

IBM Software

Innovate2012

The Premier Event for Software and System Innovation

Next  NOW!



What's new in Rational Software Architect 8.5

Kapil Gambhir
kgambhir@in.ibm.com

Please note

IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal without notice at IBM's sole discretion.

Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision.

The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for our products remains at our sole discretion.

Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon many factors, including considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve results similar to those stated here.

Agenda

- **RSA 2011 Highlights**
- What's New in RSA 8.5
 - MDD
 - BPMN
 - Base Modeling
 - Real-Time Extension

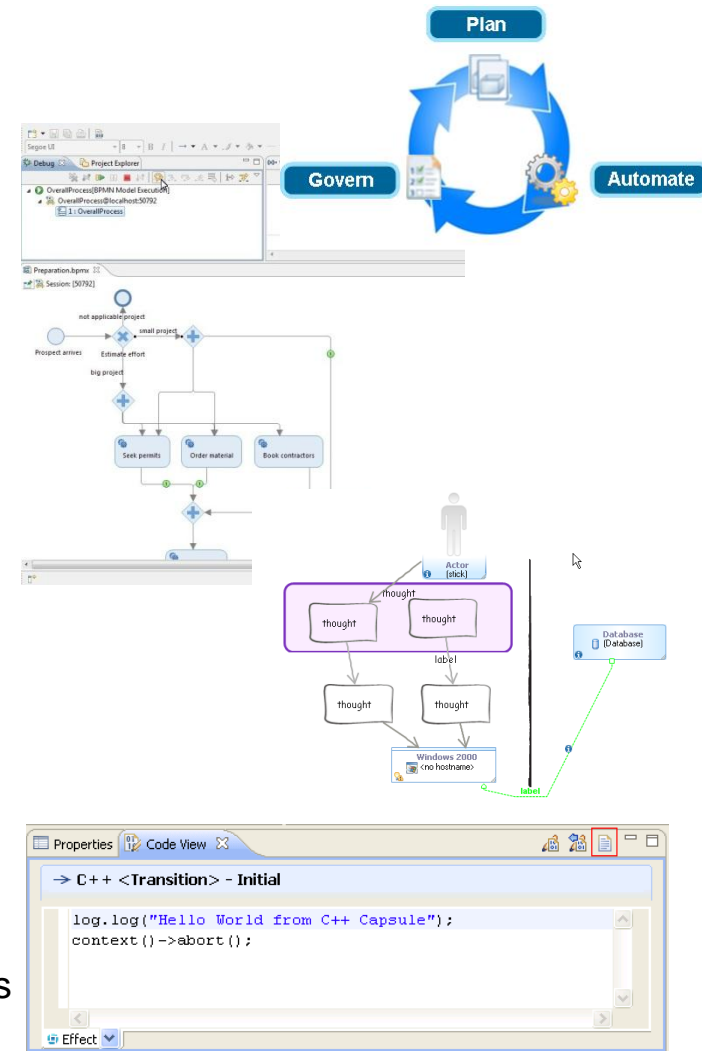
Rational Software Architect 2011 Highlights

▪ Rational Software Architect

- **Agile Sketcher**
- **Model Animation and Execution**
- Introduced service specification and development tools aligned to **Rational SOMA 2.9** guidance
- Create and design **services based on REST** architectural style
- Modeling JEE applications using Apache **Struts Framework**
- **Deployment Planning and Automation** and automation content pack for WAS, Integration with **TADDM**
- **BPMN2 Support extended** to Choreographies and simulation
- Model Animation and **Execution support for UAL** (UML Action Language)
- RSA **Jazz** enablement via **RSA Design Manager**

▪ Rational Software Architect Real-Time Edition

- **Performance improvements** for very large real-time models
- **Improved Code Viewers** and better support for long code snippets
- RSA RTE **Jazz** enablement via **RSA Design Manager**



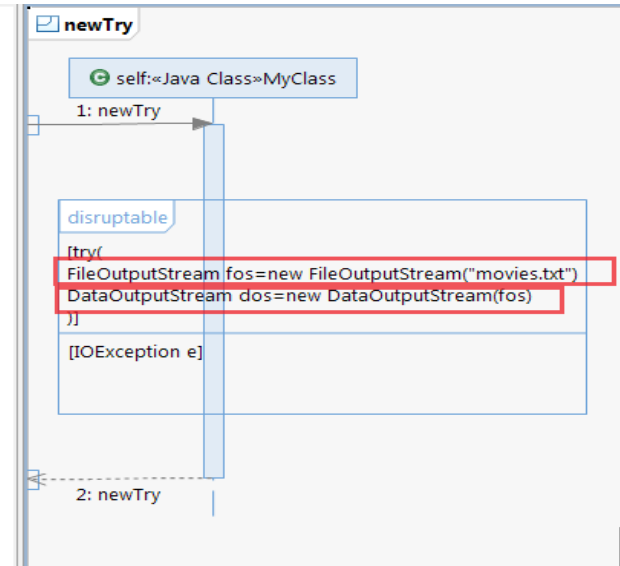
Agenda

- RSA 2011 Highlights
- **What's New in RSA 8.5**
 - MDD
 - Java 7
 - Spring & Hibernate Frameworks
 - Apache Struts 2
 - BPMN
 - Base Modeling
 - Real-Time Extension

Java 7 support

- Java visualizer and transform supports Java 7 Language constructs: e.g.,
 - try-with-resources statement
 - Switch string statement
 - Multi-catch and final re-throw
 - Underscores in numeric literals
 - Binary integral literals
 - Diamond operator

Automatic Resource Mgmt

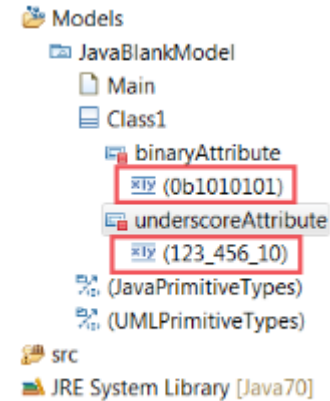


```

public void testDiamond() {
    // new diamond notation is sufficient
    List<String> list = new ArrayList<>();
    Map<String, List<String>> map = new HashMap<>();
}
    
```

Diamond operator

Underscores in numeral literals



Agenda

- RSA 2011 Highlights
- **What's New in RSA 8.5**
 - MDD
 - Java 7
 - **Spring & Hibernate Frameworks**
 - Apache Struts 2
 - BPMN
 - Base Modeling
 - Extensions

RSA Spring Framework Support

- Provide modeling and transformation of Spring Framework v2.5 – 3.0.6.
- Supported Spring Modules (Profiles):
 - Core
 - MVC
 - Transaction
- RSA Supports Spring Core bean definitions for Spring Container configuration file
- RSA supports Context annotations for Spring and annotated classes for Component, Configuration and Service can be defined with Autowired, Required and Value annotations
- Spring Transaction supports Repository definition with Transactional Operation details

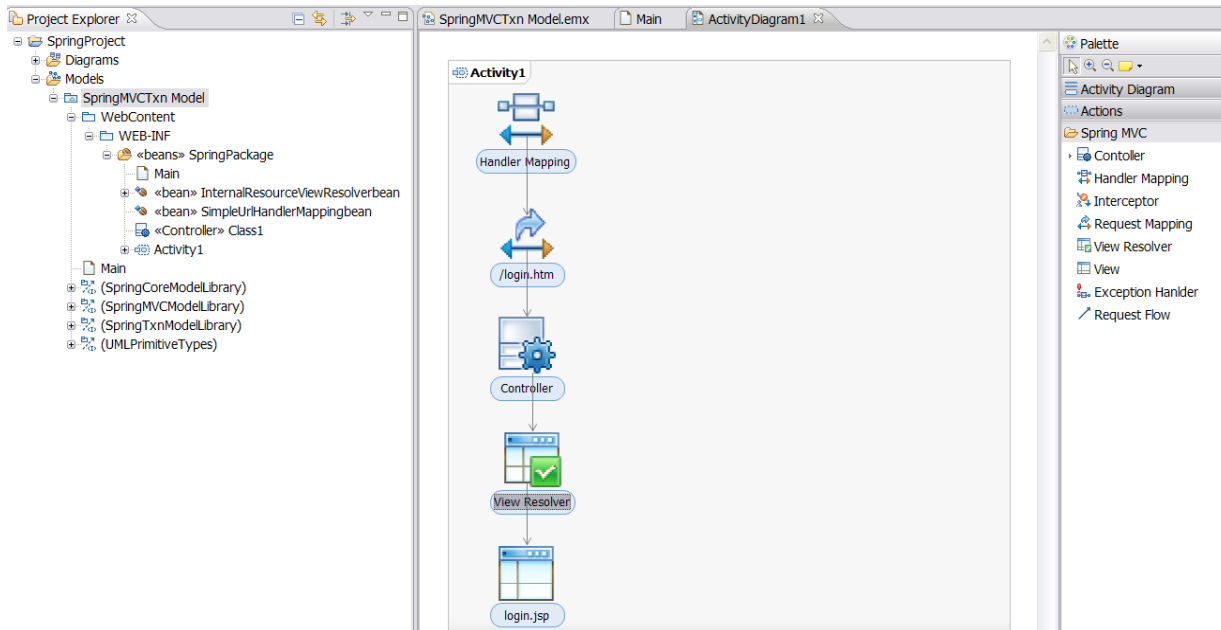
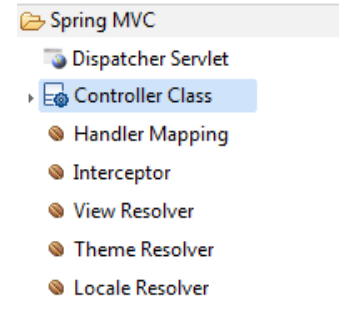
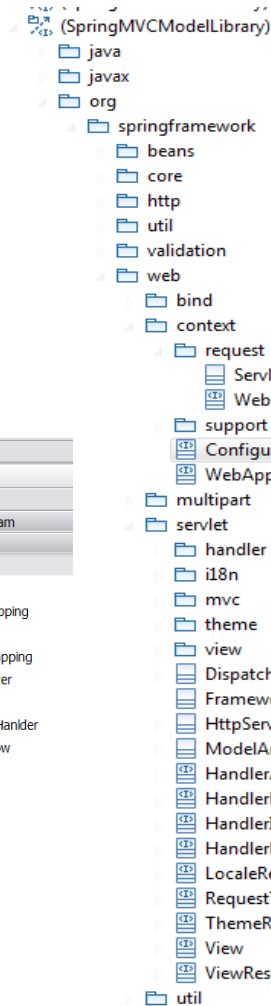
The screenshot displays the RSA IDE interface with several key components:

- Create Model Dialog:** Shows a tree of categories including Business Process Modeling, General, Java Development, Requirements, REST Modeling, Sketches, Spring, and UML Integrated Architecture (UPIA) Modeling. The 'Spring' category is selected, showing templates like SpringCore Model, SpringMVC Model, SpringMVCTxn Model, and SpringTxn Model.
- Palette:** A 'Create' palette showing Spring-related components such as beans, bean, Depends On, Parent, Dispatcher servlet, Component, Configuration, Bean Config Operation, Service, Autowired Operation, Value, Required, Spring Transaction, Repository, Transactional, Spring MVC, Dispatcher Servlet, Controller Class, Handler Mapping, Interceptor, View Resolver, Theme Resolver, and Locale Resolver.
- Project Explorer:** Shows the project structure for 'SpringProject', including Diagrams, Models, SpringMVCTxn Model, WebContent, WEB-INF, Main, and various libraries like SpringCoreModelLibrary, SpringMVCModelLibrary, SpringTxnModelLibrary, and UMLPrimitiveTypes.
- Properties View:** Shows the configuration for a TransactionalOperation, including General, Parameters, Exceptions, Stereotypes, Documentation, Constraints, Relationships, Advanced, Spring Txn, and Timeout settings.

Spring Application Development Framework Reference Documentation: <http://springsource.org>

Spring MVC Model Designing

- Spring MVC models can be designed as an Activity Flow
- RSA supports designing of MVC models with Controller beans and annotations
- Core model Library supports Spring defined beans for Dispatcher Servlet, Controller, Handler Mapping, View Resolver, Theme Resolver, Locale Resolver etc.



Transformation of Spring Models

- Spring Models can be transformed to Dynamic Web Projects
- UML classes of Spring model are transformed to java classes with required annotations and import statements
- Spring beans and their properties are transformed to configuration file for Spring container
- Spring MVC Activity Flow is transformed to Java classes and configuration file

New Transformation Configuration

Specify a Configuration Name and Transformation
Specify the configuration file name and transformation information.

Name: SpringTC

Configuration file destination: /SpringProject

Transformation:

- General
- Java Transformations
 - Java to UML
 - UML to Java**
 - UML to Java (deprecated)
- Service Oriented Architecture Transformation

Show all transformations

Protocol

- Conceptual
- Mixed
- Reconciled

You can use a reverse transform the current state of elements in the target domain, such as Java, to the current state of the source domain, such as UML.

UML to Java Transformation: SpringTC.tc

UML to Java extensions

ID	Name	Description
<input type="checkbox"/> com.ibm.xtools.transform.java.enum...	UML to Java Custom Enumeration Extension	UML to Java support for alternate style Java enumer...
<input type="checkbox"/> com.ibm.xtools.transform.java.exten...	UML to Java Custom Getter and Setter Nam...	An extension that ignores Java conventions for the n...
<input checked="" type="checkbox"/> com.ibm.xtools.transform.uml2.java....	Passive Class Statemachine Extension	Extension to generate java code for statemachines in...
<input type="checkbox"/> com.ibm.xtools.transform.uml2.java...	UML to Java Vararg Override Extension	UML to Java extension to override generation of vara...
<input checked="" type="checkbox"/> com.ibm.xtools.transform.uml2.spring	UML to Java Spring Transformation extension	Spring extension for UML2 to Java5 transformation

Java to UML extensions

ID	Name	Description
<input type="checkbox"/> com.ibm.xtools.transform.java.enum...	Java to UML Custom Enumeration Extension	Java to UML support for alternate style Java enum...
<input type="checkbox"/> com.ibm.xtools.transform.java.uml.v...	Java to UML Apply Vararg Keyword Extension	Java to UML extension to apply the keyword "vara...
<input checked="" type="checkbox"/> com.ibm.xtools.transform.spring.uml2	Spring Java5 to UML Transformation Extension	Spring extension for Java5-to-UML Transformation

Main | Source and Target | Extensions | Collections | Java-to-UML Associations | Mapping | Spring Properties

Hibernate Framework Support in RSA

- Provide modeling and transformation support for Hibernate Framework v3.5 & 3.6
- Transformation support to generate hibernate-annotated Java code and hibernate configuration and mapping file(deployment descriptor).
- Reverse transform support to generate the Hibernate model from either annotated source files or deployment descriptors.
- The hibernate modeling and transforms support includes modeling elements from Java persistence API also.
- Hibernate support in RSA 8.5 includes Entity and related elements, inheritance support, associations, identifier and properties, queries and custom-SQL.

Hibernate Reference Documentation: <http://www.hibernate.org/docs>

Hibernate tools for eclipse/RSA are available <http://www.hibernate.org/subprojects/tools.html>

Hibernate Modeling Toolset

- Modeling toolset now includes a Hibernate profile, model templates, palette entries, content menus and property page enhancements.
- Entities can be built-up from scratch or mapped to an existing table from a database.

The screenshot illustrates the workflow for creating an entity from a database table in the Hibernate Modeling Toolset. It shows the 'Hibernate Profile' containing templates for '<Entity> Class', 'Entity From Table', 'Bidirectional Association', 'Generalization', '<Datasource> Actor', and '<Embeddable> Class'. A context menu is shown with options to 'Add Hibernate', 'Add', 'Add UML', 'Make Default Diagram', 'Navigate', and 'Convert to New Sketch...'. The 'Add Hibernate' option is expanded to show the same set of templates. The 'Entity From Table' dialog is open, with 'Database' selected as the source type. The Properties window for the selected entity class is also visible, showing fields for 'Database', 'Table name', 'Schema name', 'Catalog', and 'Access type', along with a 'Queries' section.

Hibernate Transformation

- UML to Hibernate transformation generates annotated code and the hibernate mapping file

```
@Table(name = "CUSTOMERS", schema = "CLASSICMODELS")
@Entity
public class Customers implements Serializable {
```

```
<class mutable="true" name="Customers" polymorphism="implicit"
  schema="CLASSICMODELS" table="CUSTOMERS">
  <id name="id"/>
  <property column="CUSTOMERNUMBER" insert="true" length="255"
    name="customernumber" not-null="false" precision="0"
    scale="0" unique="false" update="true"/>
  <property column="CUSTOMERNAME" insert="true" length="255"
    name="customername" not-null="false" precision="0" scale="0"
    unique="false" update="true"/>
  <property column="CONTACTLASTNAME" insert="true" length="255"
```

Property	Value
Access type	Field
Delete Unmatched tags	false
Generate a deployment descriptor	true

- The 'properties' tab of the configuration can be used to configure the transform

Spring Hibernate Model Support

- RSA supports Models with Spring and Hibernate Modeling support
- RSA template model comes with Spring and Hibernate Model definitions
- Model library comes with Hibernate specific Spring classes for modeling

Agenda

- RSA 2011 Highlights
- **What's New in RSA 8.5**
 - MDD
 - Java 7
 - Spring & Hibernate Frameworks
 - **Apache Struts 2**
 - BPMN
 - Base Modeling
 - Extensions

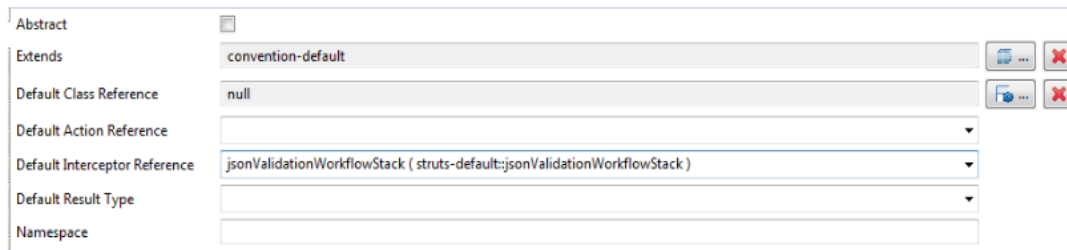
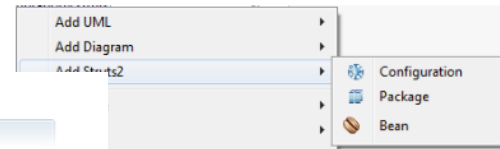
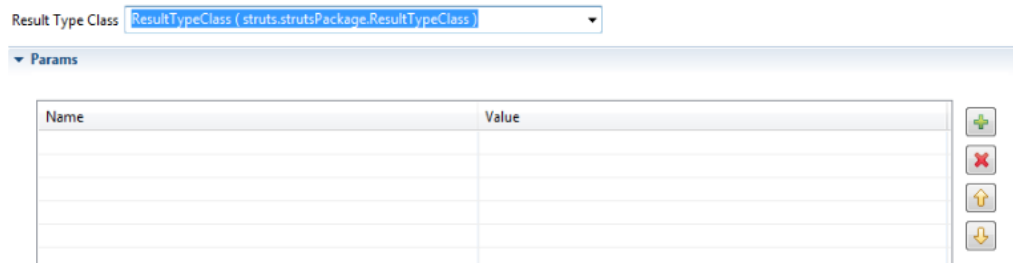
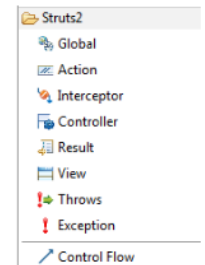
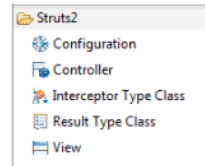
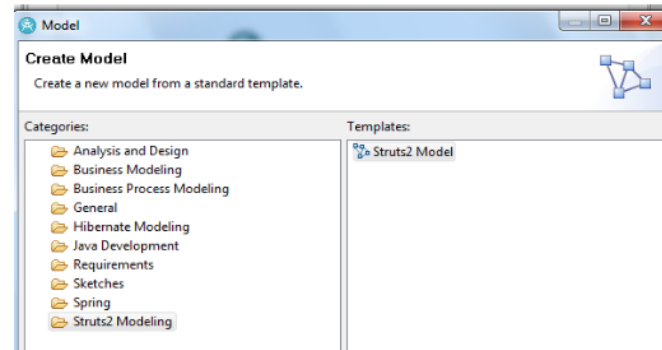
Struts2 Model Driven Development

- *UML-to-Java transformation Extensions*
- *Assisted tooling for easier creation of Struts2 elements*
- *Forward & reverse transformation*
- *Generation of Struts2 configuration XML*
- *Generation of Struts 2Annotations*
- *Support of standard Struts2 validations on model data*

Struts 2 Reference Documentation: <http://struts.apache.org>

Struts2 Modeling Toolset

- Modeling toolset now includes a Struts 2 profile, model template, palette entries, context menus, wizards and property page enhancements
- Model structural view (Views, Controllers, Interceptors) using Class diagram
- Model navigation flows using Activity diagram



Struts2 Transform

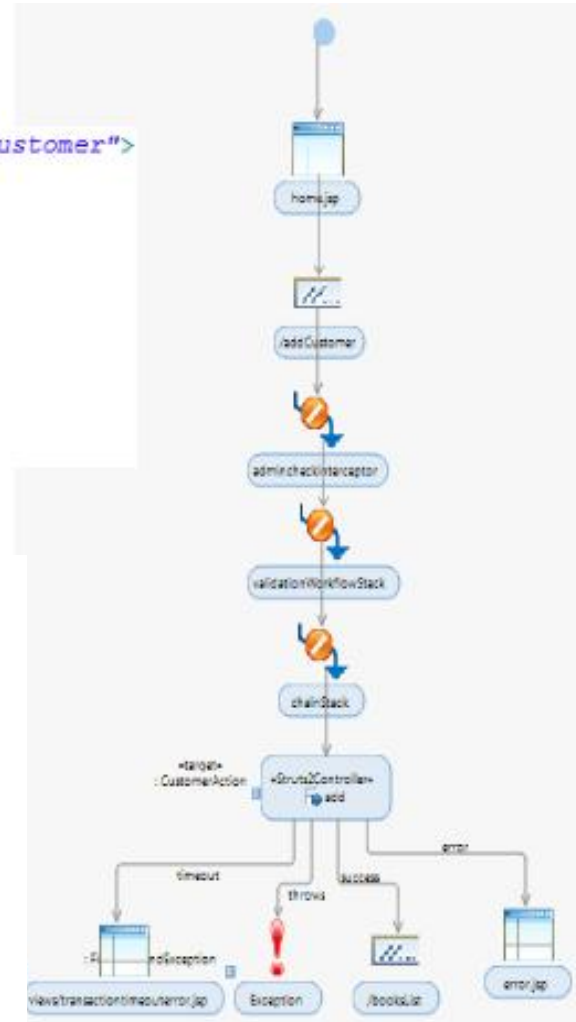
XML Generation

```
<action class="com.bookshop.actions.CustomerAction" method="add" name="/addCustomer">
  <result name="timeout">views/transactiontimeouterror.jsp</result>
  <result name="error">error.jsp</result>
  <result name="success" type="chain">/booksList</result>
  <interceptor-ref name="admincheckinterceptor"/>
  <interceptor-ref name="validationWorkflowStack"/>
  <interceptor-ref name="chainStack"/>
  <exception-mapping exception="java.io.FileNotFoundException"
    name="throws" result="error"/>
</action>
```

Annotation Generation

```
/**
 * <!-- begin-UML-doc -->
 * <!-- end-UML-doc -->
 * @generated "UML to Java (com.ibm.xtools.transform.uml2.java5.internal.UML2Ja
 */
@Action(value = "/addCustomer", interceptorRefs = {
    @InterceptorRef("admincheckinterceptor"),
    @InterceptorRef("validationWorkflowStack"),
    @InterceptorRef("chainStack") }, results = {
    @Result(name = "error", location = "error.jsp"),
    @Result(name = "success", type = "chain", location = "/booksList"),
    @Result(name = "timeout", location = "transactiontimeouterror.jsp") })
public void add() {
    // begin-user-code
    // TODO Auto-generated method stub

    // end-user-code
}
```

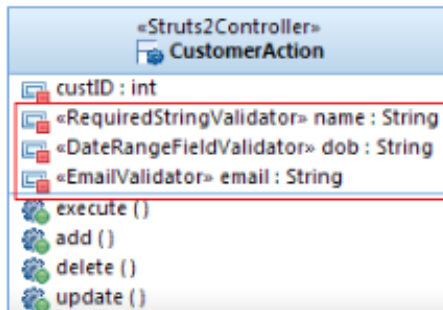


Struts2 Validation

```

<validators>
  <field name="name">
    <field-validator type="requiredstring">
      <param name="trim">false</param>
      <message key="key.nameError">The name field cannot be left blank</message>
    </field-validator>
  </field>
  <field name="dob">
    <field-validator type="date">
      <message key="key.doberror">Enter the correct date of birth</message>
    </field-validator>
  </field>
  <field name="email">
    <field-validator short-circuit="true" type="email">
      <param name="type">SIMPLE</param>
      <message key="key.emailError">The email address entered is not valid</message>
    </field-validator>
  </field>
</validators>

```



```

@EmailValidator(message = "The email address entered is not valid", key = "key.emailError", shortCircuit = true,
public String getEmail() {
    // begin-user-code
    return email;
    // end-user-code
}

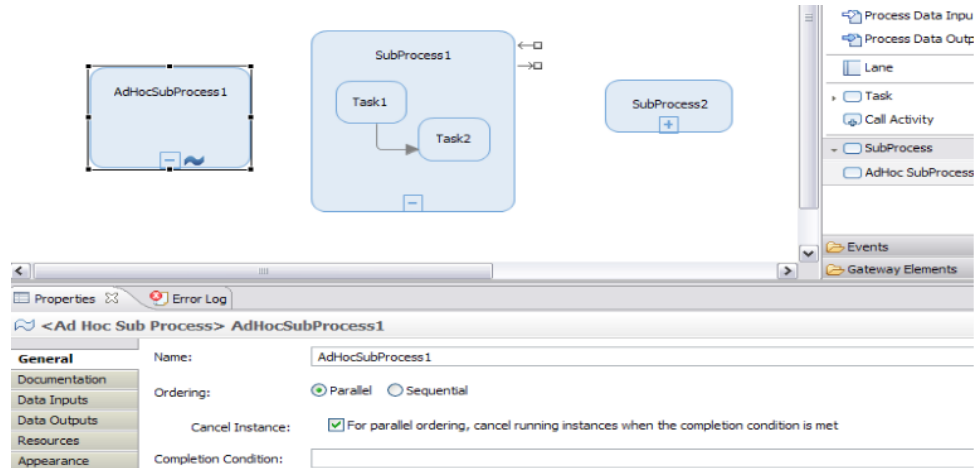
```

Agenda

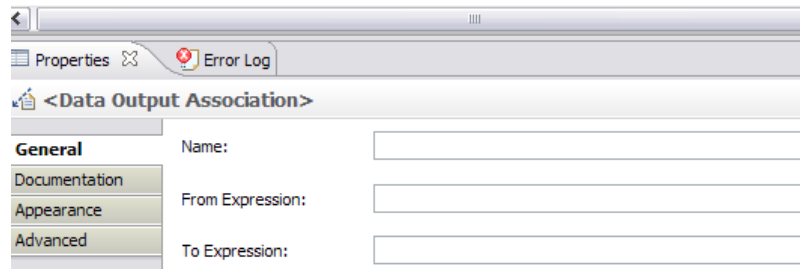
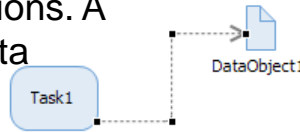
- RSA 2011 Highlights
- **What's New in RSA 8.5**
 - MDD
 - BPMN**
 - Base Modeling
 - Extensions

BPMN Modeling Enhancements

– BPMN SubProcess and Adhoc SubProcess



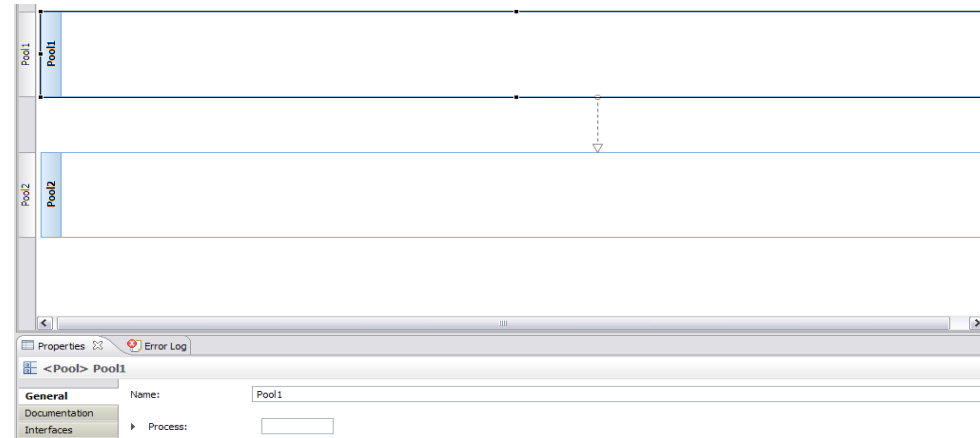
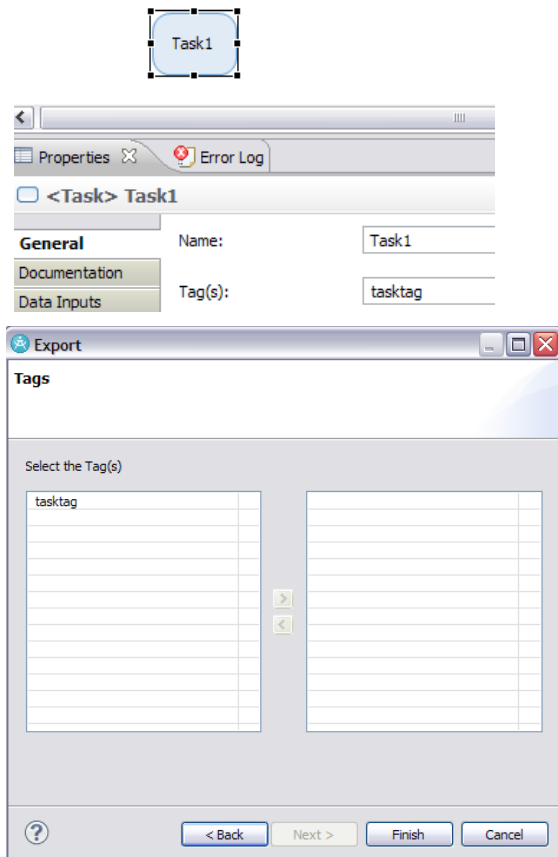
– Assignments can be provided for data associations. A From and a To Expression can be added for data associations from Properties view



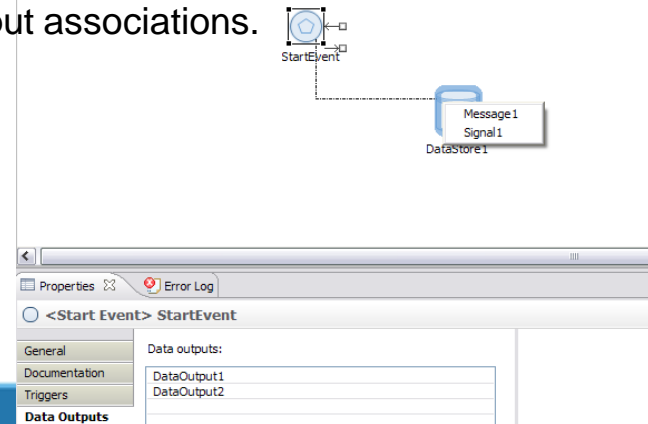
Tagging BPMN elements and scoped export of BPMN elements

- Support for tagging BPMN elements
- Can select to export tagged elements only

– Black box pools & message flows between pools



- Events can now be connected to data stores, data objects, process data inputs and outputs to create data input/output associations.

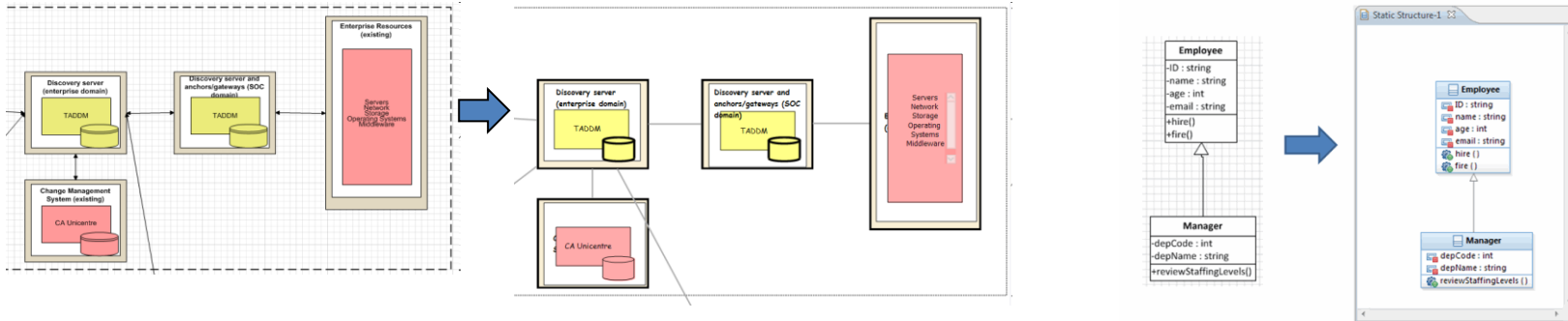


Agenda

- RSA 2011 Highlights
- **What's New in RSA 8.5**
 - MDD
 - BPMN
 - Base Modeling**
 - **Microsoft® Visio Diagram Import**
 - Usability Enhancements
 - Extensions

Microsoft® Visio Diagram Import

- Imports UML (Class and Use case) and Network Diagrams drawn in Visio 2010
- Preserve the semantic and makes best effort towards preserving visual layout.



- Provides an HTML import report and navigable ToDo markers wherever possible user intervention is required.

Visio-import report for file "Sample_for_deck.vdx".

Import finished in 24 seconds with 4 information and 14 warning messages

Information collected during import process

S.No	Severity	Message	Type	Action Taken	Details
1	WARNING	Processing - Document - (Sample_for_deck)	Document - (Sample_for_deck)	Completed	

Processing - Document - (Sample_for_deck)

S.No	Severity	Message	Type	Action Taken	Details
1	WARNING	Processing - Page - (Page-1)	Page - (Page-1)	Completed	
2	WARNING	Processing Visio Document: Name - Sample_for_deck	Document - (Sample_for_deck)	Created Topology Model - Sample_for_deck	Element imported

Processing - Page - (Page-1)

S.No	Severity	Message	Type	Action Taken	Details
1	WARNING	Shape not recognized in domain.	Shape - (Rectangle)	View created for shape -	Element not supported
2	INFO	Recognized topology domain shape	Shape - (File server)	Created unit - server.ServerUnit. Added capability - server.Server.	Element imported
3	WARNING	Shape not recognized in domain.	Shape - (PC)	View created for shape - Desktop(Target).	Element not supported
4	INFO	Recognized topology domain shape	Shape - (Server)	Created unit - server.ServerUnit. Added capability - server.Server.	Element imported
5	INFO	Recognized topology domain shape	Shape - (Server)	Created unit - server.ServerUnit. Added capability - server.Server.	Element imported
6	INFO	Recognized topology domain shape	Shape - (Server)	Created unit - server.ServerUnit. Added capability - server.Server.	Element imported
7	WARNING	Shape not recognized in domain.	Shape - (SECURITY Diagram)	View created for shape - SECURITY Diagram.	Element not supported

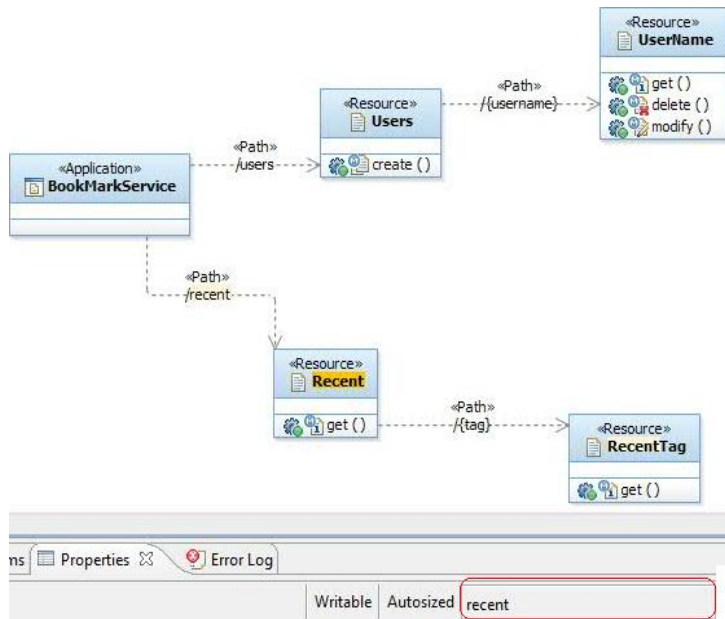
Description	Resource	Path	Location	Type
Edge created connecting "Server" to "Server".	Page-1.topologyv	/esf/Blueprint	Page-1	Visio Import Task
Edge created connecting "Server" to "Server (t...	Page-1.topologyv	/esf/Blueprint	Page-1	Visio Import Task
Edge created connecting "Server" to "SP".	Page-1.topologyv	/esf/Blueprint	Page-1	Visio Import Task
Edge created connecting "Server" to "SP".	Page-1.topologyv	/esf/Blueprint	Page-1	Visio Import Task
Edge created connecting "Server (target)" to "...	Page-1.topologyv	/esf/Blueprint	Page-1	Visio Import Task
View created for shape - .	Page-1.topologyv	/esf/Blueprint	Page-1	Visio Import Task
View created for shape - Desktop(Target).	Page-1.topologyv	/esf/Blueprint	Page-1	Visio Import Task
View created for shape - Sample content for DIP....	Page-1.topologyv	/esf/Blueprint	Page-1	Visio Import Task
View created for shape - SECURITY Diagram.	Page-1.topologyv	/esf/Blueprint	Page-1	Visio Import Task
View created for shape - Z2: DIP.	Page-1.topologyv	/esf/Blueprint	Page-1	Visio Import Task

Agenda

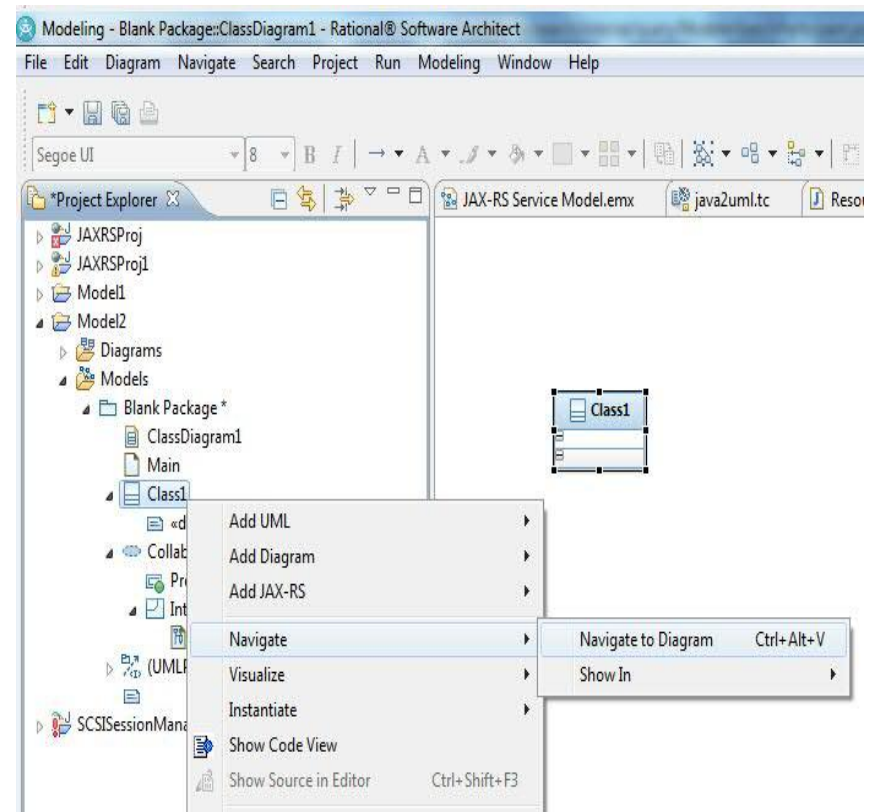
- RSA 2011 Highlights
- **What's New in RSA 8.5**
 - MDD
 - BPMN
 - Base Modeling**
 - Microsoft® Visio Diagram Import
 - **Usability Enhancements**
 - Extensions

Usability Enhancements

- Incremental forward (Ctrl-J) and backwards (Ctrl-Shift-J) search in UML diagrams
 - Incremental search will highlight all matching elements in diagram



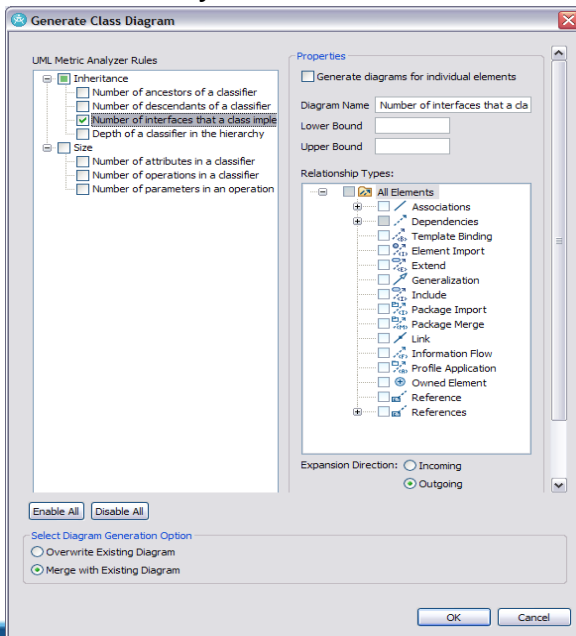
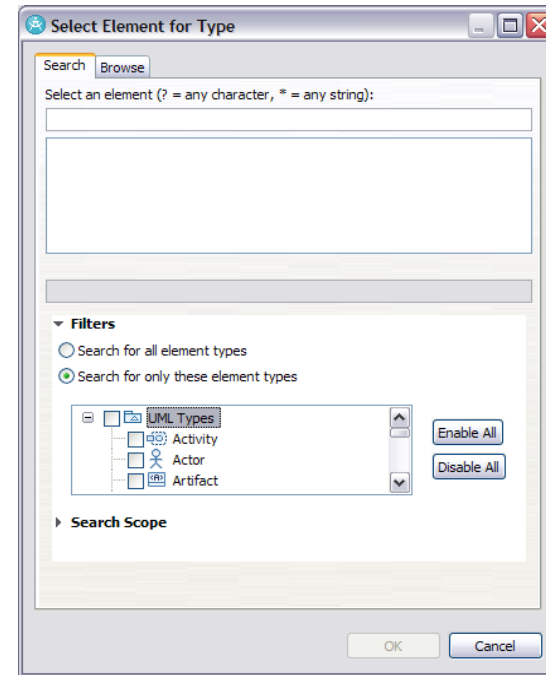
- Navigate To Diagram (Ctrl+Alt+V) PE action diagram
 - Multiple diagrams listed in search view



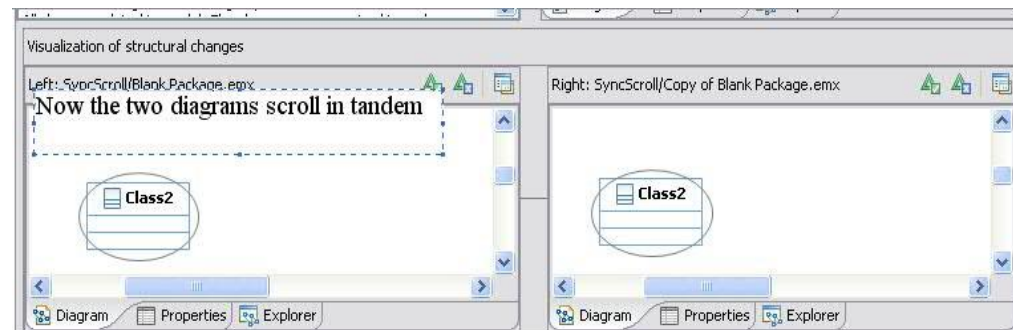
Usability Enhancements

- UML type filters provided in Search element dialog
 - These filters will compliment the 'text' search by adding type filters to list 'type(s)' of interest only in search result

- Generate Class Diagrams PE action
 - generate class diagram automatically based on model analysis rules



- Synchronized horizontal & vertical scrolling is now supported for diagram compare



Other Usability Enhancements...

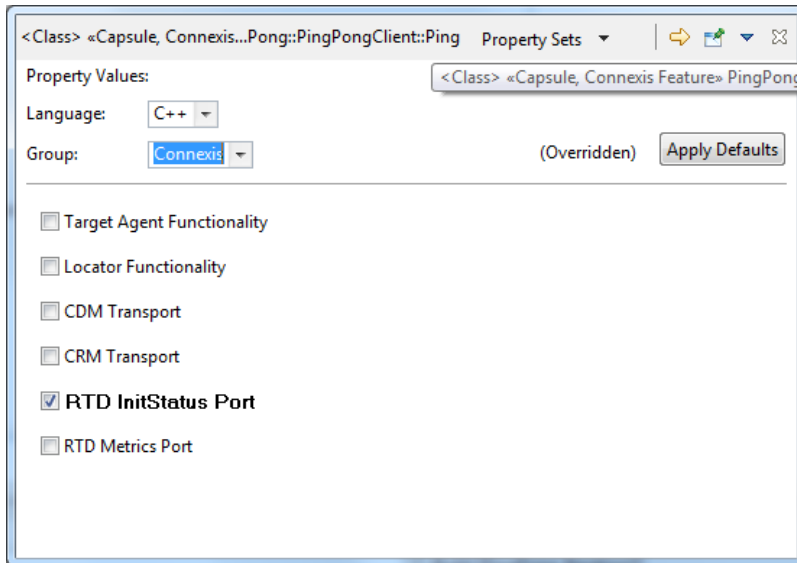
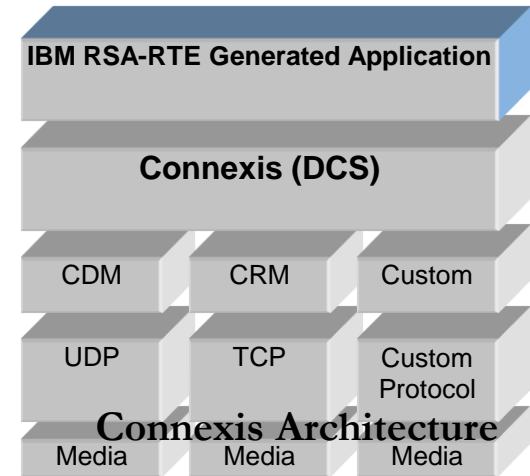
- Improved rich text support for HTML tags
 - Improved table formatting
 - Better handling of line break and paragraph breaks
 - Improved handling of HTML Lists (ordered and un-ordered)
 - Robust migration from 7.5.x to 8.5
- Ability to load multiple models and their sub-fragments at once
- Improved Search scope options
- Navigation support from properties view to container element
- Option to sort the Inheritance Explorer members in "inheritance order"

Agenda

- RSA 2011 Highlights
- **What's New in RSA 8.5**
 - MDD
 - BPMN
 - Base Modeling
 - Extensions**
 - **Real Time: Connexis**
 - **Deployment Planning: MQ & MB**

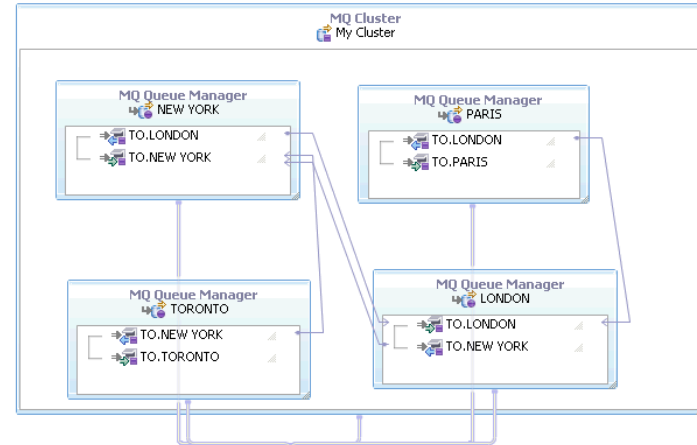
RSA-RTE: Rational Connexis

- Rational Connexis is Distributed Communication Service that eliminates the need to design, develop and test custom IPC mechanisms
- New Connexis UML profile
- GUI support to enable Connexis support
 - Using ports and capsules property pages
 - Transform Configuration
- New Connexis C++ Libraries

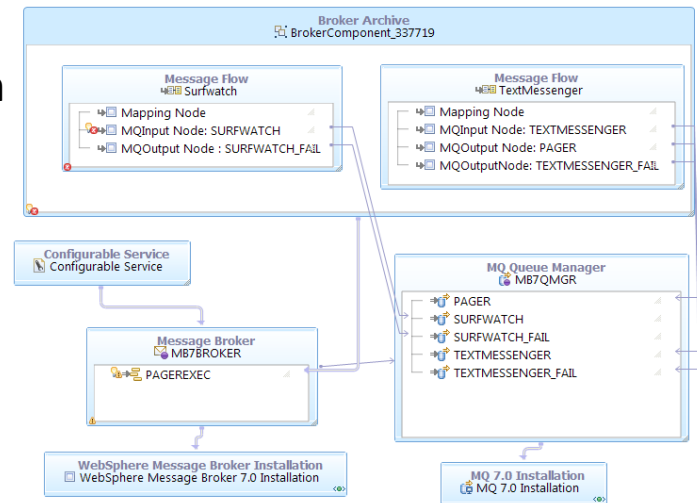


Deployment Planning and Automation enhancements

- Support for WebSphere MQ domain
 - Enhanced modeling support
 - Better validations etc.
 - Discovery of MQ content from TADDM server



- Support for WebSphere Message Broker domain
 - Modeling support
 - Templates and Palette entries
 - Custom validations and resolutions
 - Discovery of MB content from TADDM server



More Info ...

- For more information on Rational Software Architect visit:
 - <https://www.ibm.com/developerworks/wikis/display/RSA/Home>
 - <http://www-01.ibm.com/software/awdtools/swarchitect/>

QUESTIONS

www.ibm.com/software/rational

Acknowledgements and disclaimers



Availability: References in this presentation to IBM products, programs, or services do not imply that they will be available in all countries in which IBM operates.

The workshops, sessions and materials have been prepared by IBM or the session speakers and reflect their own views. They are provided for informational purposes only, and are neither intended to, nor shall have the effect of being, legal or other guidance or advice to any participant. While efforts were made to verify the completeness and accuracy of the information contained in this presentation, it is provided AS-IS without warranty of any kind, express or implied. IBM shall not be responsible for any damages arising out of the use of, or otherwise related to, this presentation or any other materials. Nothing contained in this presentation is intended to, nor shall have the effect of, creating any warranties or representations from IBM or its suppliers or licensors, or altering the terms and conditions of the applicable license agreement governing the use of IBM software.

All customer examples described are presented as illustrations of how those customers have used IBM products and the results they may have achieved. Actual environmental costs and performance characteristics may vary by customer. Nothing contained in these materials is intended to, nor shall have the effect of, stating or implying that any activities undertaken by you will result in any specific sales, revenue growth or other results.

© **Copyright IBM Corporation 2012. All rights reserved.**

– **U.S. Government Users Restricted Rights - Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.**

IBM, the IBM logo, ibm.com, Rational, the Rational logo, Telelogic, the Telelogic logo, Green Hat, the Green Hat logo, and other IBM products and services are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both. If these and other IBM trademarked terms are marked on their first occurrence in this information with a trademark symbol (® or ™), these symbols indicate U.S. registered or common law trademarks owned by IBM at the time this information was published. Such trademarks may also be registered or common law trademarks in other countries. A current list of IBM trademarks is available on the Web at “Copyright and trademark information” at www.ibm.com/legal/copytrade.shtml

If you have mentioned trademarks that are not from IBM, please update and add the following lines:

[Insert any special third-party trademark names/attribution here]

Other company, product, or service names may be trademarks or service marks of others.



www.ibm.com/software/rational

© Copyright IBM Corporation 2012. All rights reserved. The information contained in these materials is provided for informational purposes only, and is provided AS IS without warranty of any kind, express or implied. IBM shall not be responsible for any damages arising out of the use of, or otherwise related to, these materials. Nothing contained in these materials is intended to, nor shall have the effect of, creating any warranties or representations from IBM or its suppliers or licensors, or altering the terms and conditions of the applicable license agreement governing the use of IBM software. References in these materials to IBM products, programs, or services do not imply that they will be available in all countries in which IBM operates. Product release dates and/or capabilities referenced in these materials may change at any time at IBM's sole discretion based on market opportunities or other factors, and are not intended to be a commitment to future product or feature availability in any way. IBM, the IBM logo, Rational, the Rational logo, Telelogic, the Telelogic logo, and other IBM products and services are trademarks of the International Business Machines Corporation, in the United States, other countries or both. Other company, product, or service names may be trademarks or service marks of others.