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What's new in Rational Software Architect 8.5

Kapil Gambhir
kgambhir@in.ibm.com

Please note

Agenda

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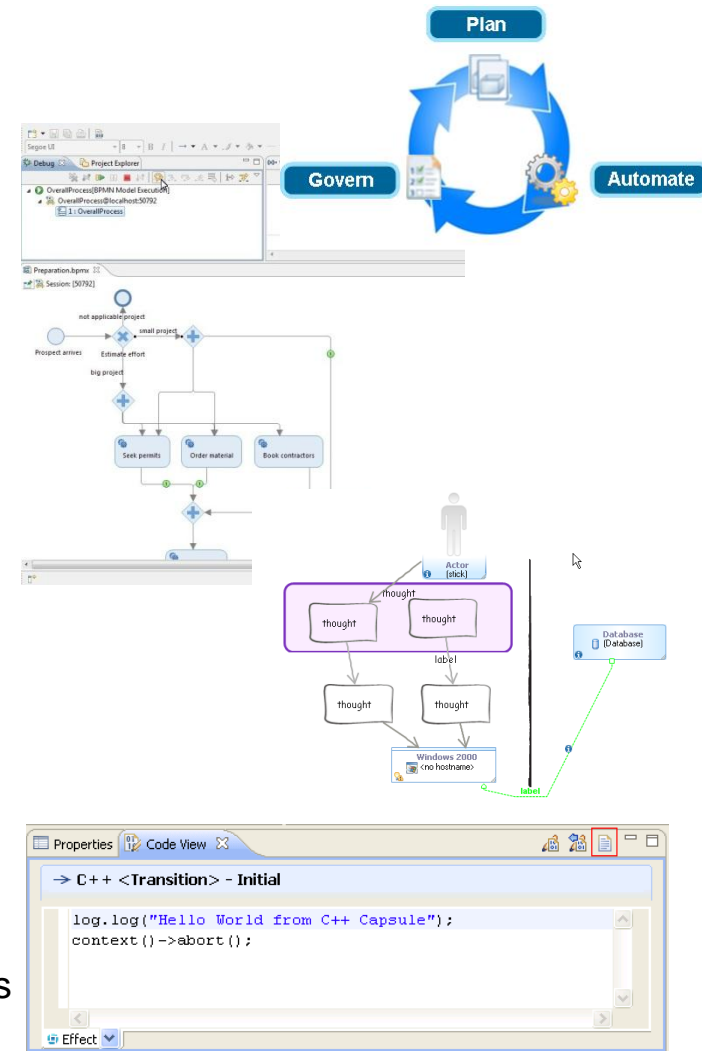 - Real-Time Extension

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

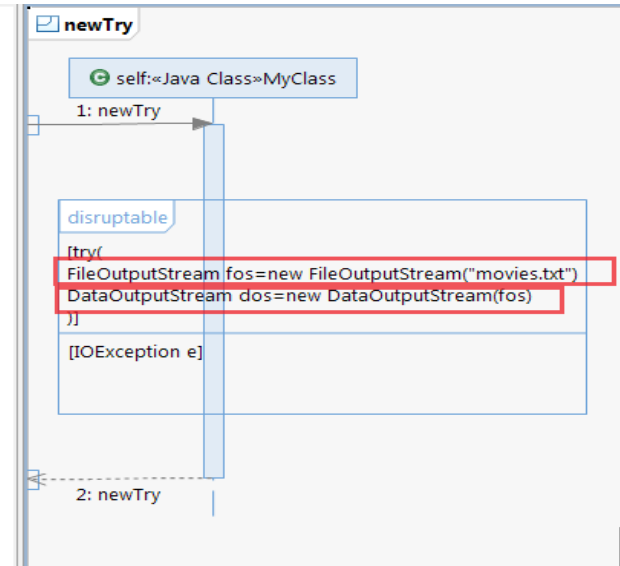 - RSA RTE **Jazz** enablement via **RSA Design Manager**

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- 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

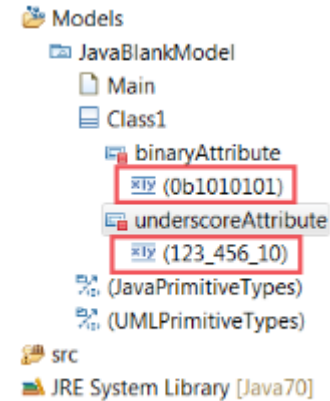 - Diamond operator

Automatic Resource Mgmt

Diamond operator

Underscores in numeral literals

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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

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.
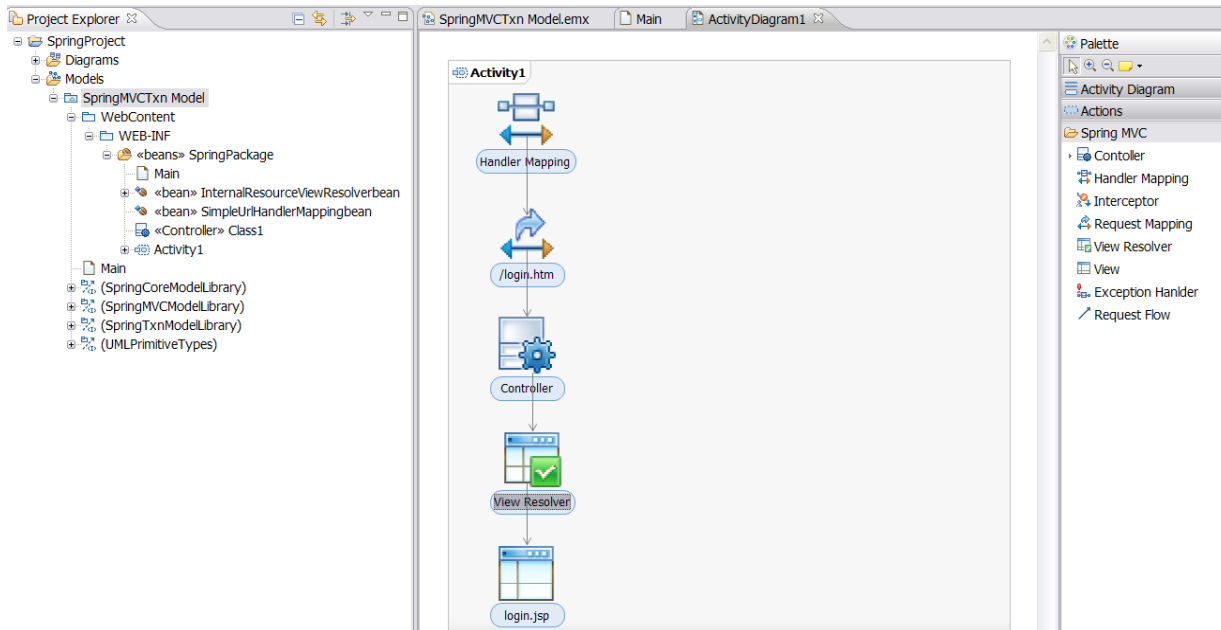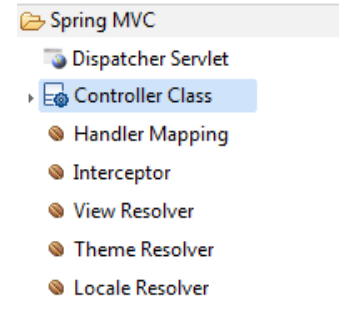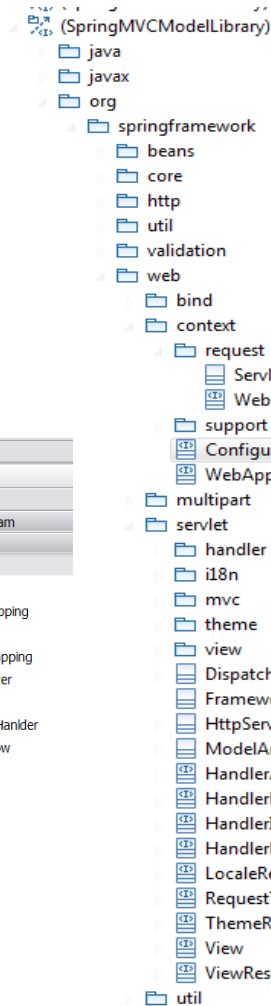
Transformation of Spring Models

- 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

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.

Hibernate Transformation

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

```java
@Table(name = "CUSTOMERS", schema = "CLASSICMODELS")
@Entity

public class Customers implements Serializable {
```

```xml
<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

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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*

Struts2 Modeling Toolset

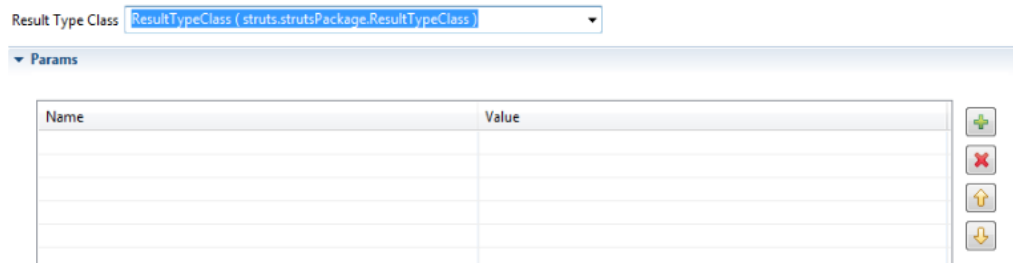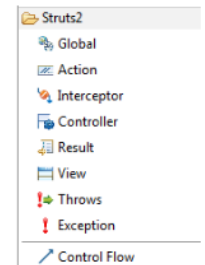- Modeling toolset now includes a Struts 2 profile, model template, palette entries, context menus, wizards and property page enhancements
- Model structural view (Views, Controllers, Interceptors) using Class diagram
- Model navigation flows using Activity diagram
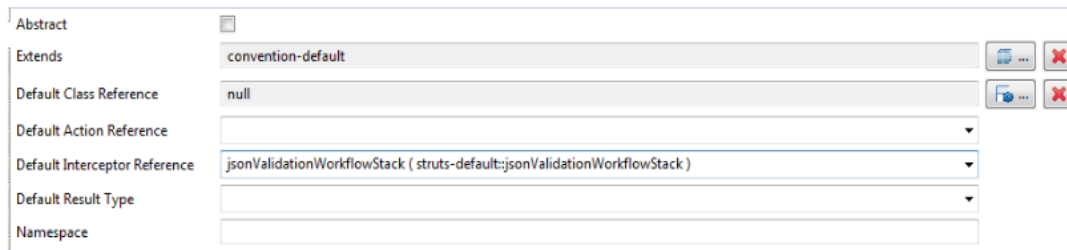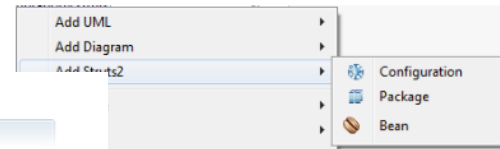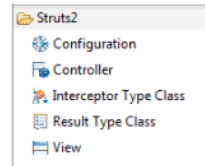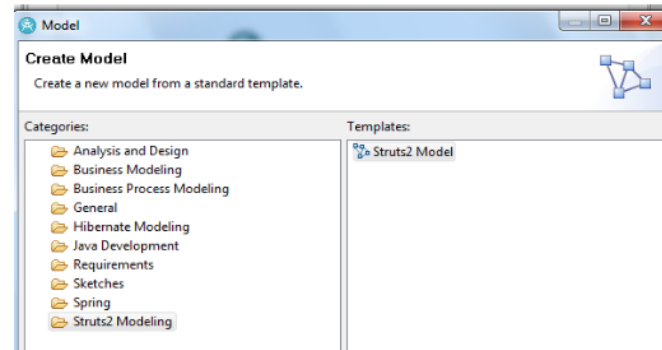
Struts2 Transform

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>
```
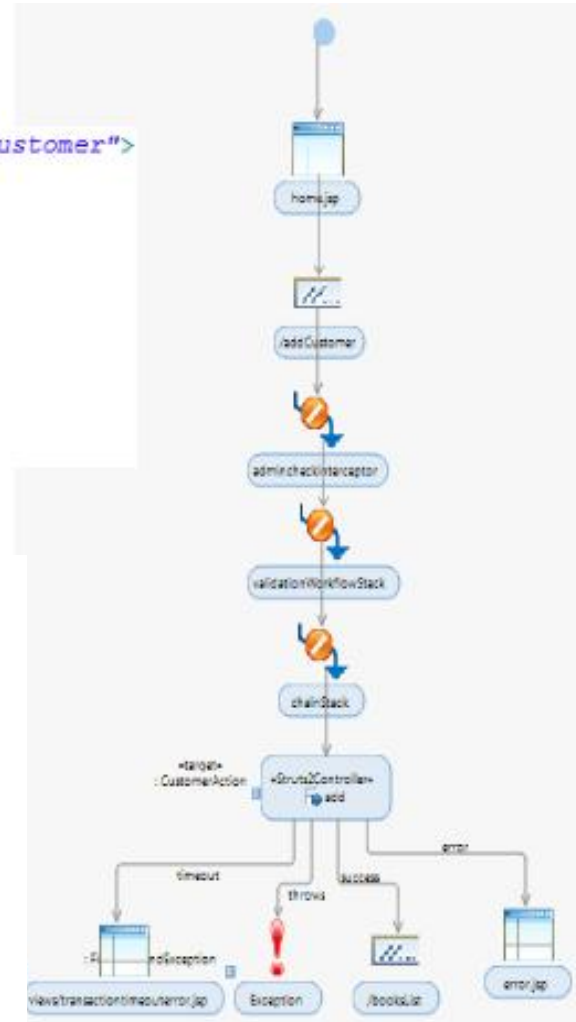
Annotation Generation

```
/**
 * <!-- 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

«Struts2Controller»
CustomerAction

- custID : int
- «RequiredStringValidator» name : String
- «DateRangeFieldValidator» dob : String
- «EmailValidator» email : String
- execute ()
- add ()
- delete ()
- update ()

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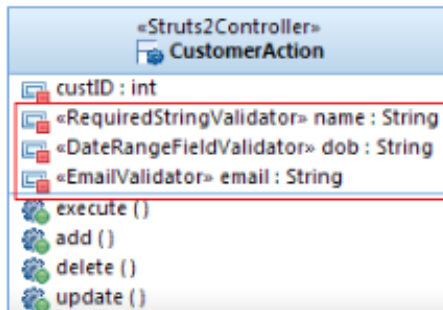
```java
@EmailValidator(message = "The email address entered is not valid", key = "key.emailError", shortCircuit = true,
public String getEmail() {
    // begin-user-code
    return email;
    // end-user-code
}
```
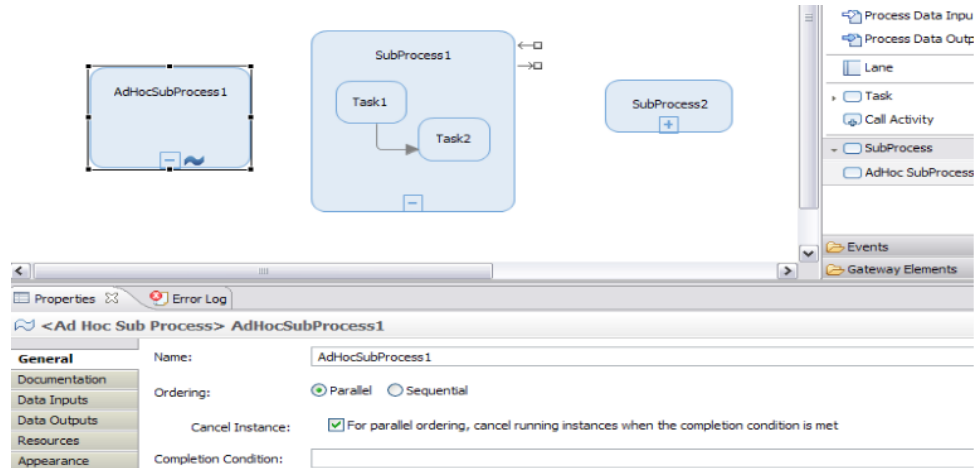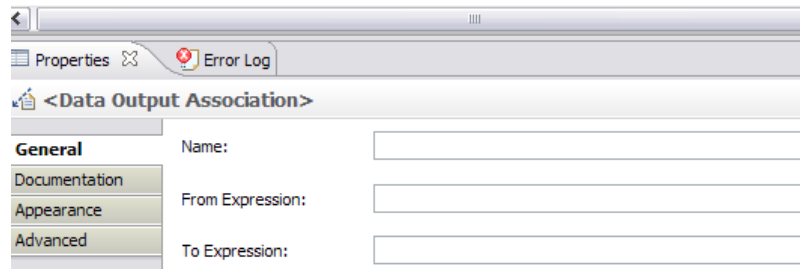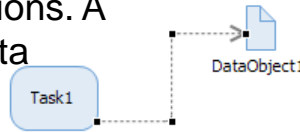
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BPMN Modeling Enhancements

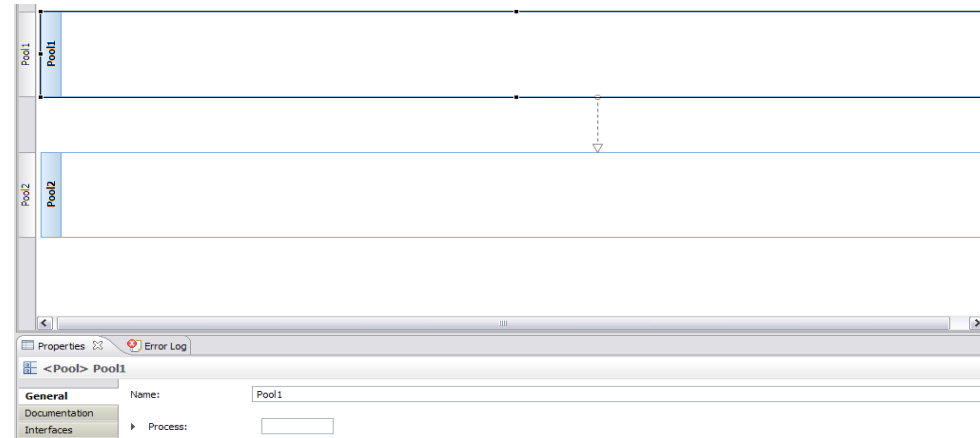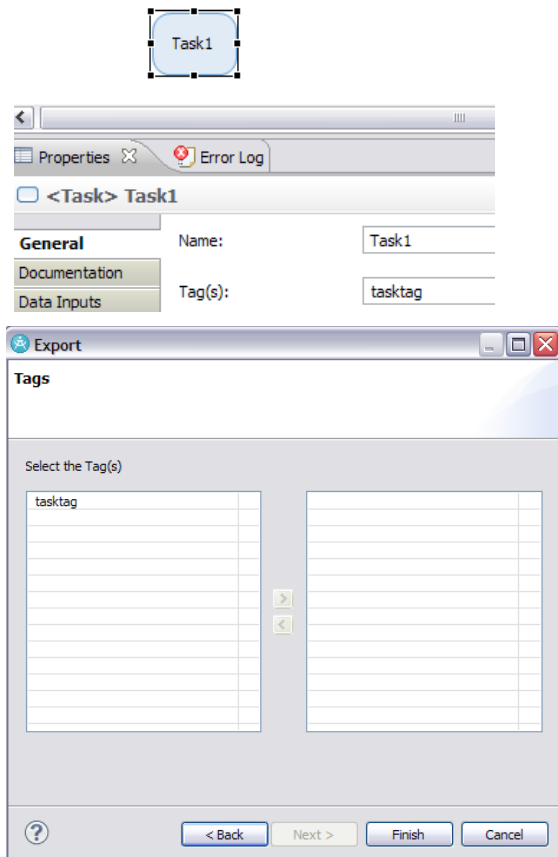– BPMN SubProcess and Adhoc SubProcess

– Assignments can be provided for data associations. A From and a To Expression can be added for data associations from Properties view
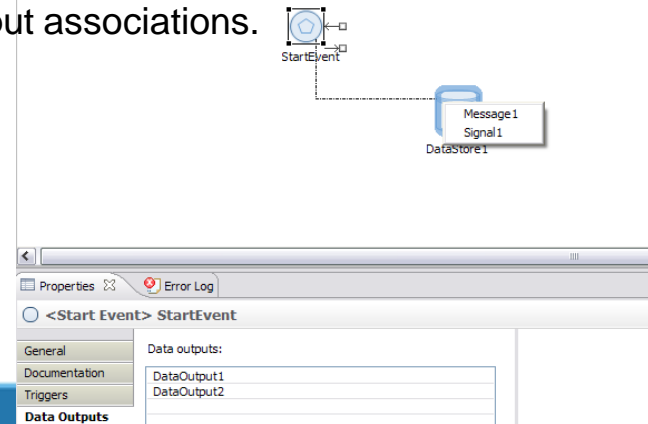
Tagging BPMN elements and scoped export of BPMN elements

– 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.
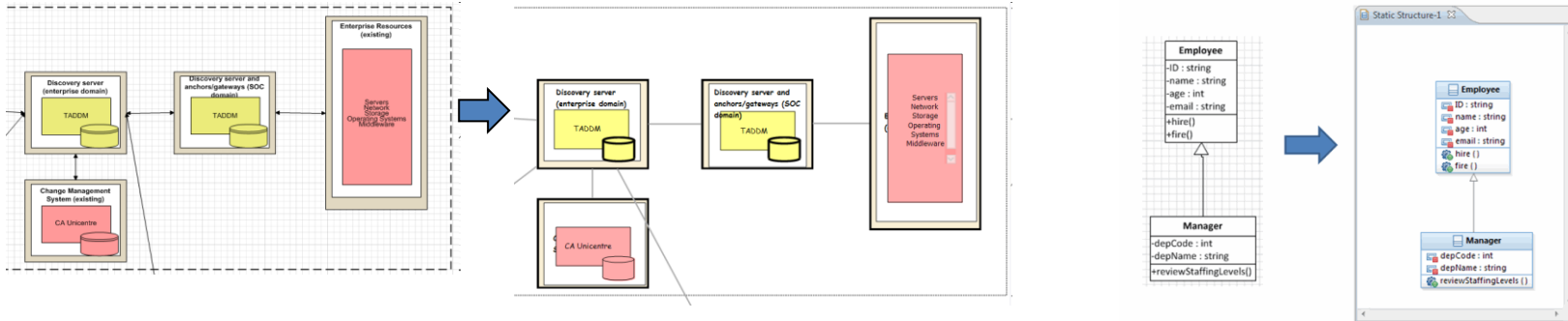
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- RSA 2011 Highlights
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  - BPMN
  - **Base Modeling**
    - **Microsoft® Visio Diagram Import**
    - Usability Enhancements
  - Extensions

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.

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  - **Base Modeling**
    - Microsoft® Visio Diagram Import
    - **Usability Enhancements**
  - Extensions

Usability Enhancements

- Incremental forward (`Ctrl-J`) an backwards (`Ctrl-Shift-J`) search in UML diagrams

  – Incremental search will highlight all matching elements in diagram
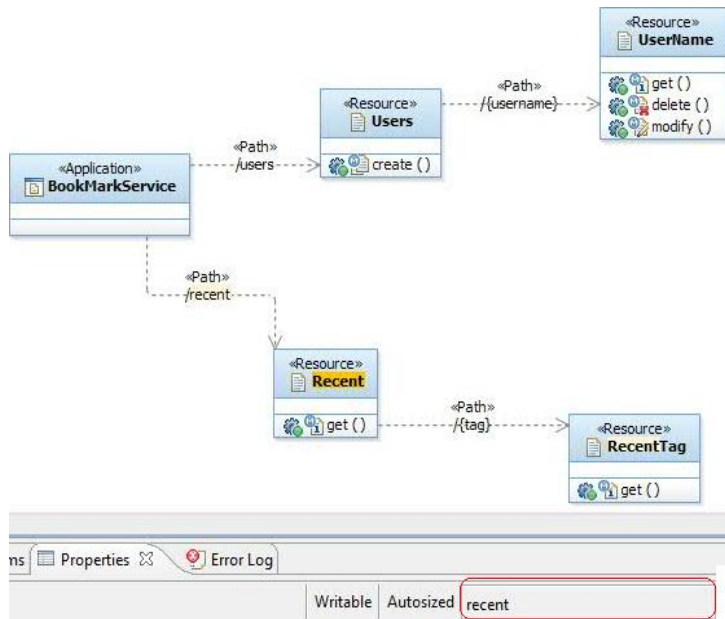
- `Navigate` To Diagram (Ctrl+Alt+V) PE action diagram

  – Multiple diagrams listed in search view
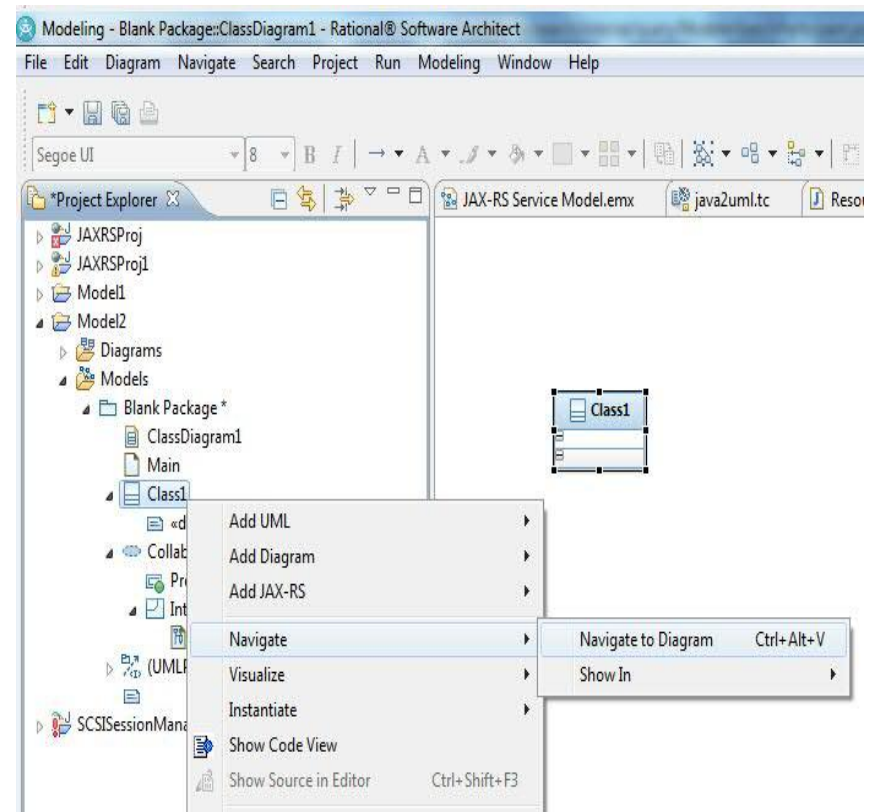
Usability Enhancements

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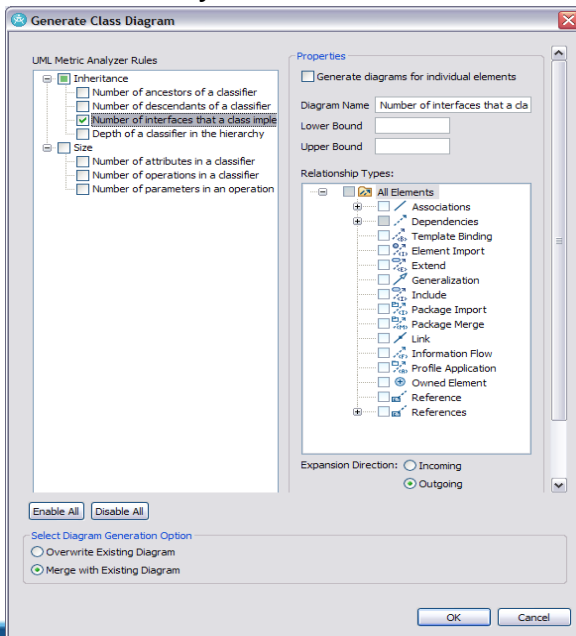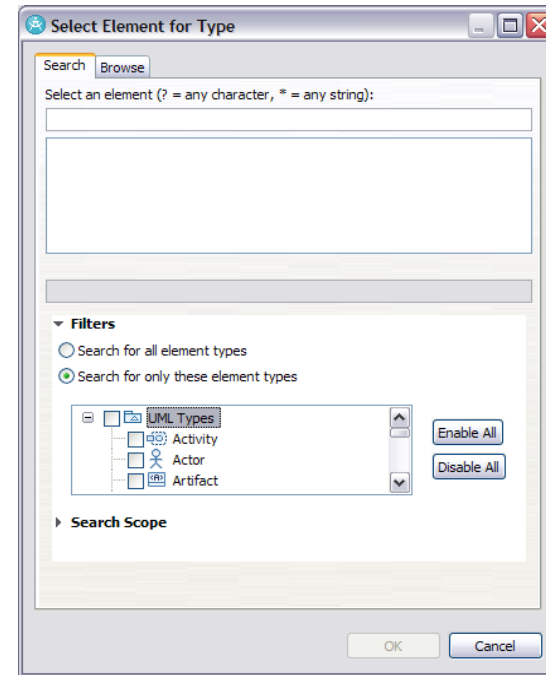
- Synchronized horizontal & vertical scrolling is now supported for diagram compare

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
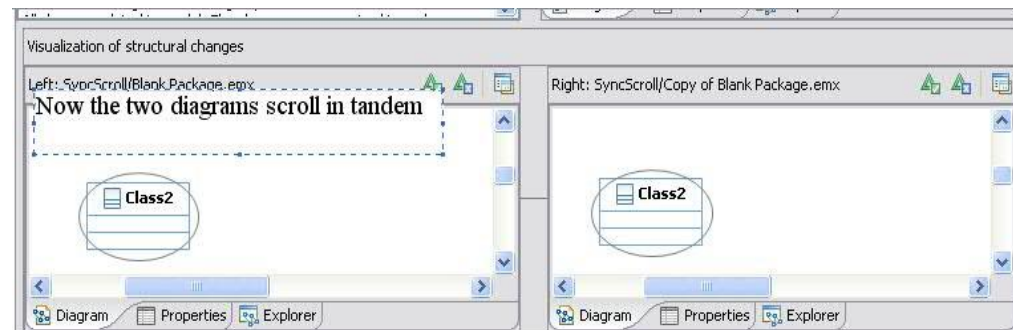- Ability to load multiple models and their sub-fragments at once
- Improved Search scope options
- Navigation support from properties view to container element
- Option to sort the Inheritance Explorer members in "inheritance order"

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- RSA 2011 Highlights

- **What's New in RSA 8.5**
  - MDD
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  - **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

IBM RSA-RTE Generated Application

Connexis (DCS)

CDM	CRM	Custom
UDP	TCP	Custom Protocol
Media	Media	Media

Connexis Architecture

```
<Class> «Capsule, Connexis...Pong::PingPongClient::Ping    Property Sets  ▼   ⇨ ⬚ ▼ ⬚

Property Values:                          <Class> «Capsule, Connexis Feature» PingPong:

Language:    C++  ▼
Group:       Connexis  ▼              (Overridden)    Apply Defaults

☐ Target Agent Functionality

☐ Locator Functionality

☐ CDM Transport

☐ CRM Transport

☑ RTD InitStatus Port

☐ RTD Metrics Port
```
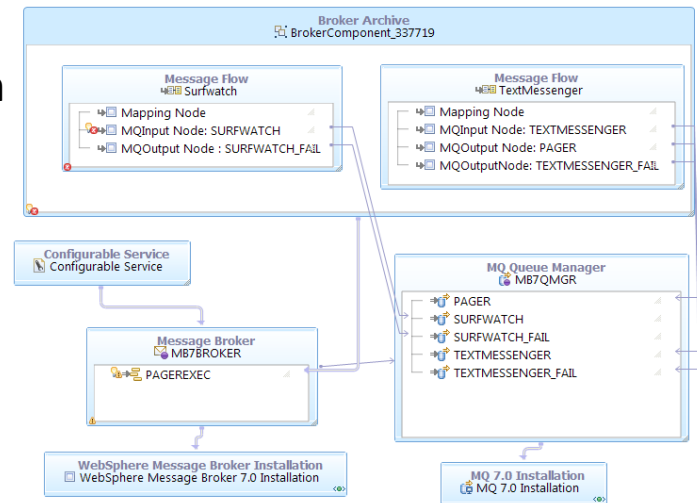
Deployment Planning and Automation enhancements

- Support for WebSphere MQ domain
  - Enhanced modeling support
    - Better validations etc.
  - Discovery of MQ content from TADDM server
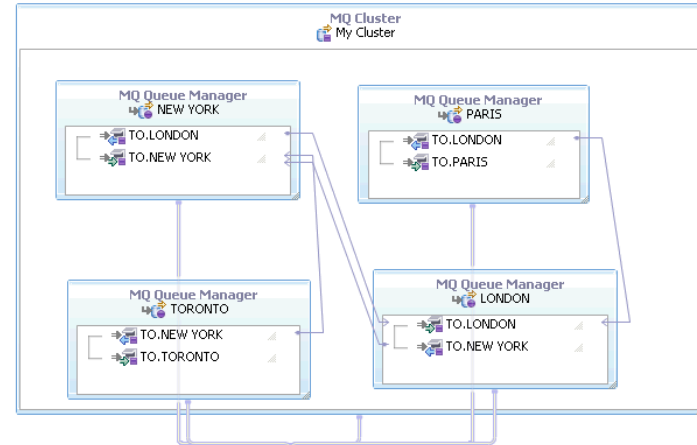
- Support for WebSphere Message Broker domain
  - Modeling support
    - Templates and Palette entries
    - Custom validations and resolutions
  - Discovery of MB content from TADDM server

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/**

www.ibm.com/software/rational

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