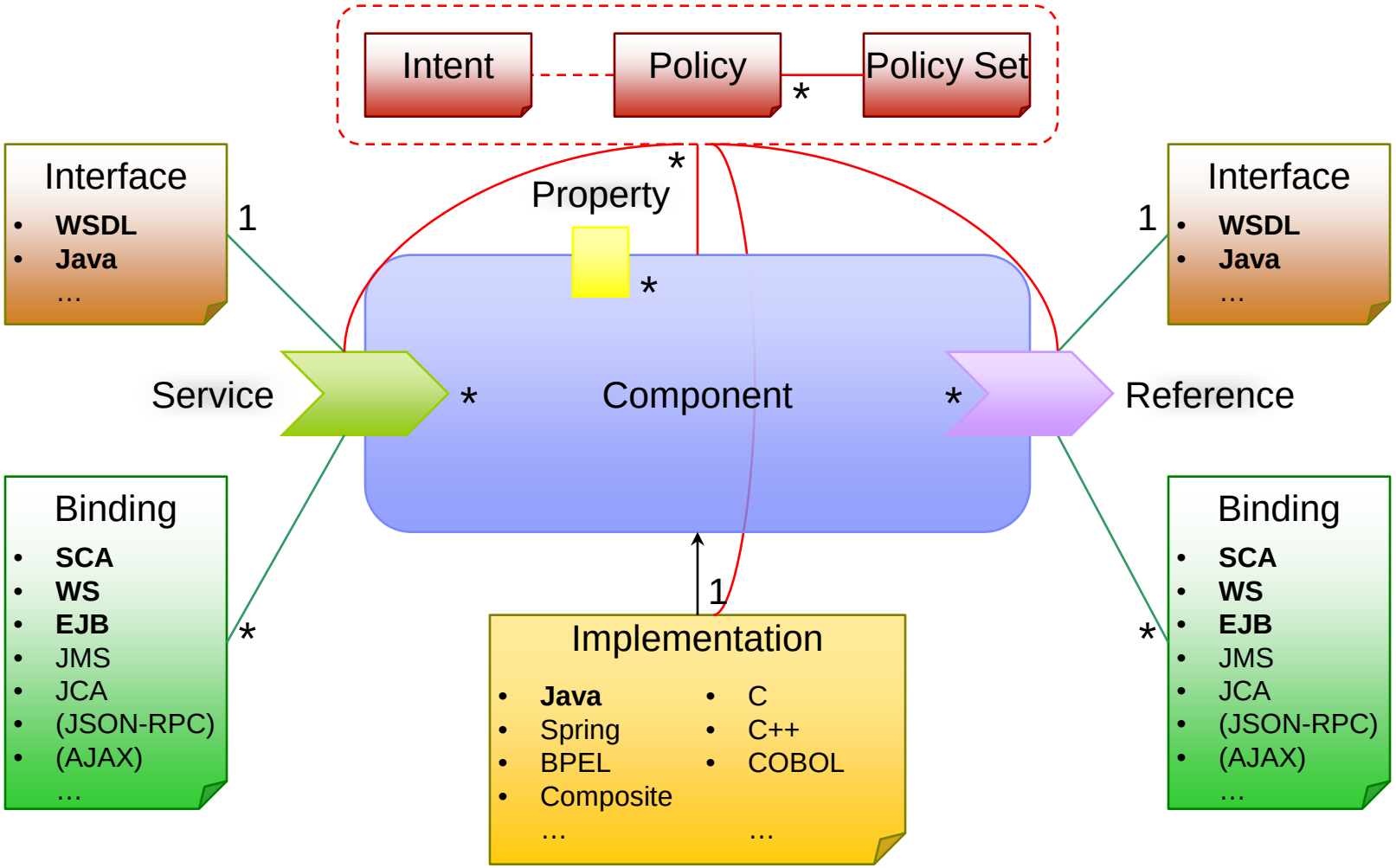
SCA Components



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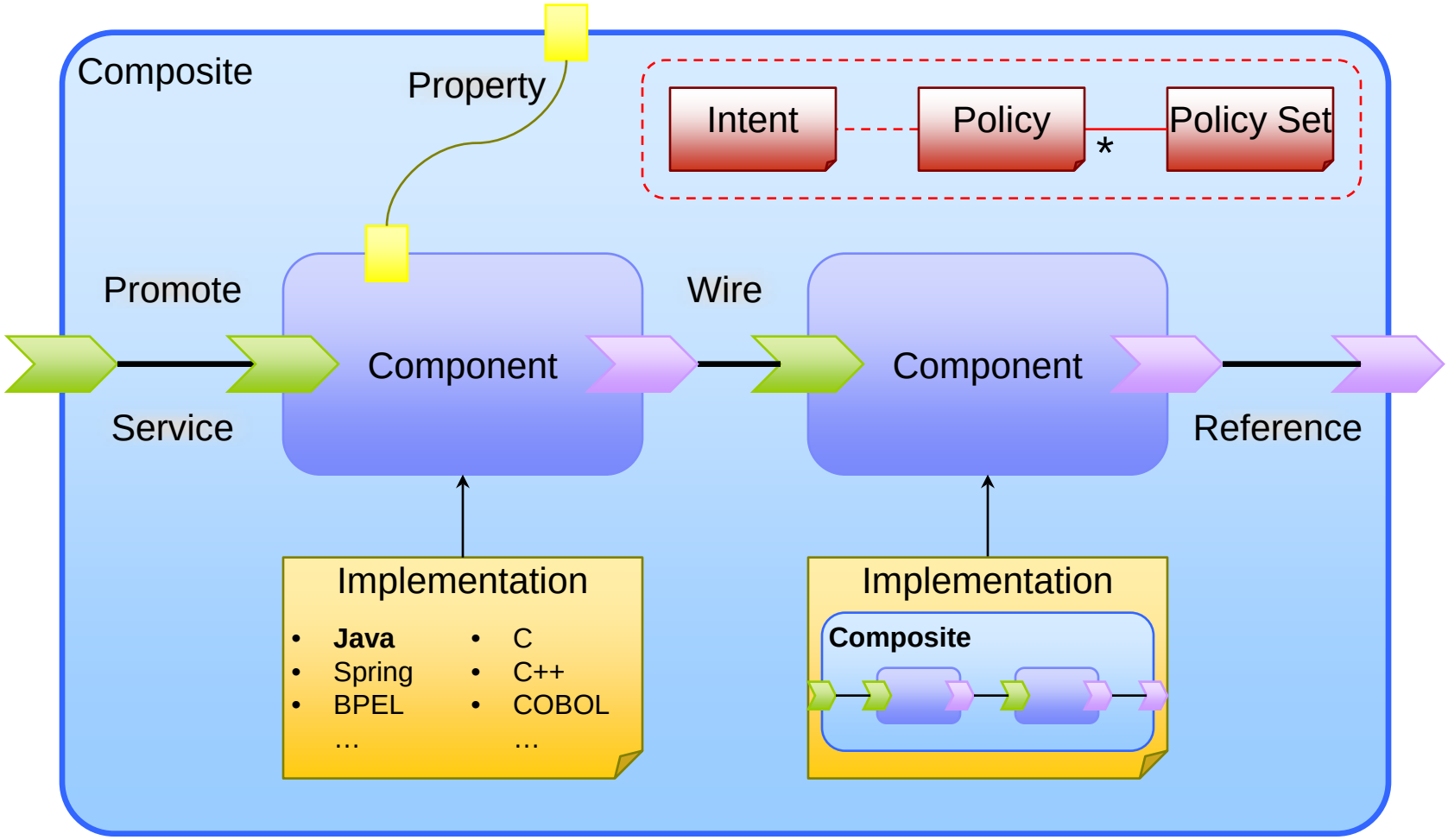
SCA Composites



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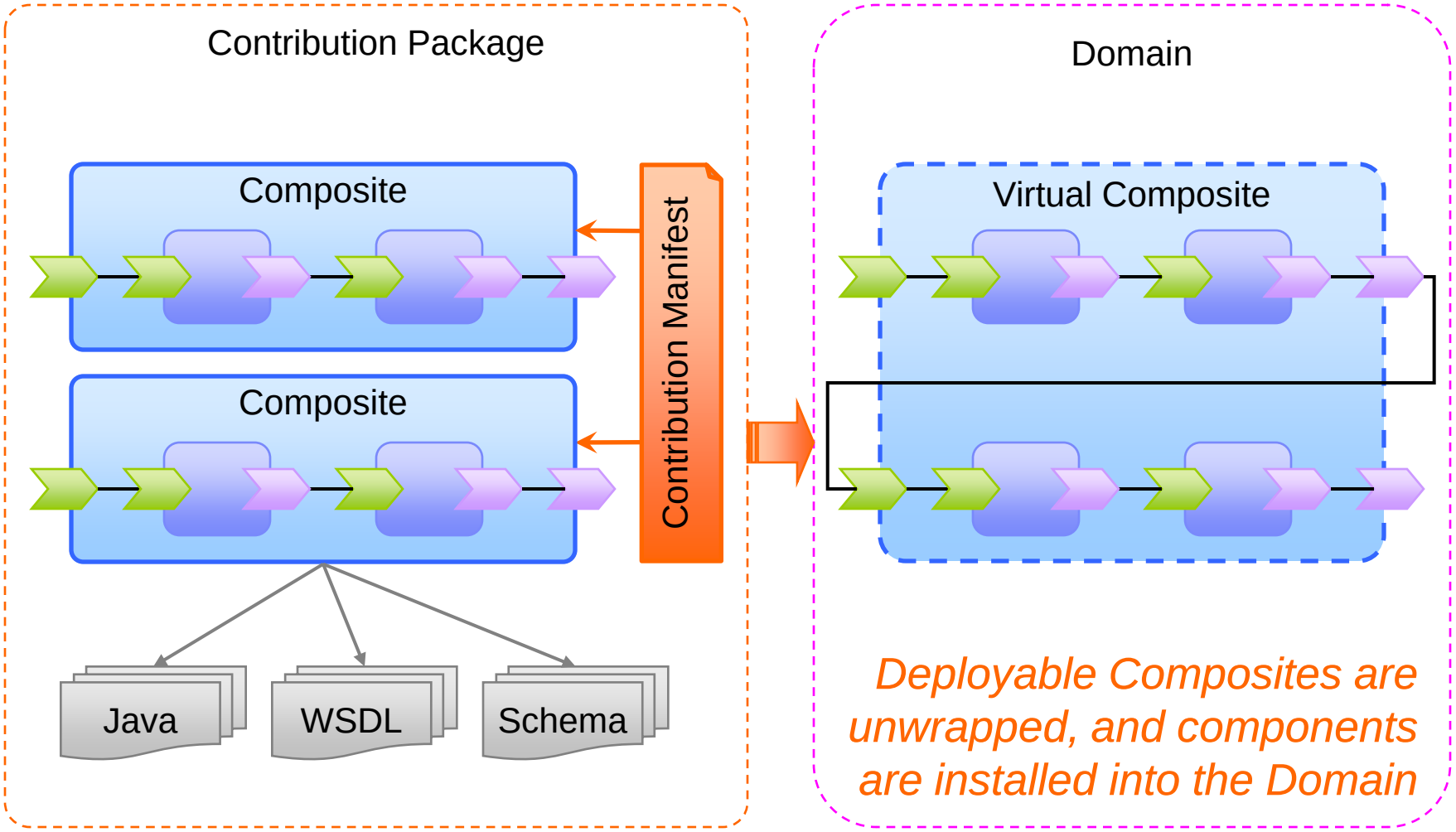
SCA Contributions



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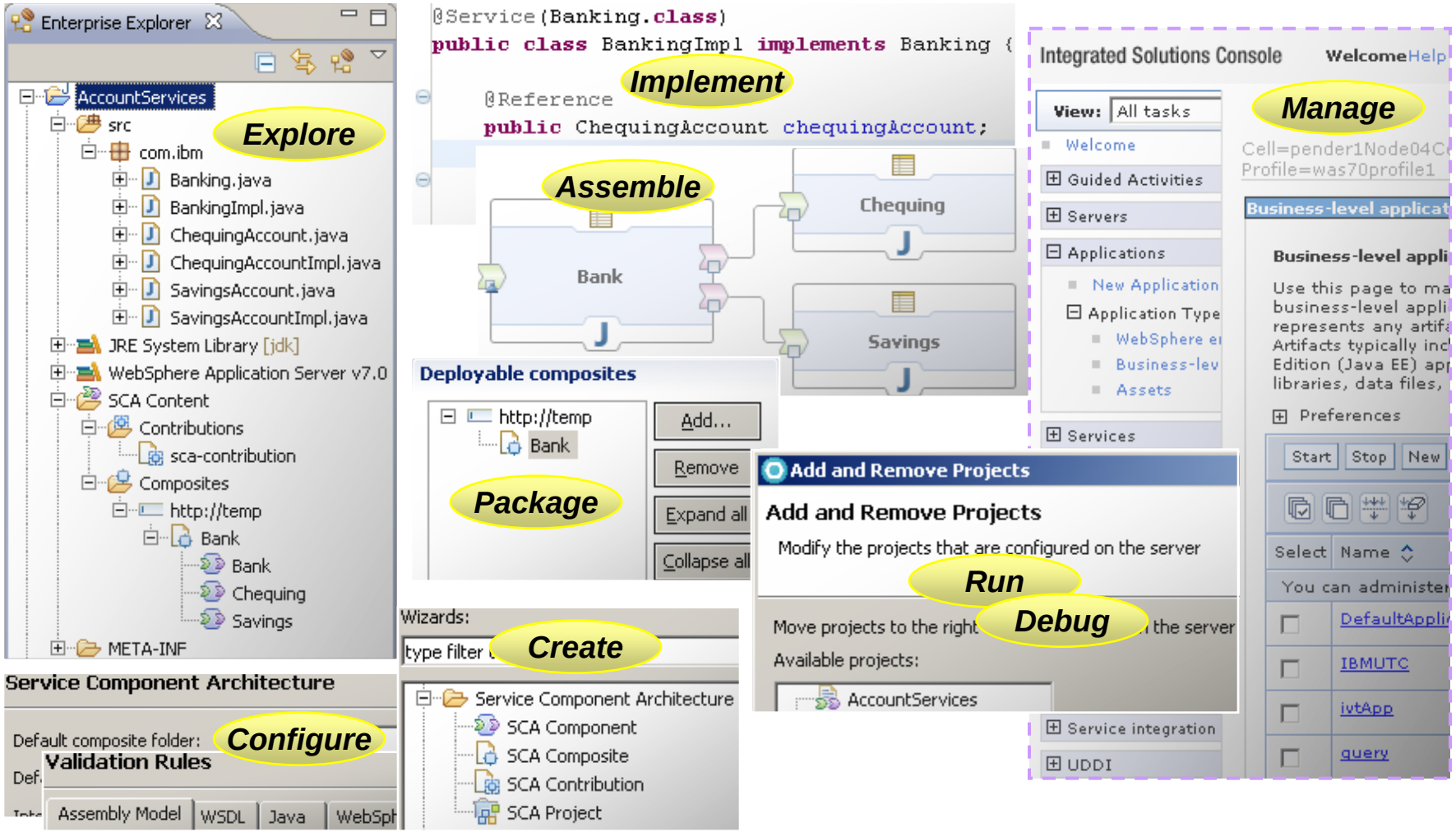
Tools for SCA Assembly and Deployment

…and the WAS Admin Console for SCA Application Management



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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 **and** SCA feature pack
- WebSphere Portal Server 6.1
- WebSphere Portal Server 6.0 (stub support)
- Remote deployment to all WebSphere servers listed above
- Integrated debugging, menu items for admin console, ability launch WSADMIN, application client launcher
- Universal test client to dynamically test your applications

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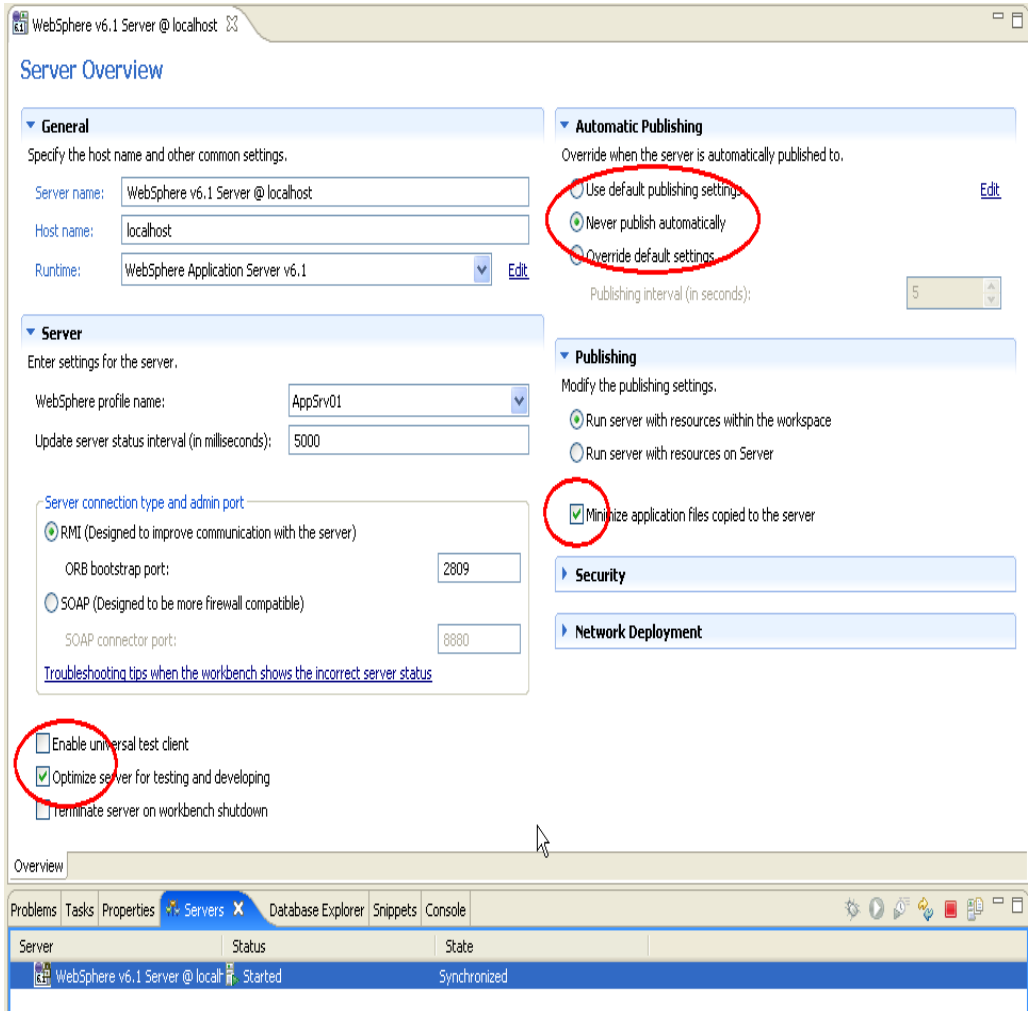
WebSphere Test Environment support

Publishing to WebSphere

- Support for exporting and publishing to WebSphere
- Support for hot deploy
  - Ability for WebSphere to recognize a change to the archive file and automatically update the server
- Support for automatic update
  - Changes in the workspace are automatically updated to the server

Server Tuning Options

- Be aware of the different server options
- Can also run the server on a different machine



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Agenda

Rational Application Developer

- Using RAD in your agile development lifecycle

Rational Application Developer – V7.5.3

- Getting Started quickly
- Web Client Development
  - Web 2.0 & JSF
- Building Distributed Services
  - Java EE & Web Services
  - Service Component Architecture
  - WAS Deployment
- Verifying the quality of the code
  - Problem determination & Debugging
- Team Collaboration / Product Integration

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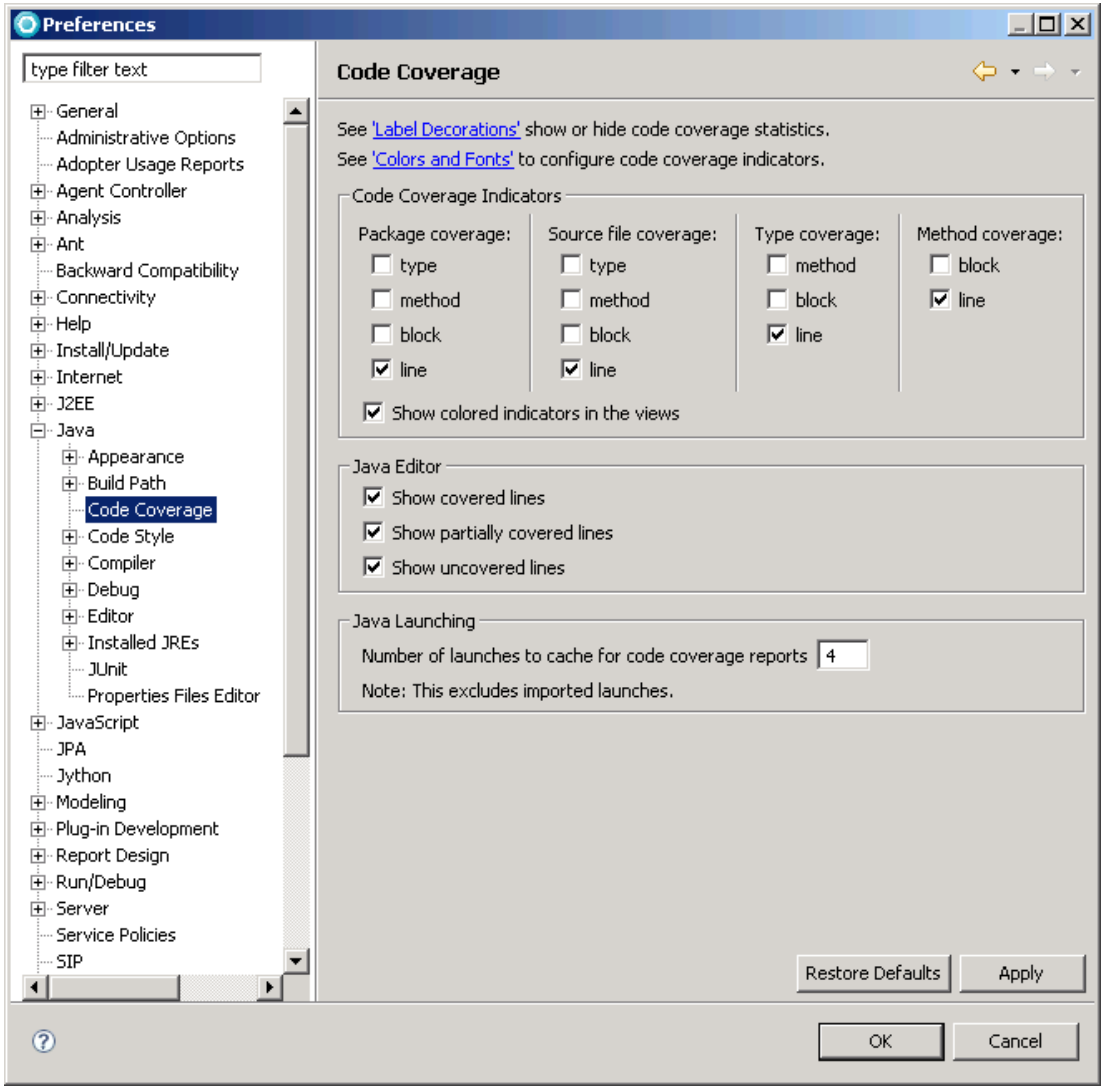
RAD helps with line level code coverage

- 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



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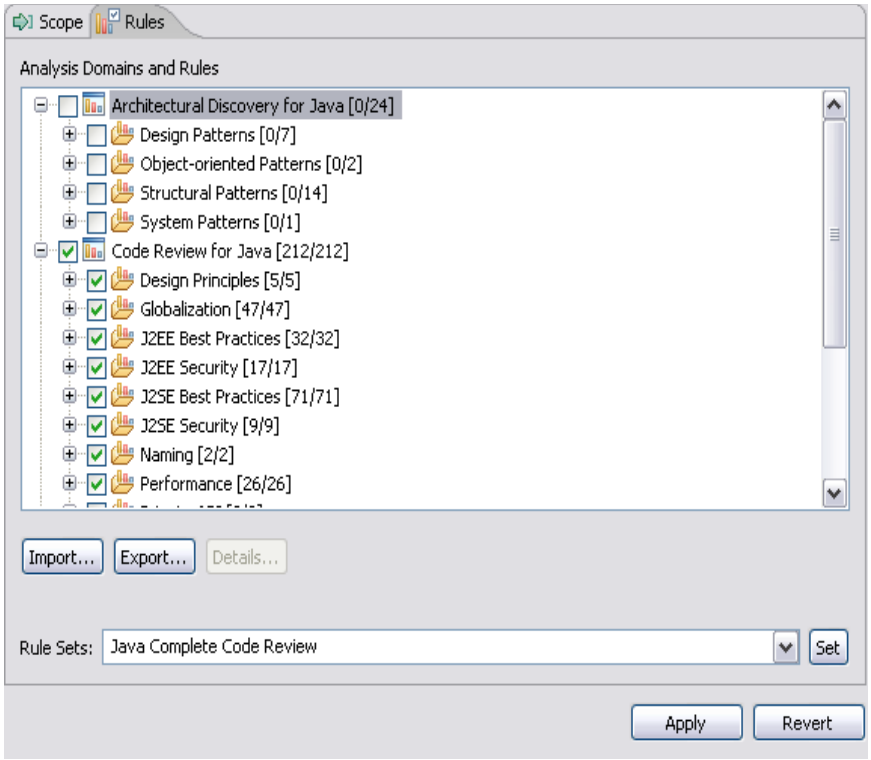
RAD Helps with Code Quality Assurance

- Analyze Project/Workspace to find problems of various types:
  - 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)



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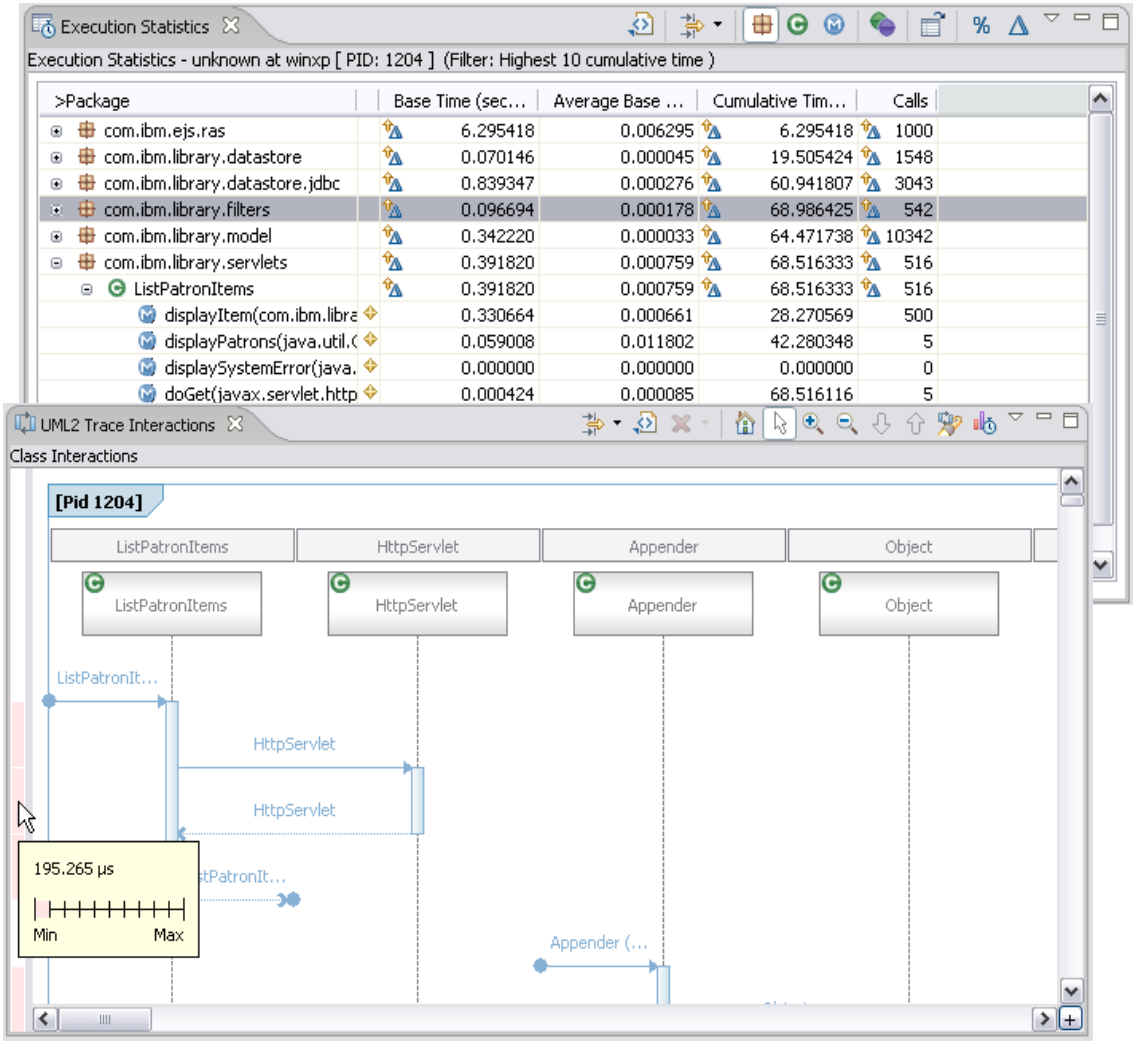
Performance and memory testing to detect problems sooner

- Start WAS in Profile Mode
  - Configure profiling set for analysis
- Begin Monitoring the application
  - Exercise scenarios for profile run
- Analyze
  - Tables and graph views to analyze profiling data
  - Tune Java code to address performance & memory issues
  - Timing
  - Memory statistics
- Probekit - allows you to write your own probes



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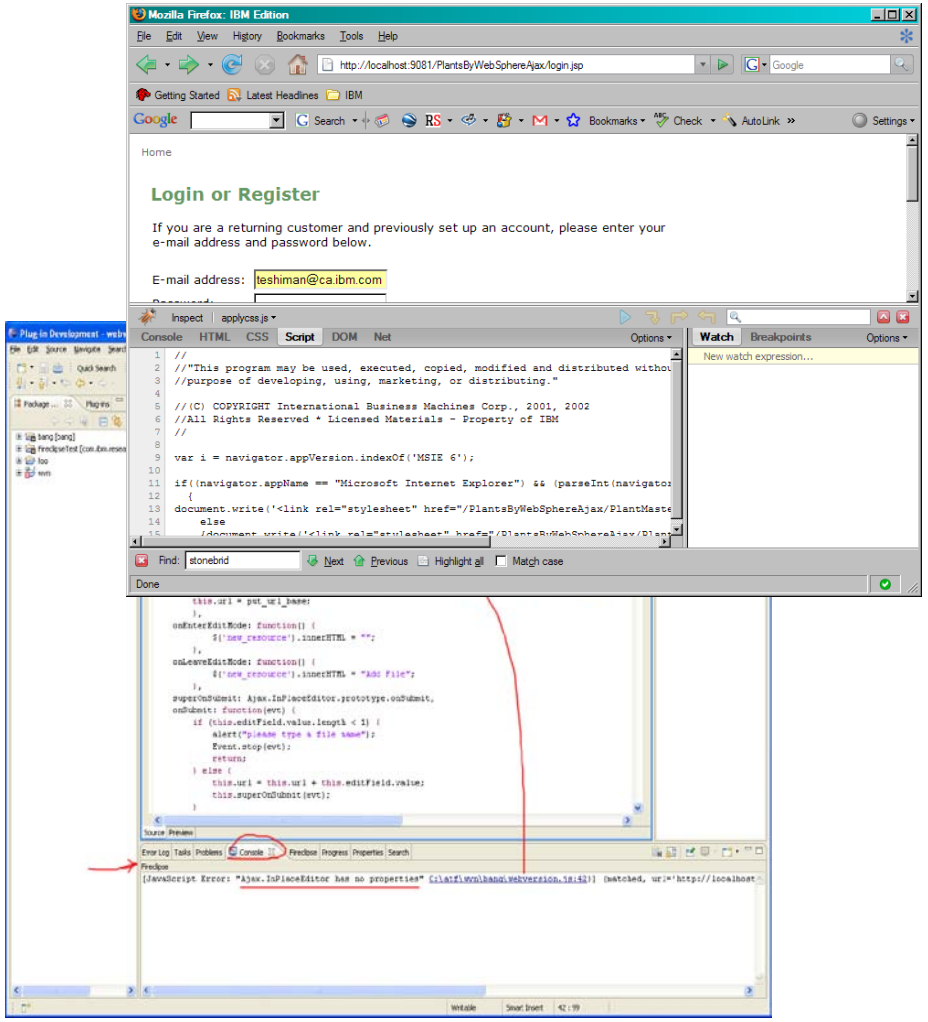
RAD helps with RIA debugging and testing

- Firebug JavaScript debugger
  - Shipping with RAD
- RAD Integration
  - Automatic installation of Firebug
  - Launch page into Firebug
  - Editor synchronization
  - Problems and Console views synchronization



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Debug Tools

- **J2EE/Web application debugging**
  - Advanced debug support for Websphere Application Server, including EJBs, SCA components, JSP pages and servlets.
- **XSLT debugger**
  - The XSLT debugger enables you to detect and diagnose errors in XSLT Transformations
- **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.
  - Supported object types: Web objects, XSLT
- **Logical display of complex variable types**
  - Display variables in a logical manner, allowing the user to examine variables more easily.
  - Supported complex variable types: JSP 2.0 Implicit object variables, EMF, DOM
- **Java and mixed language debugger**
  - Seemless debugging of Java calls to 'other language' programs (eg. SCA, C++) & vise versa
- **Support for DB2 V9 Stored Procedure Debug**
- **Debugger for WebSphere Jython Scripts**

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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
- Supports out-of-the-box and custom defined processes which break down functional & organizational barriers
- Allows choice of client tools and extends the value of ClearQuest & ClearCase in enterprise deployments

Open and extensible on Jazz

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

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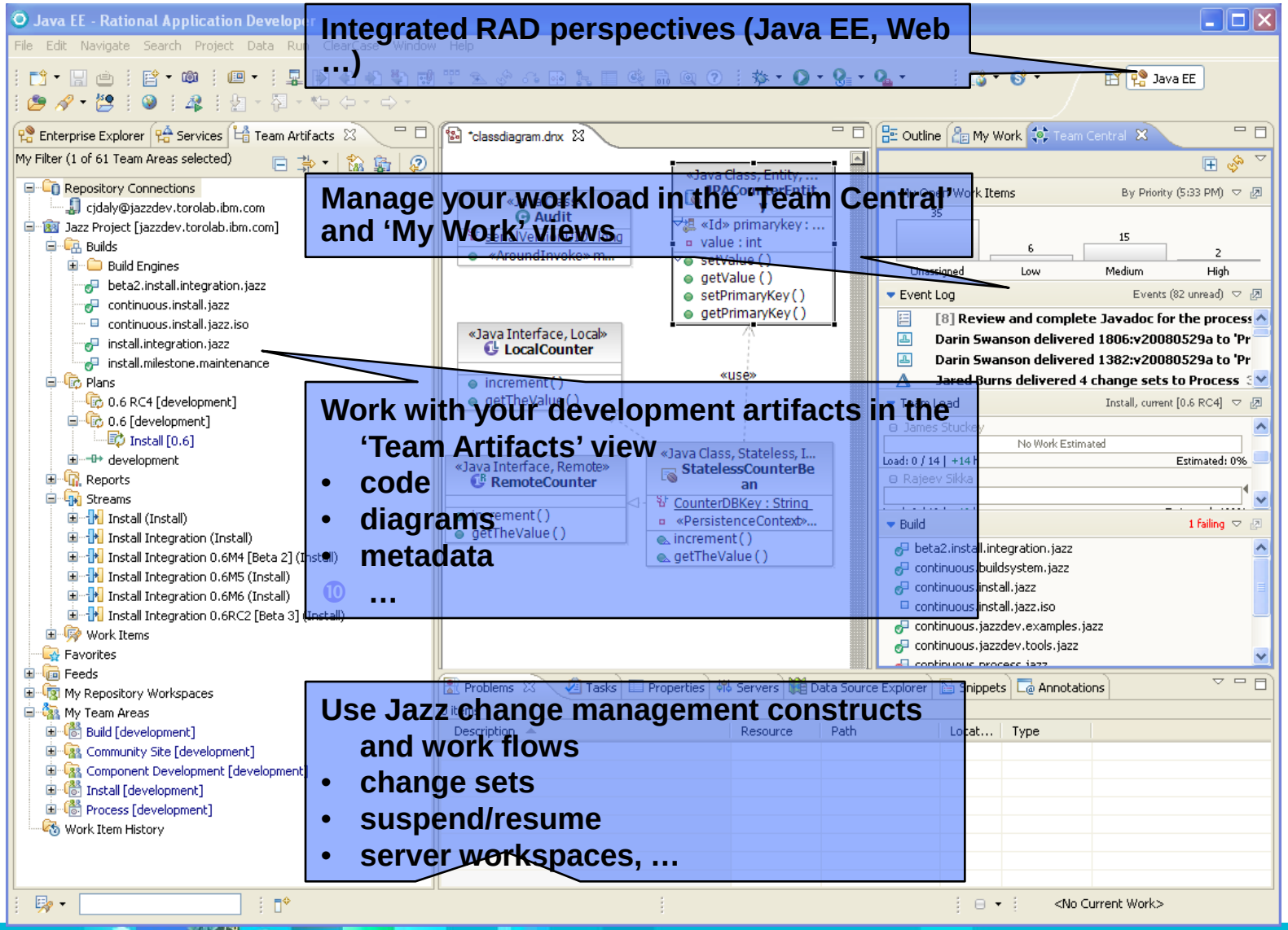
RTC Views Integrated into RAD perspectives



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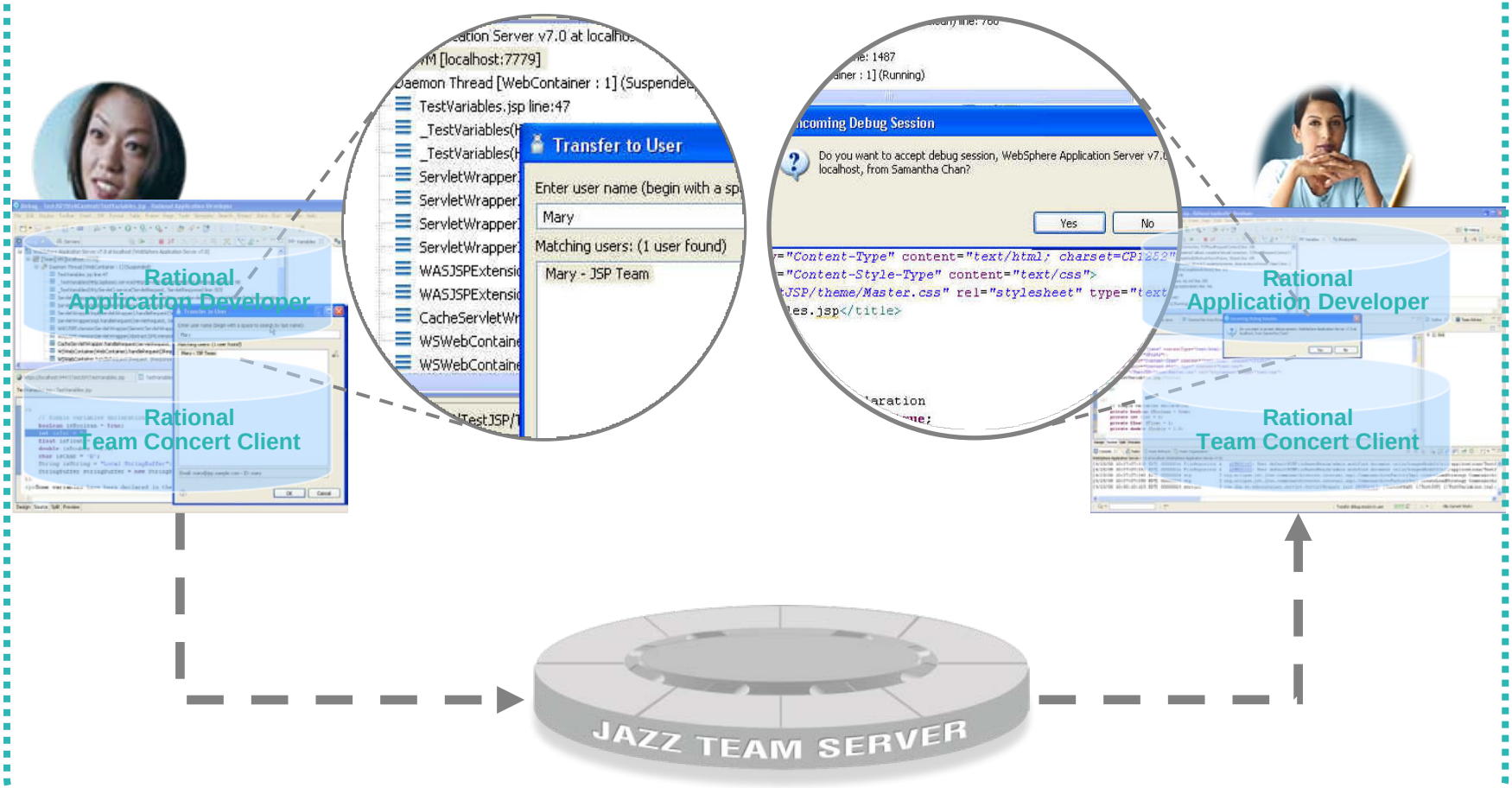
Leveraging Rational Team Concert to deliver collaborative Debugging support

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



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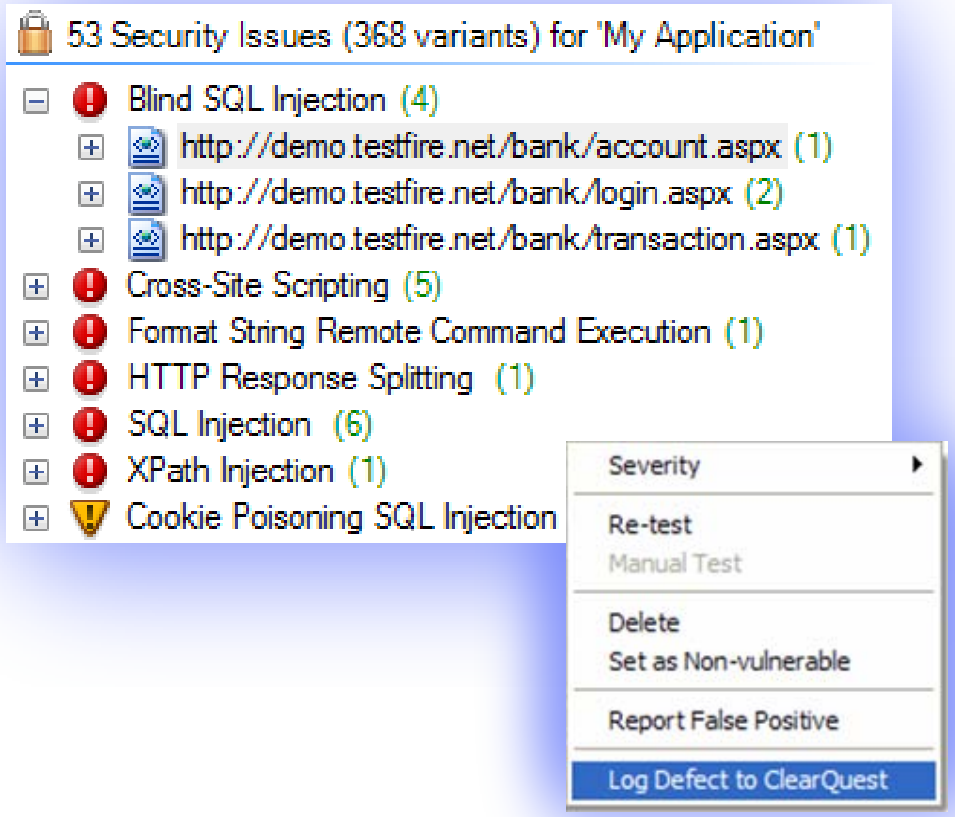
IBM Rational AppScan

Assess and remediate security vulnerabilities

- Automates security testing and execution as part of the normal QA run
- Integration with IBM Rational ClearQuest for defect entry
- Provides QA teams a single console and environment for managing security and quality tests of web applications
- Delivers real-time training on secure testing and coding techniques



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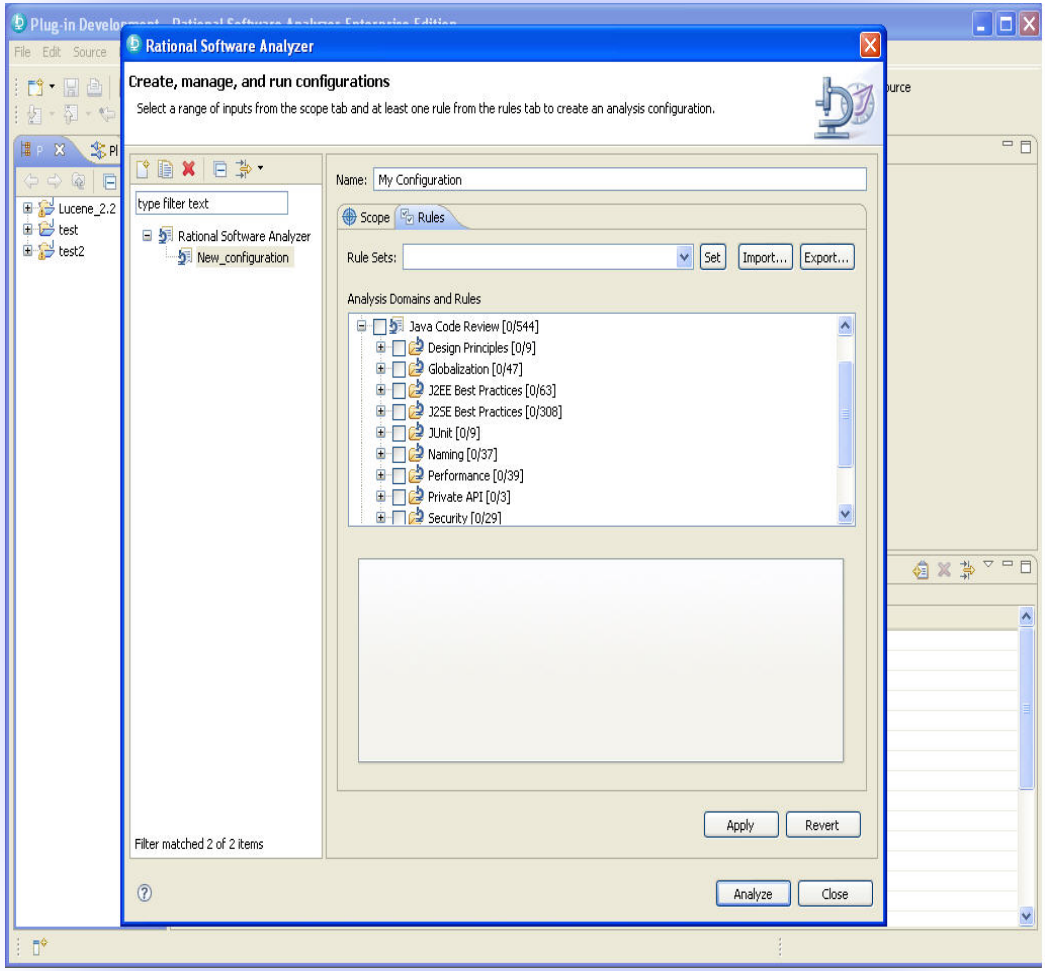
IBM Rational Software Analyzer

Identifies, assess, and remediates source code issues

- Centralize and automate code defect identification as part of the development process
- Integrates into automated build systems through CLI tool
- Simplify user experience: Shell sharing with Rational Software Application Developer & Rational AppScan DE
- Tool unification through extensible framework: ***One*** scan, ***One*** view, ***One*** analysis, ***One*** decision
- Centralized reporting for high-level view of software quality and compliance related issues



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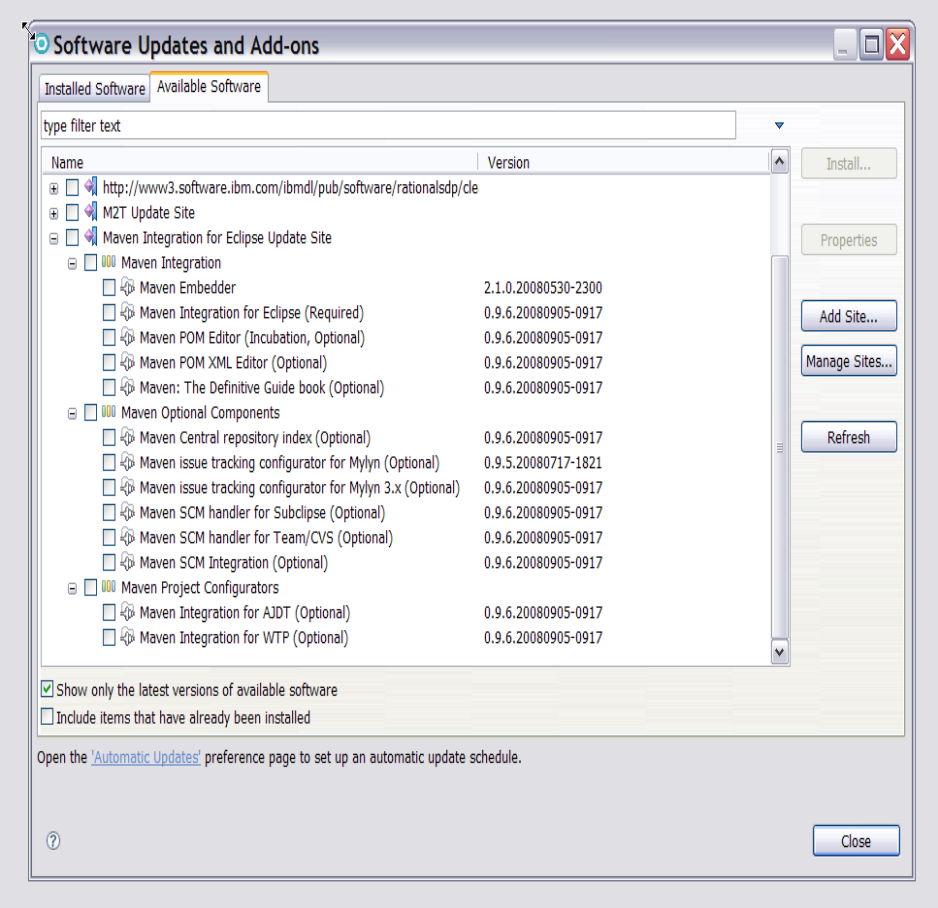
Third party plug in integration into RAD

Third party plug-ins can be installed into RAD via the Eclipse Update manager if the meet the following criteria:

- Third party plug-ins must have version tolerances that are compatible with the version of Eclipse that RAD is based on:

- ie. RAD 7.5 or higher is based on Eclipse 3.4.1 – third party plug-in must be compatible with Eclipse 3.4.1



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