



IBM Software Group

Collaborative Software development with RAD & RTC

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Brand Architect, IBM Rational

Rational software



ON DEMAND BUSINESS

Agenda

- IBM Rational Software
- Application Development Challenges
- Rational Software Architect
- Summary

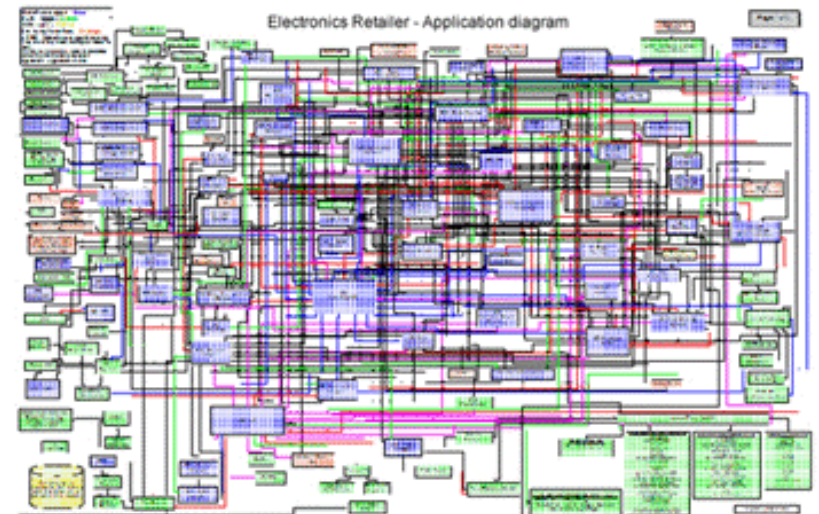


Complexity is the biggest challenge facing organizations today!

“Today’s complexity is only expected to rise, and more than half of CEOs doubt their ability to manage it.”

IBM 2010 Global CEO Study: 1500 face-to-face interviews, Companies of all sizes across 60 countries, representing 33 industries. ([IBM CEO study](#))

- Software-based applications continue to grow in size and complexity. Outsourcing, globally distributed and diverse teams, add to increased challenges in the timely launch of competitive products and services.
- Organizations struggle to balance agility and complexity.
- It’s not enough to manage development, a collaborative architectural design approach that is streamlined and efficient is required.



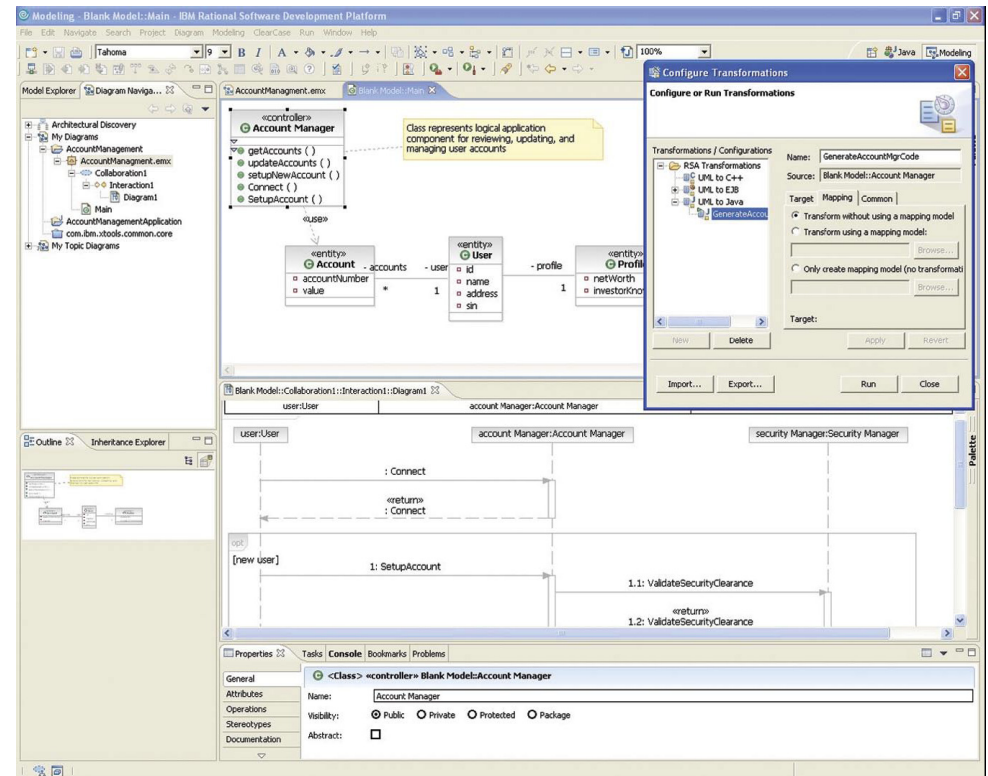
Agenda

- Business Driven Development
- Challenges of Architecting Software
- Rational Software Architect
 - ▶ Integrated Development Environment
 - ▶ Architectural Modeling and Specification
 - ▶ Java Structural Review and Control
 - ▶ Ease of Adoption and Reuse
 - ▶ Open and Extensible Modeling Platform
 - ▶ Lifecycle and Team Integration
- Summary

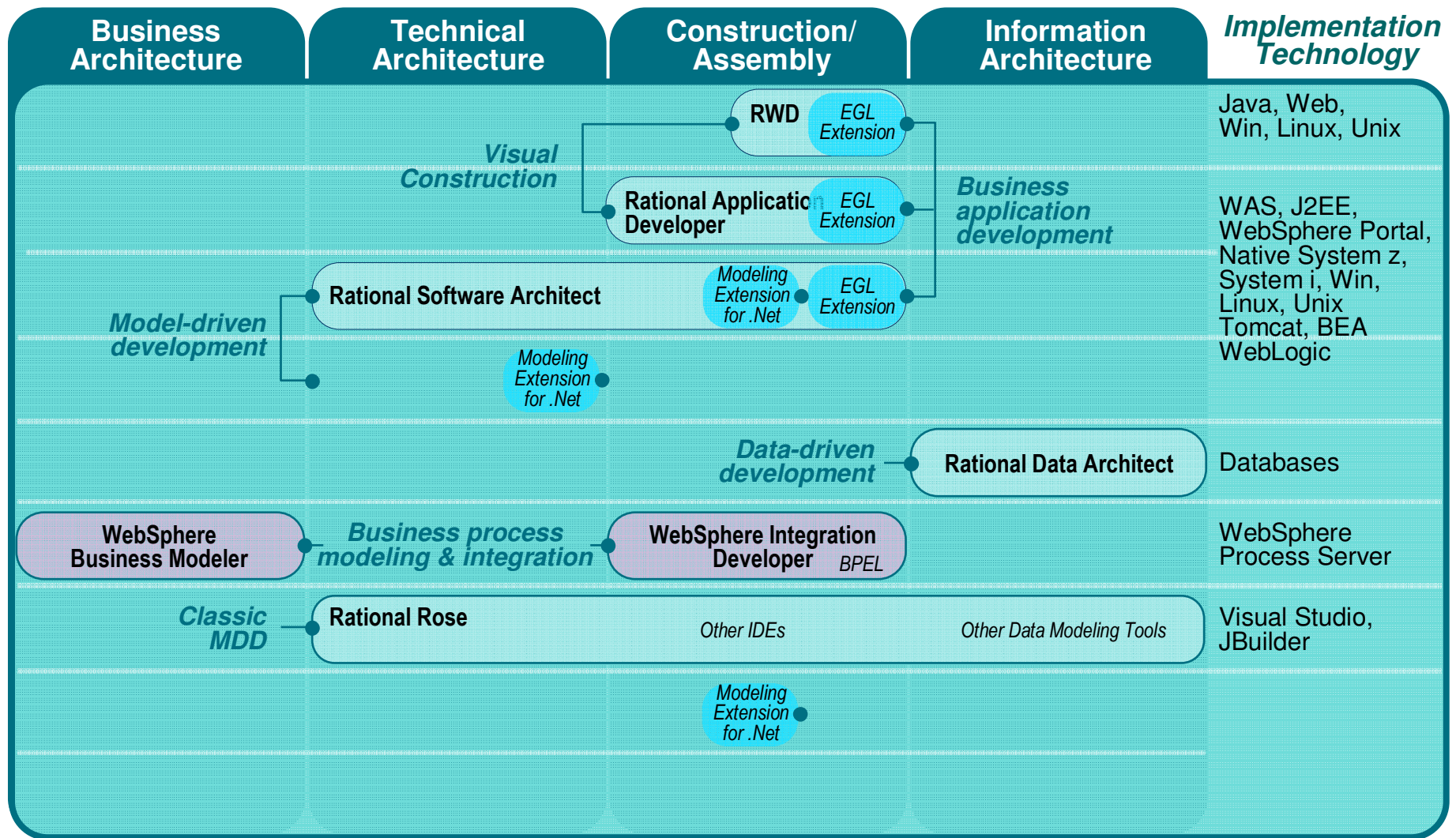


IBM Rational Software Architect

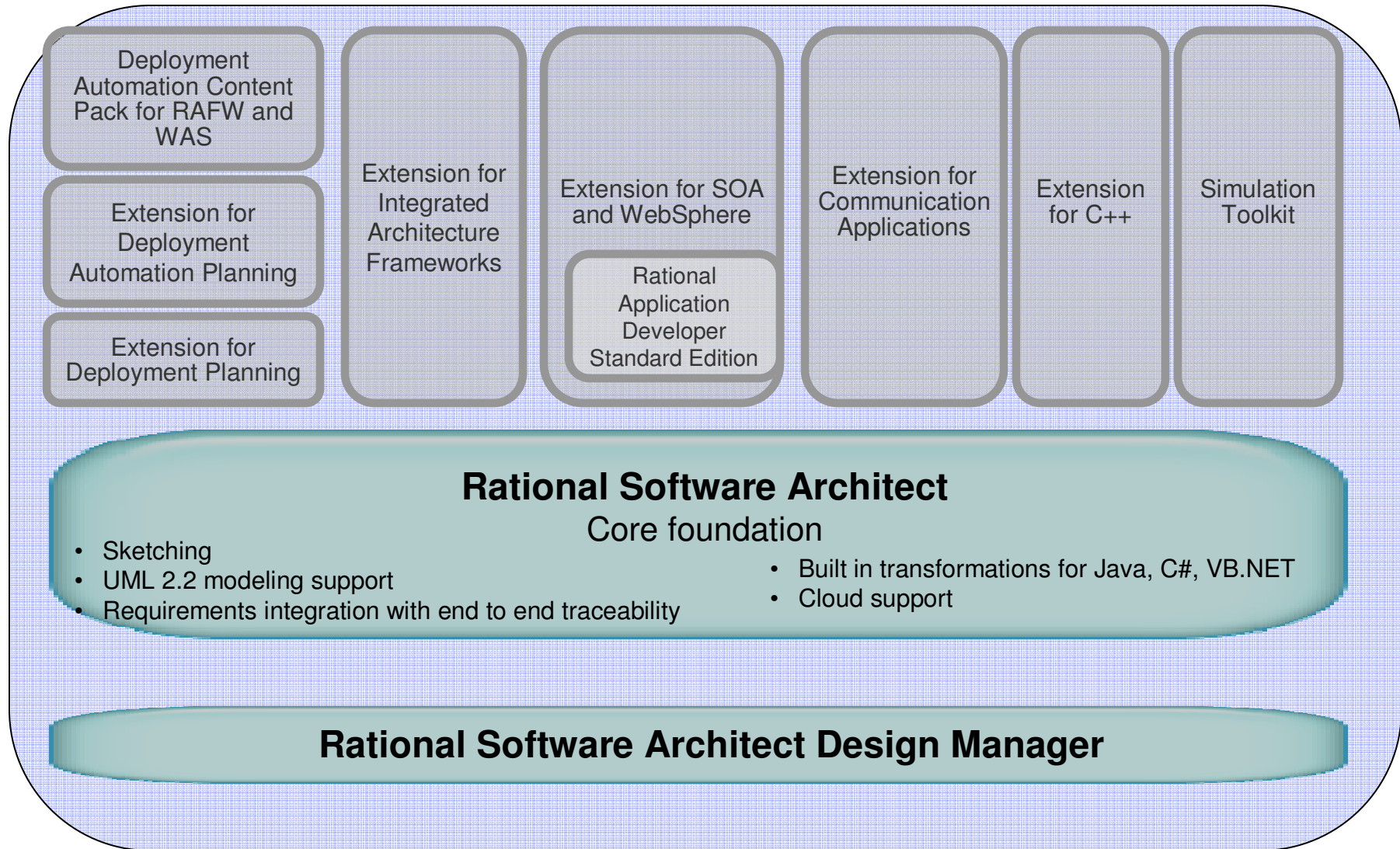
- **IBM Rational Software Architect is an integrated design and development tool.**
- Leverages model-driven development with the UML for creating well-architected applications and services.
- Develop applications and Web services more productively than ever
- Exploit the latest in modeling language technology and leverage an open and extensible modeling platform
- Review and control the structure of Java and service-oriented applications
- Simplifies the design and development tool solution by integrating with other facets of the lifecycle



Analysis Design & Construction Product Portfolio



Rational Software Architect Family - Flexible Packaging, pick the combination that you need



Solution: Integrated Development Environment

- **Complete Design & Development toolset**
 - ▶ Incorporates all the capabilities in IBM Rational Application Developer for WebSphere Software for building scaleable Web, Web services (including Web services that participate in SOA), Java, J2EE and portal applications
 - ▶ Markerless visualization/editing of J2EE, Java, and C++ structure and behavior via UML diagrams
- **Enterprise class IDE powered by Eclipse technology**
 - ▶ Adapt and extend your development environment with Eclipse-based plug-ins that match your needs
- **WS-I compliant Web services and Service Oriented Architectures**
 - ▶ Integrates your business applications
- **Rapid application development tools and wizards**
 - ▶ Accelerate portal, SOA and J2EE development
- **Drag-and-drop UI components, point-and-click database connectivity**
 - ▶ Leverages existing skills and shortens Java learning curve



Solution: C/C++ Development Environment

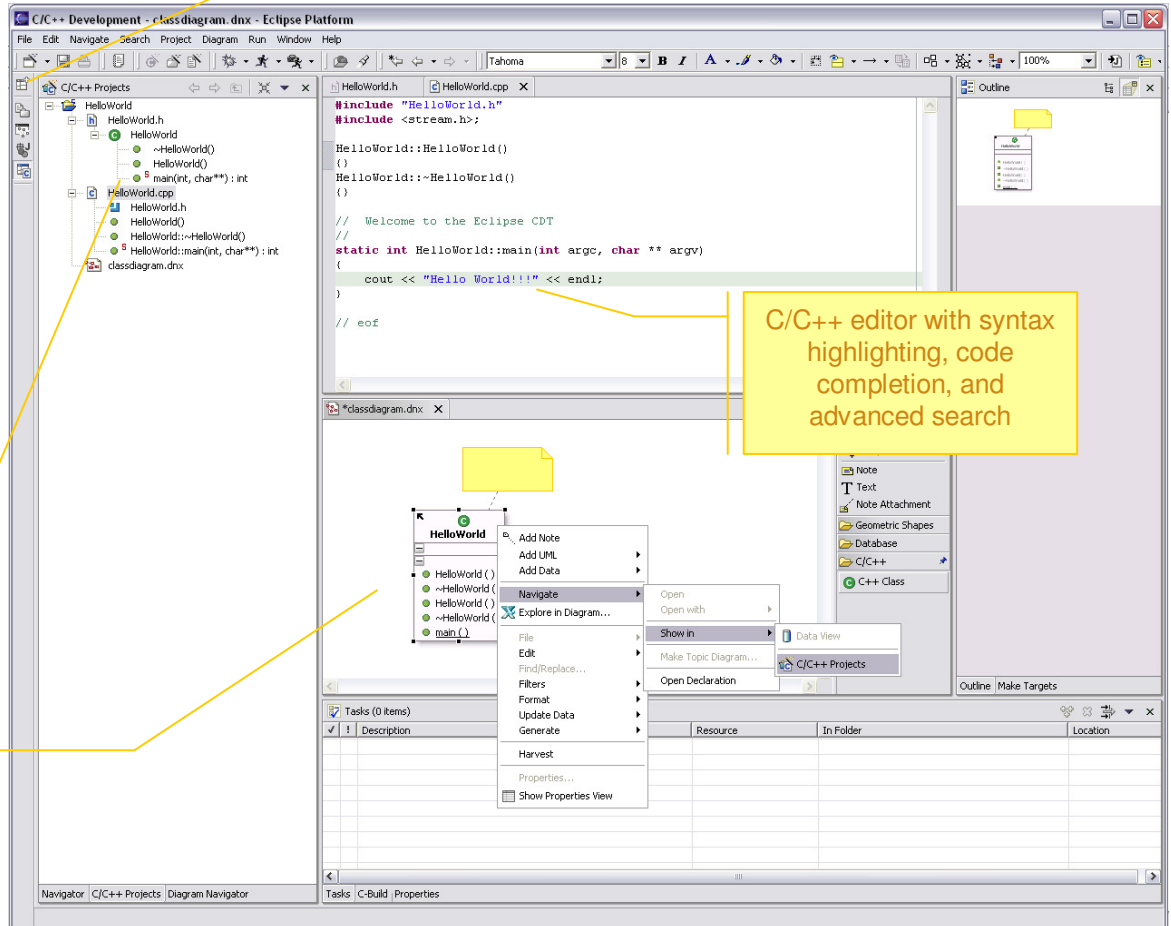
- **C/C++ development environment with syntax highlighting editor and customizable build and debugger framework**
 - ▶ Users can develop their C++ applications in the same environment that is used for developing with other languages like Java and XML.

Perspective for C++ Development

C/C++ project hierarchical tree view

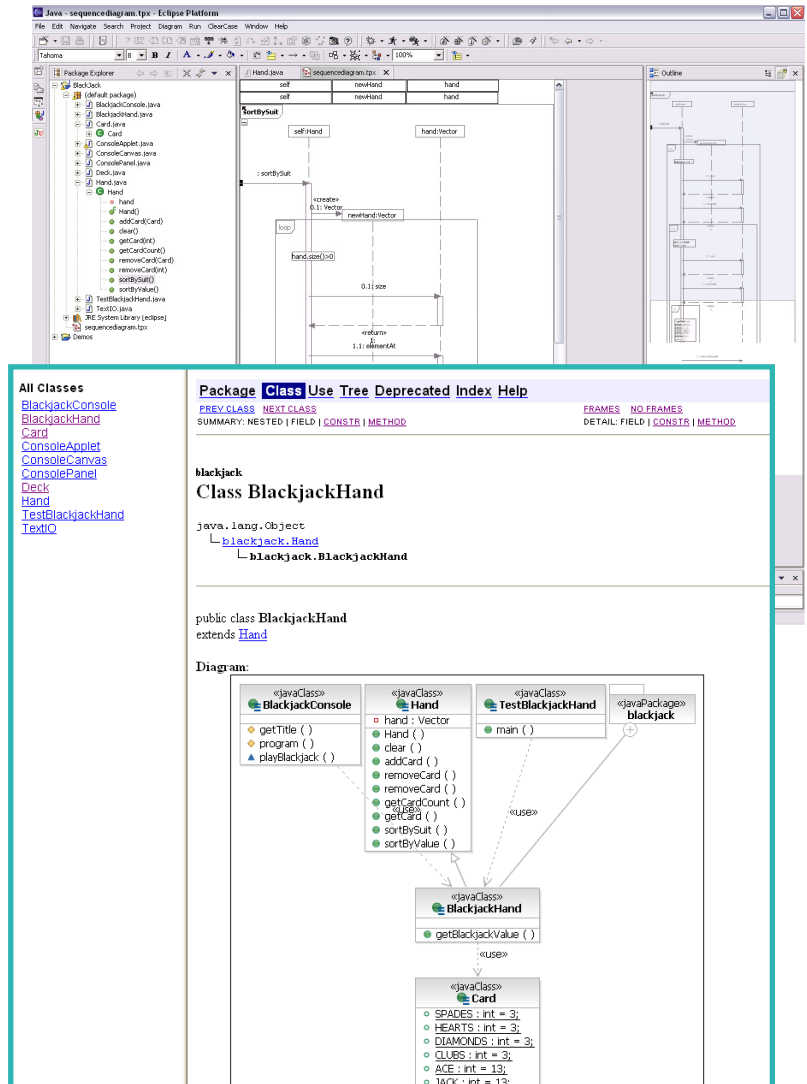
UML class diagram visualization of C/C++ classes and structs

C/C++ editor with syntax highlighting, code completion, and advanced search



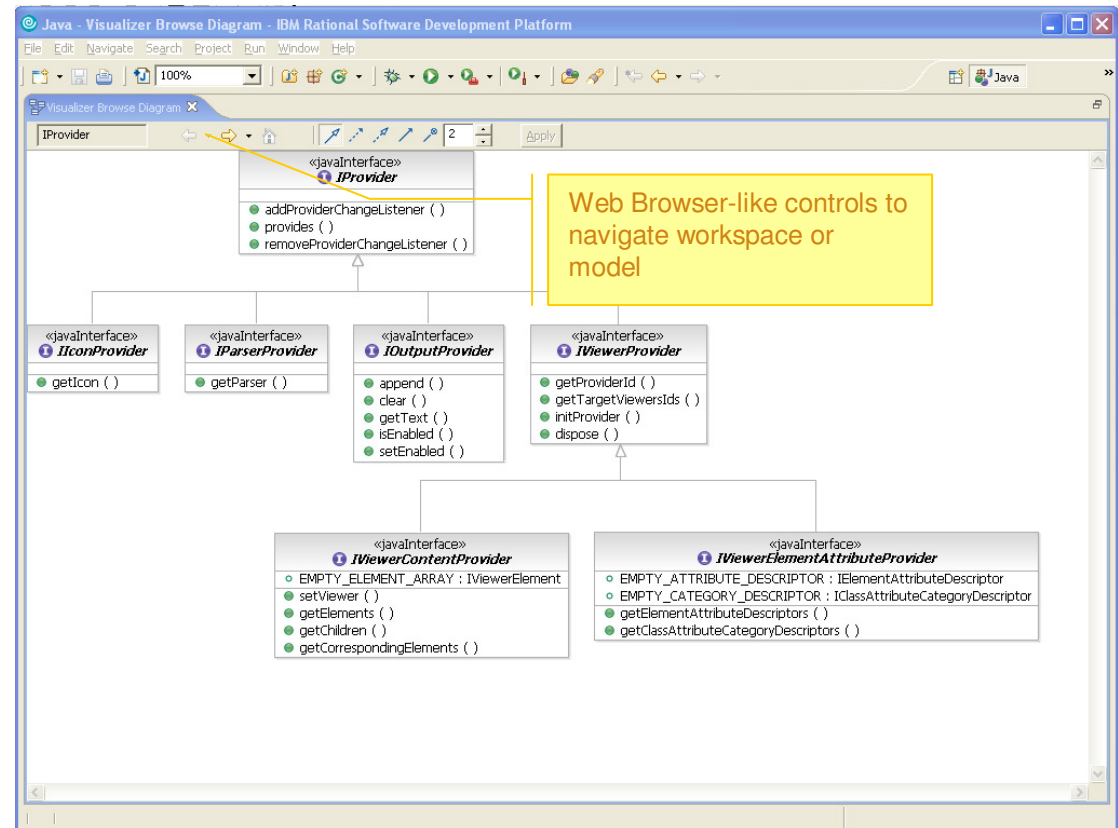
Solution: Leverage UML Support

- UML Sequence diagram editing for Java**
 - Model application behavioral interactions using UML 2 sequence diagrams.
- Java method body visualization using UML 2 Sequence diagrams**
 - Use UML 2.0 sequence diagram constructs to understand the flow of a Java method.
- Generate Javadoc with detailed design diagrams**
 - Augment Javadoc reporting capabilities with the ability to integrate UML detailed design diagrams into a Javadoc. Diagrams can be automatically generated and integrated into Javadoc, or the user has the option of creating custom diagrams and using Javadoc tags to insert them in Javadoc output.



Solution: Topic and Browse Diagrams

- **Simplified diagramming using freeform diagrams, topic diagrams and browse diagrams**
 - ▶ Simplifies the usage of UML notation for design, documentation, communication and understanding design elements captured in UML models.
- **Enables users to understand and discover models and applications without having to create or maintain diagrams**



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Solution: Unified Modeling Language (UML) 2.1 Support

- **Rational Software Modeler is based on the latest open standard Unified Modeling Language (UML) specification version 2.1.**
- **Supports diagramming for architectural and design specification**
 - ▶ Class, Communication, Component, Composite Structure, Deployment, Activity, Sequence, State, Object and Use Case diagram types
- **Automatic diagram generation**
- **Allows you to capture and communicate all aspects of an application architecture using a standard notation that is recognized by many different stakeholders.**



Solution: Modeling assistance

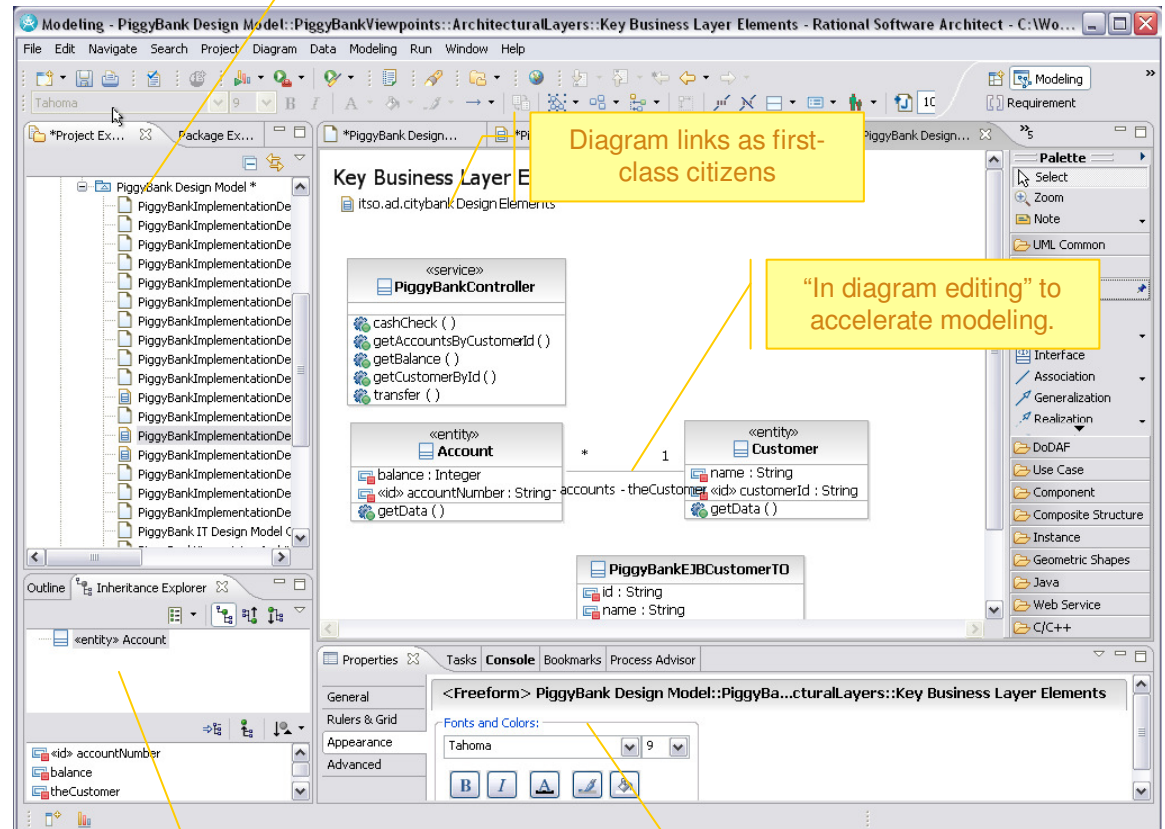
- Visual modeling with content assistance**

- Guides you with action bars, connection handles, context-sensitive content suggestions, task-specific modeling cheat sheets, extensive online help, samples and tutorials to help you create well-formed models. Simplify the capture of UML models during Analysis and Design

- Make modeling more accessible to a broader audience**

- Including Section 508

- New custom views improve the editing experience**



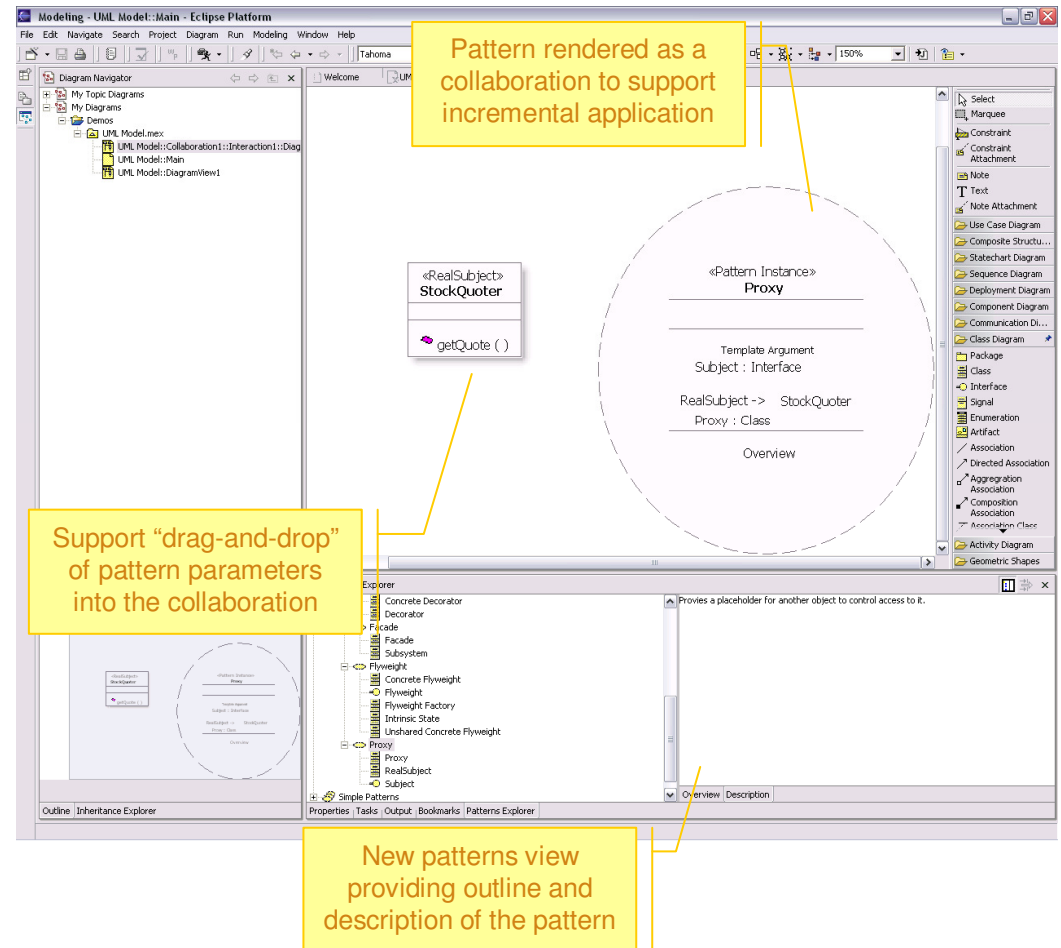
Solution: Patterns and Transformations

- **Pattern and transform authoring**
 - ▶ Allows organizations to capture and promote recipes that can be used to increase the predictability and repeatability of software development. The authoring and apply capabilities support teams in developing artifacts for reuse and developing artifacts with reuse. Provides a comprehensive patterns capability to facilitate capturing, sharing and application of specialized knowledge
- **Pattern authoring based on an Open API for maximum flexibility**
 - ▶ Pattern authoring experience will evolve to be more graphical in a future release
- **Predefined patterns available**
 - ▶ GOF design patterns
 - ▶ Additional patterns to be provided via RAS repository on Developer Works Rational



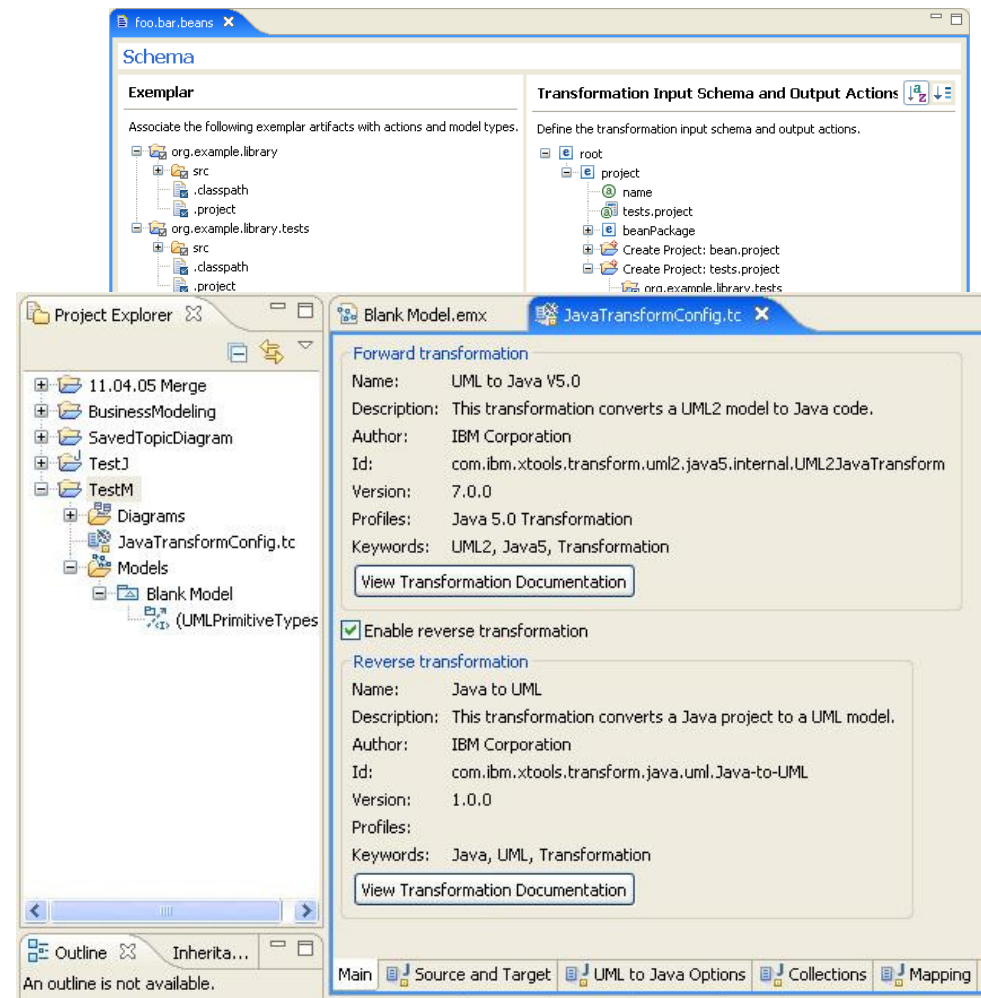
Solution: Patterns

- **Applying Patterns is very simple**
 - ▶ Evolution of pattern experience based on lessons learned
- **Pattern-authoring provides greater flexibility using Open API**
- **All Gang of Four design patterns provided**
- **Additional patterns provided via RAS repository on IBM developerWorks**



Solution: Transformations

- Transformation Engine based on JET2
- Transformations are optimal for “batch” style computationally intensive operations
 - ▶ Model-to-model
 - ▶ Model-to-code
- Out-of-the box code transforms
 - ▶ UML-to-J2EE/Java and reverse
 - ▶ UML-to-C++ and reverse
 - ▶ WSDL and XSD
 - ▶ UML-to-Logical Data Model*
- Transformations may be updated via RAS repository hosted on IBM developerWorks

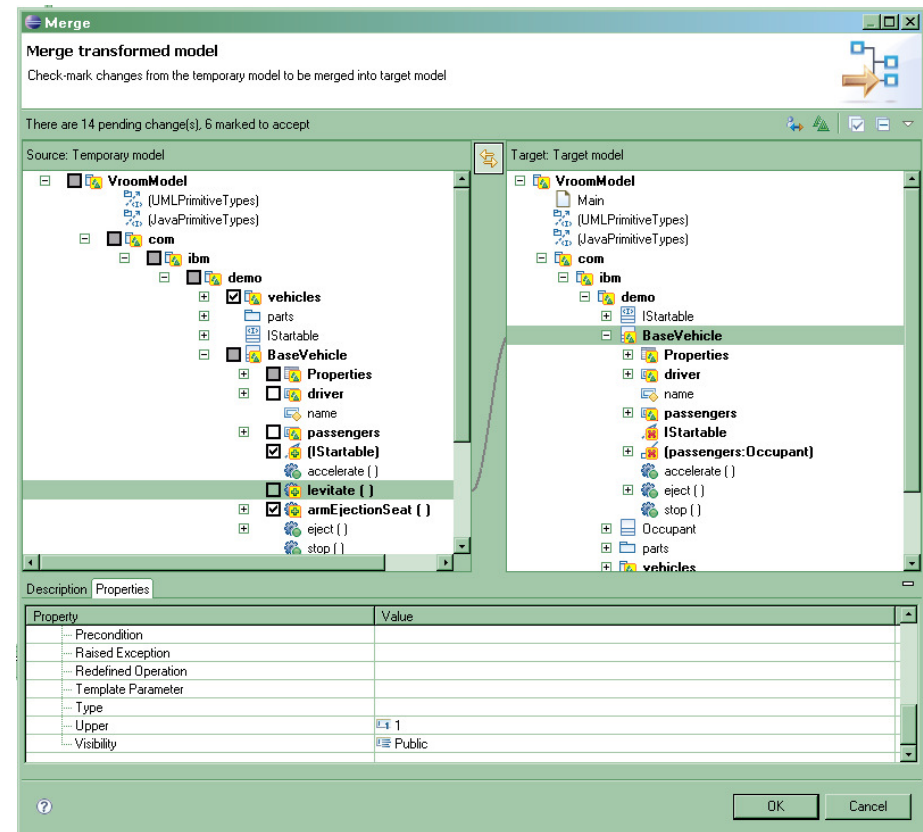


*Integration with Rational Data Architect



Solution: Model-Code Reconciliation and Reverse Transformations

- **Benefits:**
 - Allow Globally Distributed teams to work on design and implementation and reconcile results
- **Enhanced Diff/Merge capabilities in Version 7.0**
 - Reverse transform code to model
 - Reconcile models
 - Merge resulting model
 - Forward transform model to code
- **Reverse Engineering for code-to-model transformation**
 - Reverse transformations for Java, C++



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Solution: Architectural Analysis, Discovery, and Control

- **Architecture discovery for J2EE and J2SE**
 - ▶ High-level software visualization
- **Application architecture is reflected in the running code**
 - ▶ Analyzing code can help assess its maintainability
- **Govern the architecture with the assistance of rules**
 - ▶ Template-based rule authoring
- **Anti-pattern and pattern detection**
 - ▶ Detection of cyclic dependencies, hubs, breakable, etc.
 - ▶ Wizard assisted automated quick-fix

The screenshot displays the Rational software interface with several key components:

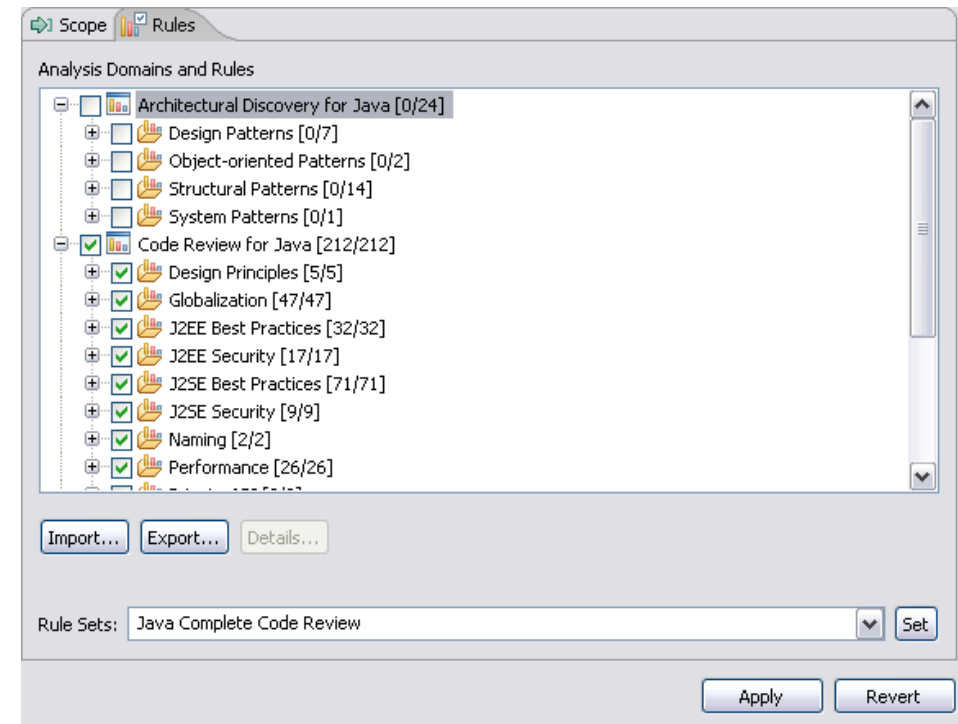
- Diagram Navigator:** A tree view on the left showing 'Architectural Topics' such as 'Component: 9', 'Global Breakable: 26', 'Global Butterfly: 51', etc.
- Diagram Editor:** A central area showing a network diagram of components like 'customer.jsp', 'item.jsp', 'product.jsp', 'CatalogHelper', 'CatalogDAO', and 'CatalogEJB' connected by dashed lines.
- Code Review: JUnit:** A pane at the bottom showing a list of detected issues, such as 'Globalization:Character (Score 20)' and 'Globalization:String (Score 122)', with specific error messages and line numbers.
- Details View:** A pane on the right showing a detailed view of an anti-pattern, including its 'Explanation', 'Location(s)', and 'Details'.

Yellow callout boxes provide additional context:

- Automatic generation of "topic" diagrams based on the results of the code analysis** (pointing to the Diagram Navigator tree).
- Patterns and anti-patterns are rendered in the diagram editor. Navigation to detailed code is supported.** (pointing to the diagram editor).
- Code review pane providing a report of detected issues. Report is inclusive of J2EE detailed code analysis results.** (pointing to the Code Review pane).
- "Details View" providing an overview and avoidance guidance for anti-patterns.** (pointing to the Details View pane).

Solution: Code Quality Assurance

- 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)



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Solution: Flexibility & consumability leveraging Eclipse open source



Community innovation

- 150+ member companies
- Over 2.3 million users
- Basis of 1,300+ products

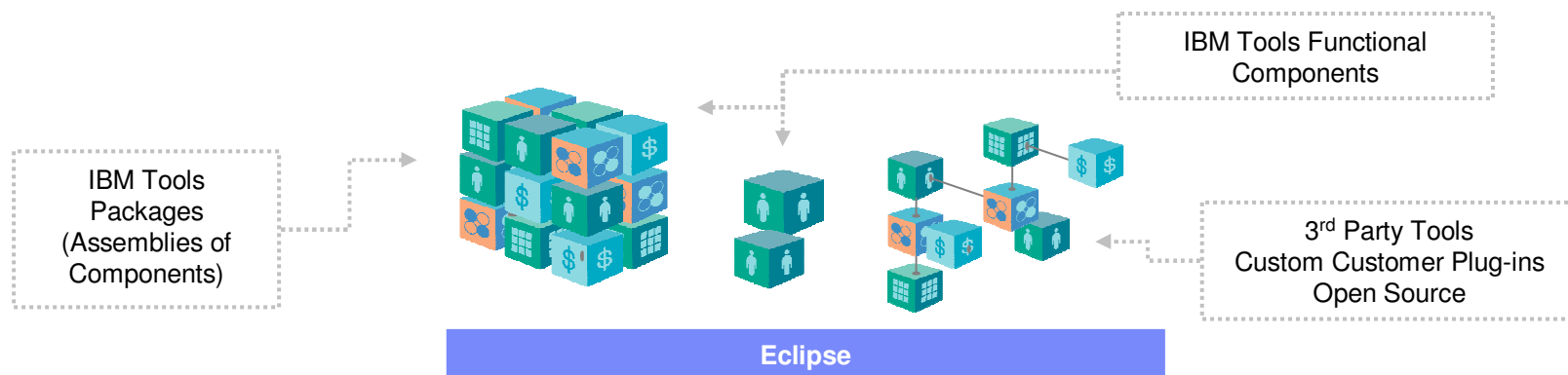
Modularity
Empowerment
Consumability

Scalable enterprise support

Rational software

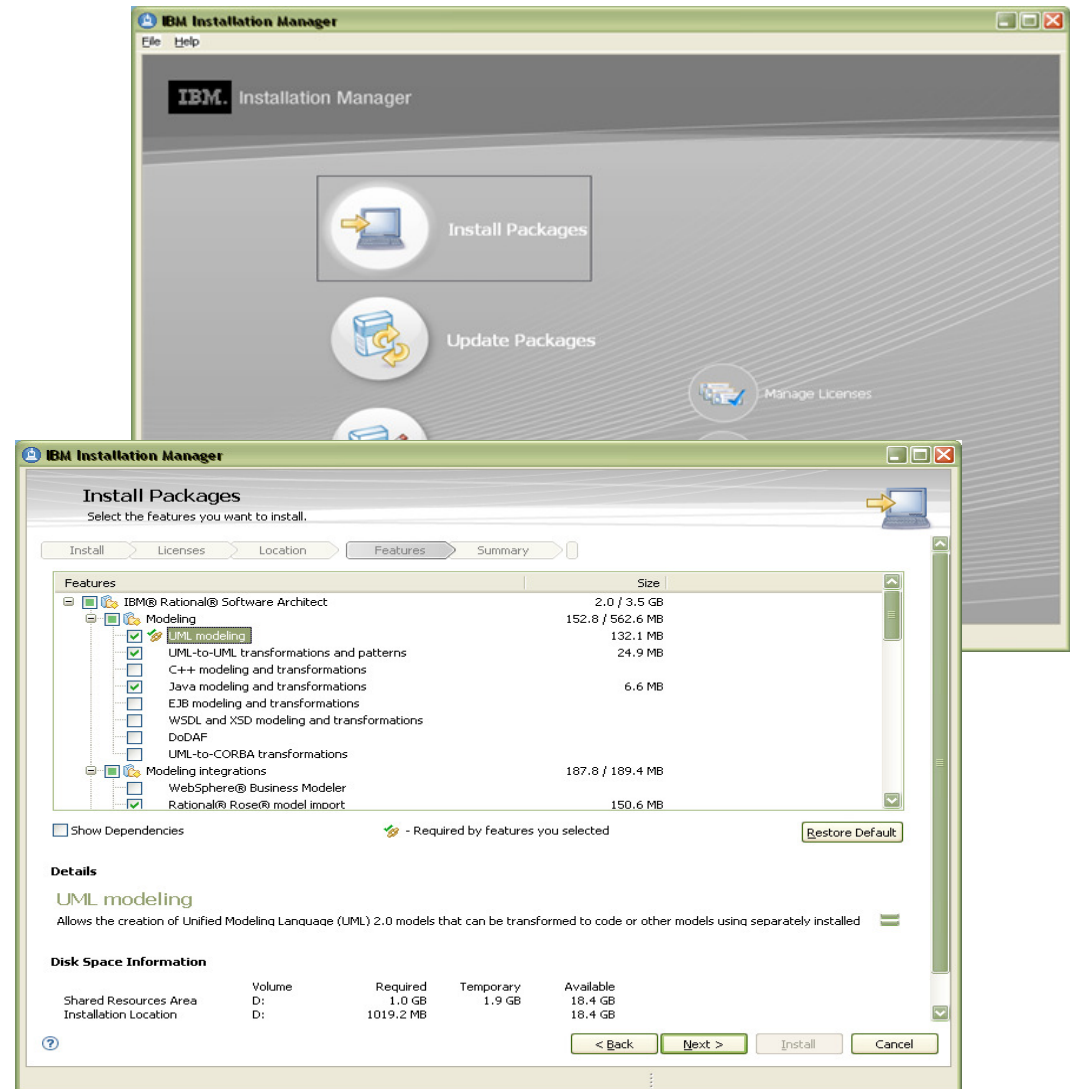
IBM Rational Software
Delivery Platform

- ✓ Rational Elite Support for Eclipse – serves broader mix of practitioners
- ✓ Option to install Rational desktop v7 offerings directly into existing Eclipse 3.2 environments
- ✓ New product installer technology offering greater choice on which features to install



Solution: Making Product Installation and Deployment Easier

- **Optionally install into existing Eclipse environment**
 - ▶ Checks plug-in versions for compatibility
- **Smaller “features” to optionally install**
- **Managed updates**
- **No re-installation from trial to product**



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Solution: Extensibility

- **Open application program interface (API) to support customizing and extending the modeling environment**
- **UML profile creation and editing to customize the properties stored in UML models**
 - ▶ Allows organizations to develop plug-ins and customize the analysis and design tools for their environment and process. Supports the creation of an ecosystem allowing vendors to develop integrations.
- **Comprehensive extensibility infrastructure for creating specialized extensions to the product**
 - ▶ Leverages Open Source API and frameworks (UML 2.1, EMF, GEF)
 - ▶ Extension points for UI, menu, layout, command management, query
 - ▶ Extensions created in Java using Eclipse plug-ins
 - ▶ “Pluglet” support for lightweight scripting using Java
 - ▶ Provides User assistance using wizards and samples



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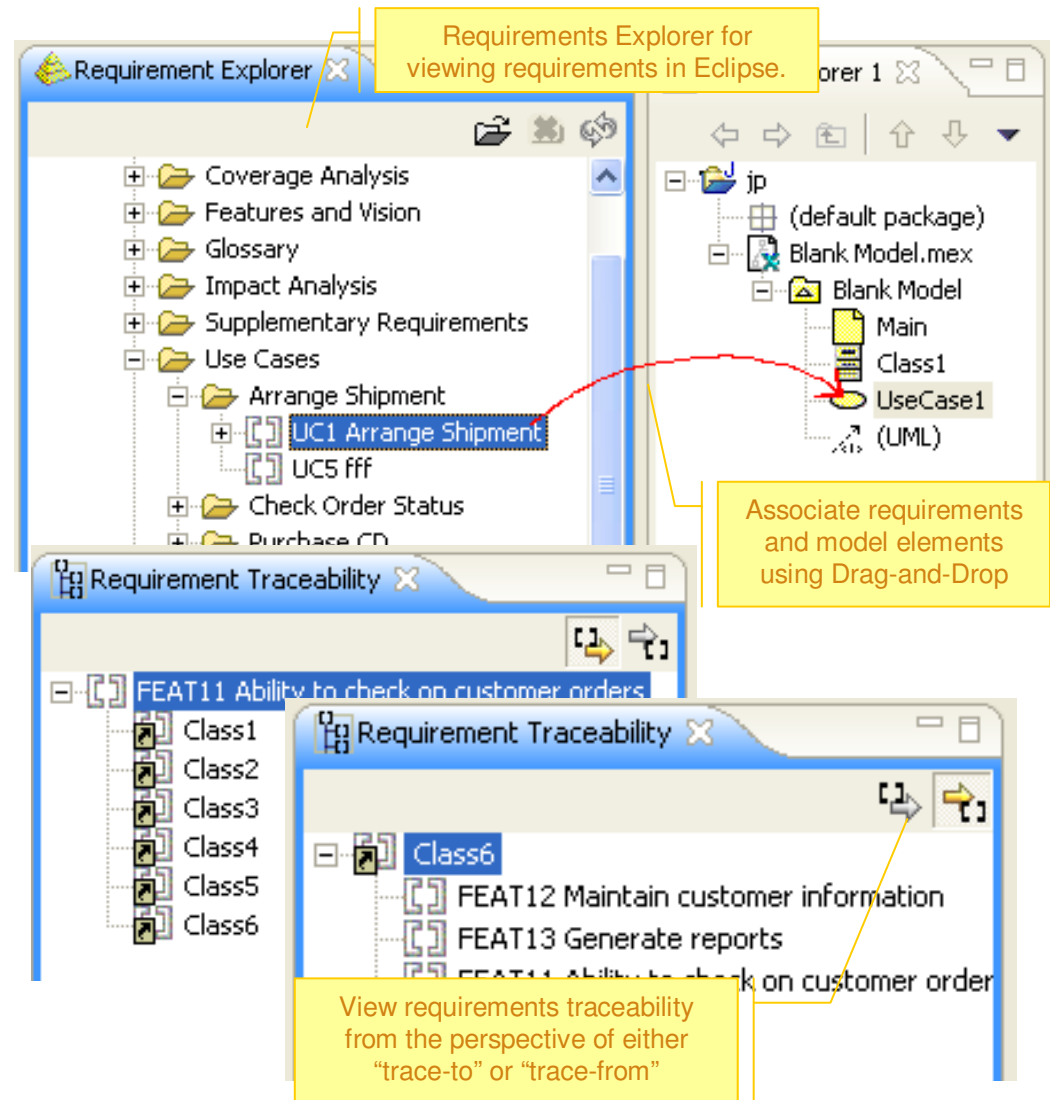


Solution: Lifecycle Integration - RequisitePro

- **Traceability links established from the requirements stage through the design stage**

 - ▶ Assist users in querying design models for traceability relationships between the requirements and the analysis/design elements in models, and the Java code.
- **Requirements perspective for browsing requirements in Rational RequisitePro software and creating links to model elements**

 - ▶ Simplifies the creation of traceability links from the requirements stage through the design stage
 - ▶ Open and browse multiple RequisitePro projects
 - ▶ See requirements, packages, and views
 - ▶ Associate requirements with model elements via drag and drop
 - ▶ Create model elements from requirements
 - ▶ Customizable synchronization

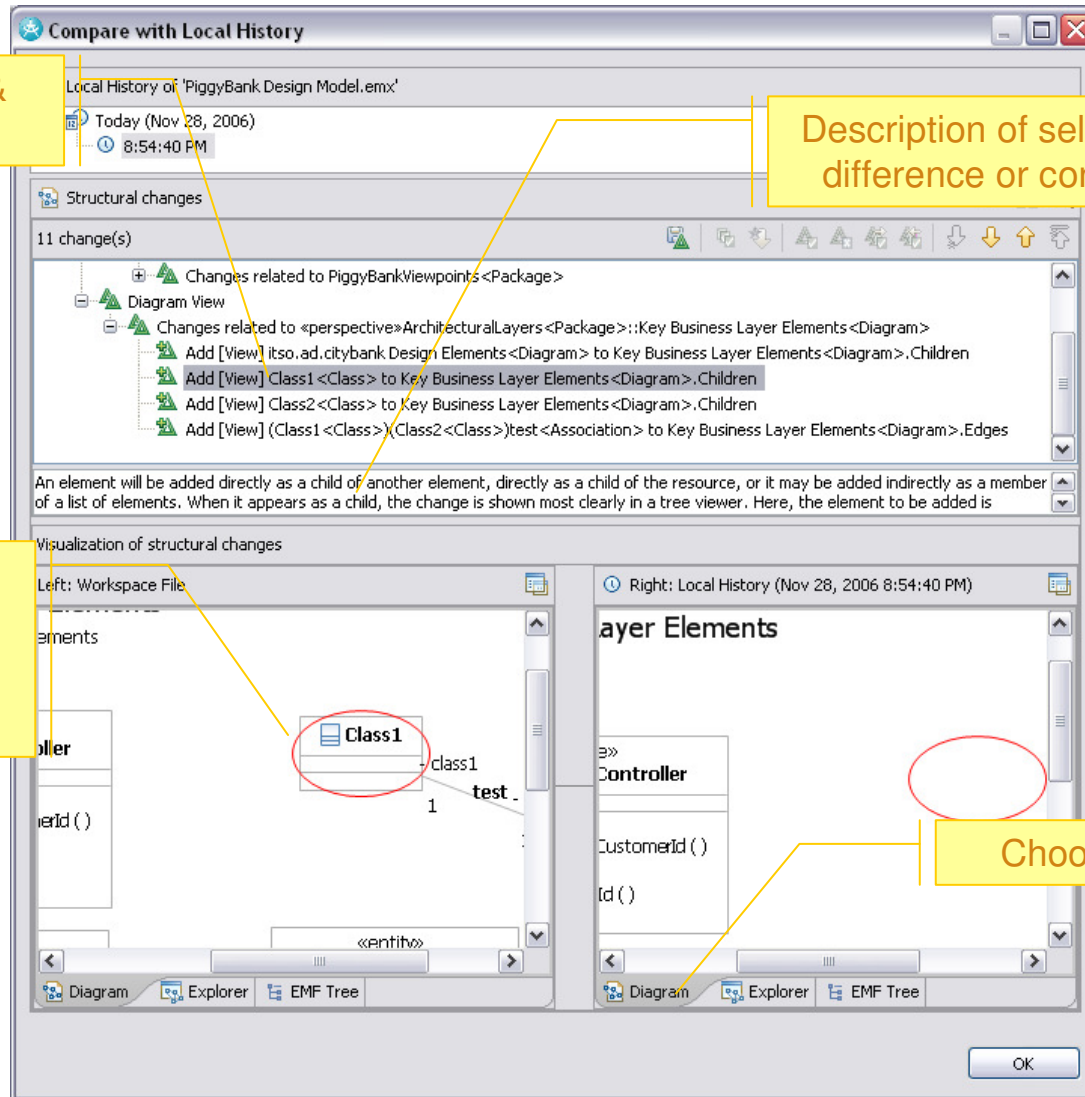


Solution: Extensive Team Development Capabilities

- **Team support with multimodel support, compare merge and software configuration management (SCM) integrations**
 - ▶ Provides all the capabilities required for distributed teams to design and develop applications.
- **Extensive team development facilitates parallel development via support for CVS, Rational ClearCase and Rational ClearQuest.**
 - ▶ Allows merging of models at model semantic level—not raw XML / text.
 - ▶ Compare and merge at the visual diagram level
 - ▶ Models can be refactored, easily partitioned and reassembled.
 - ▶ Support for Unified Change Management (UCM)
 - ▶ ClearQuest views accessible from RSA



Solution: Model Compare & Merge



Model differences & conflicts

Description of selected difference or conflict

Diagram view of selected difference or conflict for left contributor

Choose View Type

Solution: Process Guidance

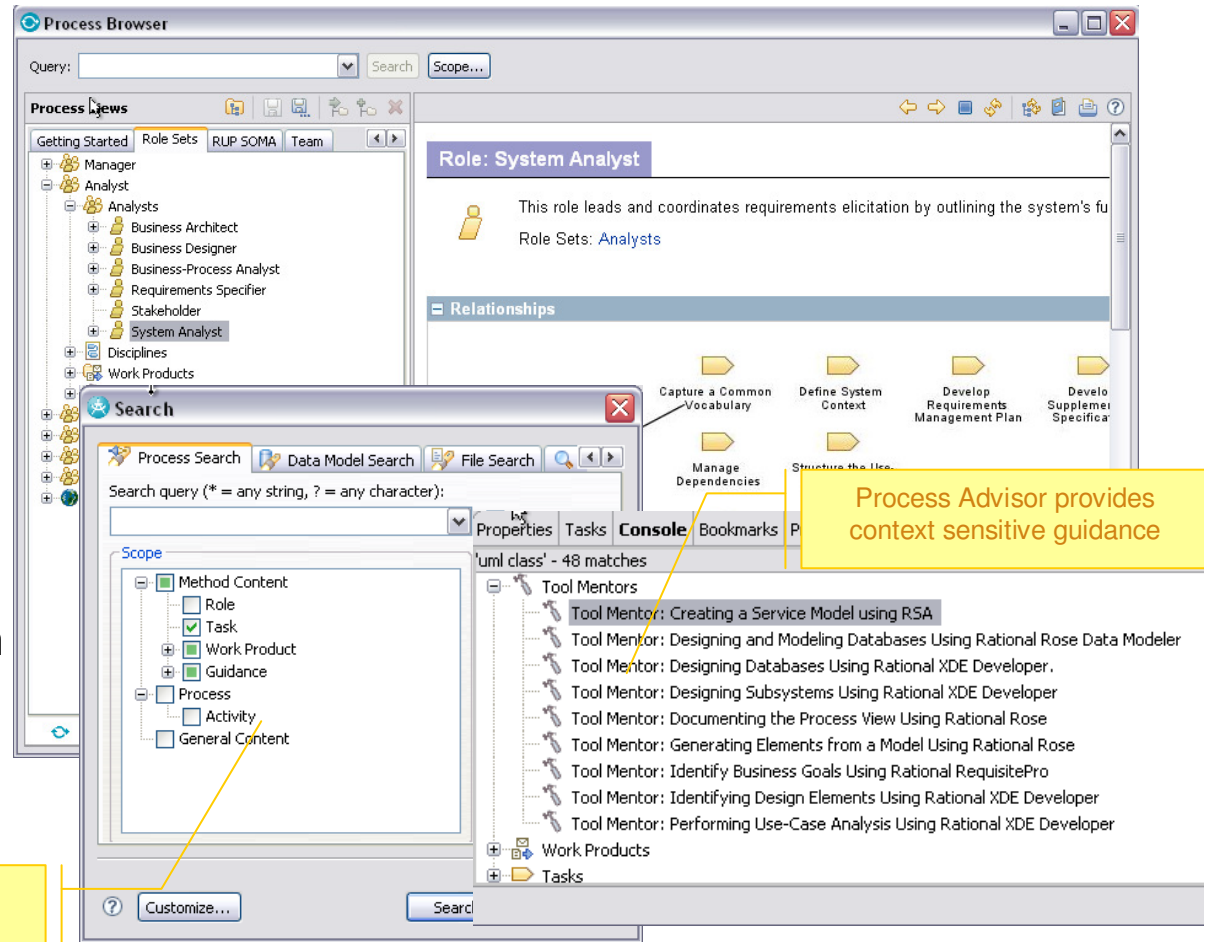
- **RUP configuration for Software Architects with context-sensitive and dynamic process guidance**

- ▶ Process guidance and user assistance is provided dynamically as the user works with the tool.
- ▶ Includes guidance for SOA and UML2

- **Tool Mentors provide guidance for activities**

- **User customizable views with user defined content**

Improved navigation of RUP

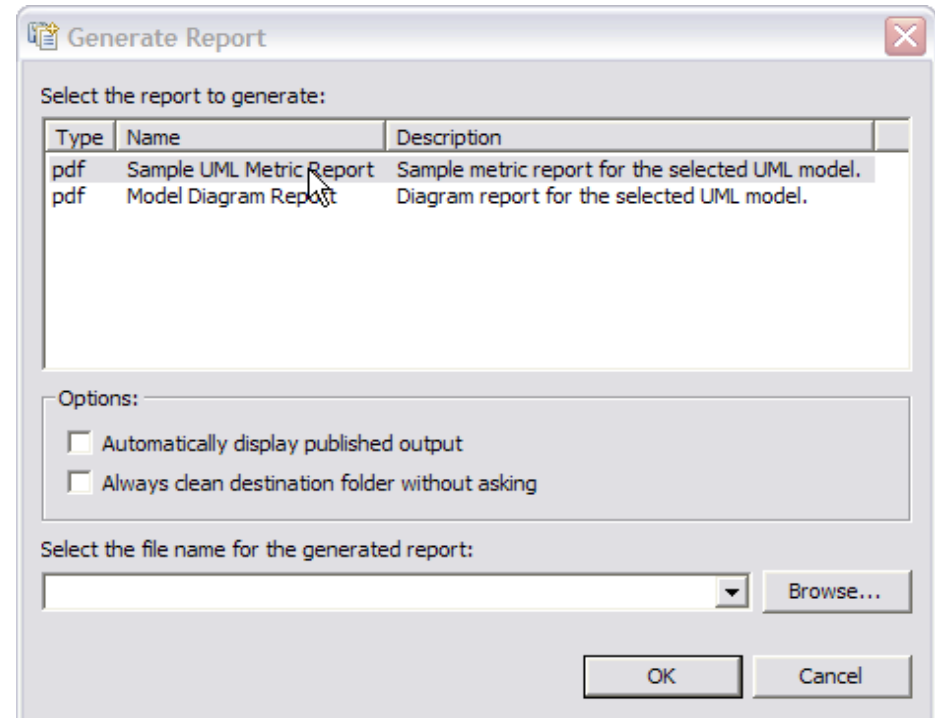


Process Advisor provides context sensitive guidance

Search is integrated with Eclipse search

Solution: Report Generation

- **Rational Software Modeler provides extensive reporting capabilities:**
 - ▶ Create reports and documentation that can be reviewed by team members or other stakeholders.
 - ▶ HTML, Portable Document Format (PDF) and XML reports generated from UML designs
 - ▶ Supports custom queries for report generation
 - ▶ Traceability reporting
 - ▶ Extensive printing options
 - ▶ Integration with IBM Rational SoDA

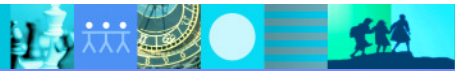


Summary: IBM Rational Software Architect

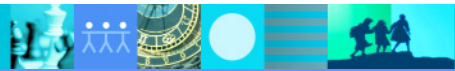
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Questions



THANK YOU



Realizing business value with IBM Rational

Assess

- High value/pain identification and project pilots
- Portfolio and project maturity assessments

Demonstrate Value and Learn

- Proof of concept, proof of technology projects
- Knowledge and skills transfer to your teams
 - ▶ Access specific communities of practice with experts in selected domains including:
 - Process and portfolio management
 - Change and configuration management
 - Software architecture
 - ▶ Rational Educational Services and roadmaps
 - ▶ IBM DeveloperWorks® community

Better Govern Development

Roll out programs to scale locally and globally



References: Our customers are adopting IBM Rational Solutions to achieve their business innovation & transformation objectives



Added new processes and methodologies to the SOA environment using IBM Rational ClearQuest & ClearCase and kept every member of the team up to date. Enabled greater reuse of application components to integrate new applications quickly and maintain existing applications easily.



Used Rational products and best practices to define an application development architecture and supporting framework for SOA resulting in 51% reuse in services.



CardinalHealth

Cardinal Health used Rational process guidance to transform business-unit centric IT model towards a company-wide IT service provider based on SOA, with greater data integration, flexible access and delivery.



Rational Software Architect allowed Sistema de Protección Médica (SPM), to quickly develop SOA service improvements and integrate with legacy applications of Argentina's medical IT infrastructure.



Ready for IBM Rational software partner ecosystem

New and Enhanced!

WIND RIVER



GALORATH

Embedded
plus

Klocwork

Systems delivery & embedded development extension

exaltec software

Legacy to SOA Modernization

GORILLA LOGIC draw it. run it.™

Business Requirements Simulation for SOA

bsd GROUP

Quality Management for Packaged Applications

Business Objects

Global Reports Management

Agitar® Develop Software With Confidence

Quality Process Integration

SPI DYNAMICS

Start Secure. Stay Secure.

OUNCE LABS

Automated Security Governance



blackduck

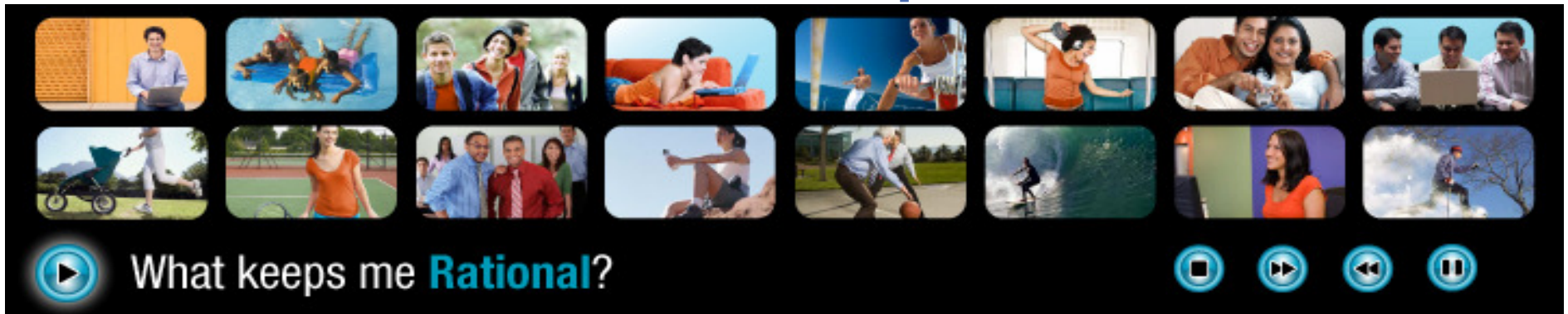
Open Source Software Reuse

Ready for
IBM Rational
software

Ready for
IBM SOA
Specialty



IBM Rational Software Development Conference



June 10-14 Walt Disney World Swan and Dolphin Orlando, FL

- Over 275 sessions – 12 tracks
- 3 & 5 hour technical workshops
- Keynotes with industry leading experts
- Exhibit hall showcasing complimentary product and services
- Access to IBM engineers & IBM Research
- Unlimited network opportunities
- IBM Solution Center
- Interactive birds-of-a-feather sessions
- Luncheon discussion tables
- Evening receptions
- Over 2,500 customers and partners

Register with this discount code and receive \$100 off your registration fee!
HDDE

Visit: www.ibm.com/rational/rsdc for more information



For More Information...

The screenshot shows the IBM Rational Software Architect product page. The page includes a navigation menu with links for Home, Products, Services & industry solutions, Support & downloads, and My IBM. The main content area features an overview of the product, highlighting its role as an integrated design and development tool. Key features listed include:

- Develops applications and Web services more productively than ever
- Exploits the latest in modeling language technology and leverages an open and extensible modeling platform
- Reviews and controls the structure of your Java™ and service-oriented applications
- Simplifies your design and development tool solution by integrating with other facets of the lifecycle
- See our [data sheet](#) for details on how Rational Software Architect can add value to your project
- [Read about SOA design and development](#)
- Operating systems supported: Linux, Windows

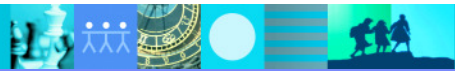
 The page also includes sections for 'Learn more' (with links to Features & benefits, System requirements, Data sheet, and Technical architecture), 'Trials and Demos' (with a Trial download link), 'Pricing and purchase' (with links to View pricing & buy and How to buy), and 'Use and maintain' (with links to Product support, Support downloads, Developer resources, Newsletter, and User group). A 'We're here to help' section offers contact options like 'Call me now' and 'E-mail us', along with contact information: 877-426-3774, Priority code: 104CBW61. A 'Highlights' section features a white paper titled 'The Value of Modeling (PDF, 155KB)' and a feature MDA Information center. An 'Award' section mentions 'IBM Rational Software Architect wins Best Java IDE' and a 'White paper' section links to 'Next-generation model-driven development'.

- Software Architect on ibm.com:
 - ▶ <http://www-306.ibm.com/software/awdtools/architect/swarchitect/index.html>
- Contacting your IBM representative
 - ▶ <http://www.ibm.com/contact/us>
 - ▶ Call 1 800 728 1212

Technical Resources on IBM developerWorks

- ▶ www.ibm.com/developerworks/rational
- ▶ Technical library of whitepapers, utilities, betas
- ▶ Downloadable demos
- ▶ Discussion forums

Questions



THANK

YOU

