What's New in Rational Software Architect

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Agenda

- **Highlights from RSA 8.0**

- What's New in 8.0.1, 8.0.2 and 8.0.3

- RSA and Collaborative Design Management

IBM Rational Software Architect v8.0: Highlights!

- **Packaging and Install Flexibility**
- **Platform and Standards Updates**
  - ‣ BPMN 2, SoaML 1.0, UML 2.2
  - ‣ Eclipse 3.6
  - ‣ JEE 6, VS 2010 / .NET 4
- **Usability Improvements**
  - ‣ Themes, layouts, layers, transparency, rich text, moveme feedback
- **Better integration of BPMN2 & SoaML**
- **Rational SOMA 2.9 practice configuration**
- **Model Execution/Simulation**
  - ‣ UML Activity, Interaction, State Machine, Action Language
  - ‣ Deployment topology trace
- **Additional MDD Capabilities**
  - ‣ WSDL → UML
  - ‣ BPMN → BPEL
  - ‣ UML ←→ VB.NET
  - ‣ UML Action Language
- **Improved performance**
- **Cloud Client, WAS tools for Cloud**

4
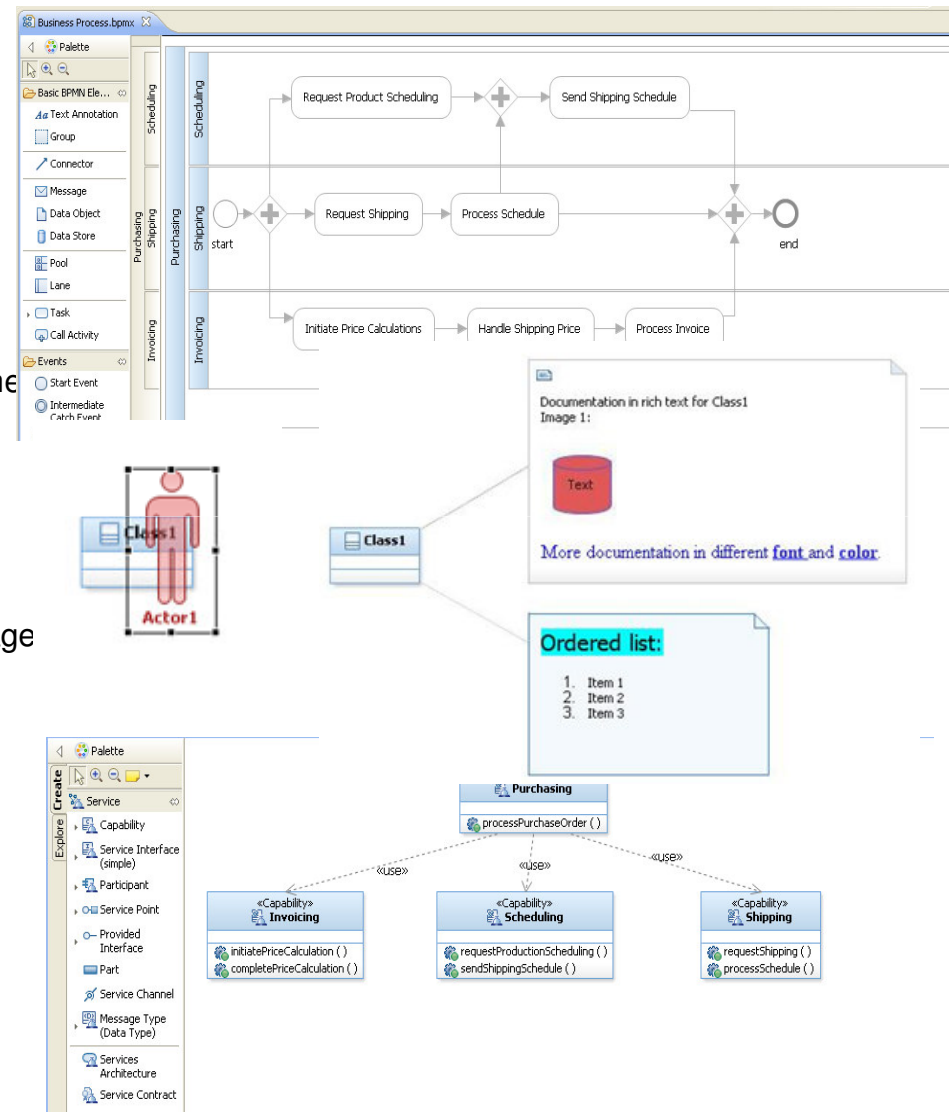
Agenda

- Highlights from RSA 8.0

- **What's New in 8.0.1, 8.0.2 and 8.0.3**

  - **Modeling Platform**
    - 64 Bit Support
    - Sketching
    - Convert to New Element
    - Rich Text handling improvements
  - UML Modeling
  - BPMN2 Modeling
  - Model Driven Development
  - Simulation
  - Deployment Planning and Automation

- RSA and Collaborative Design Management

64 Bit Support!

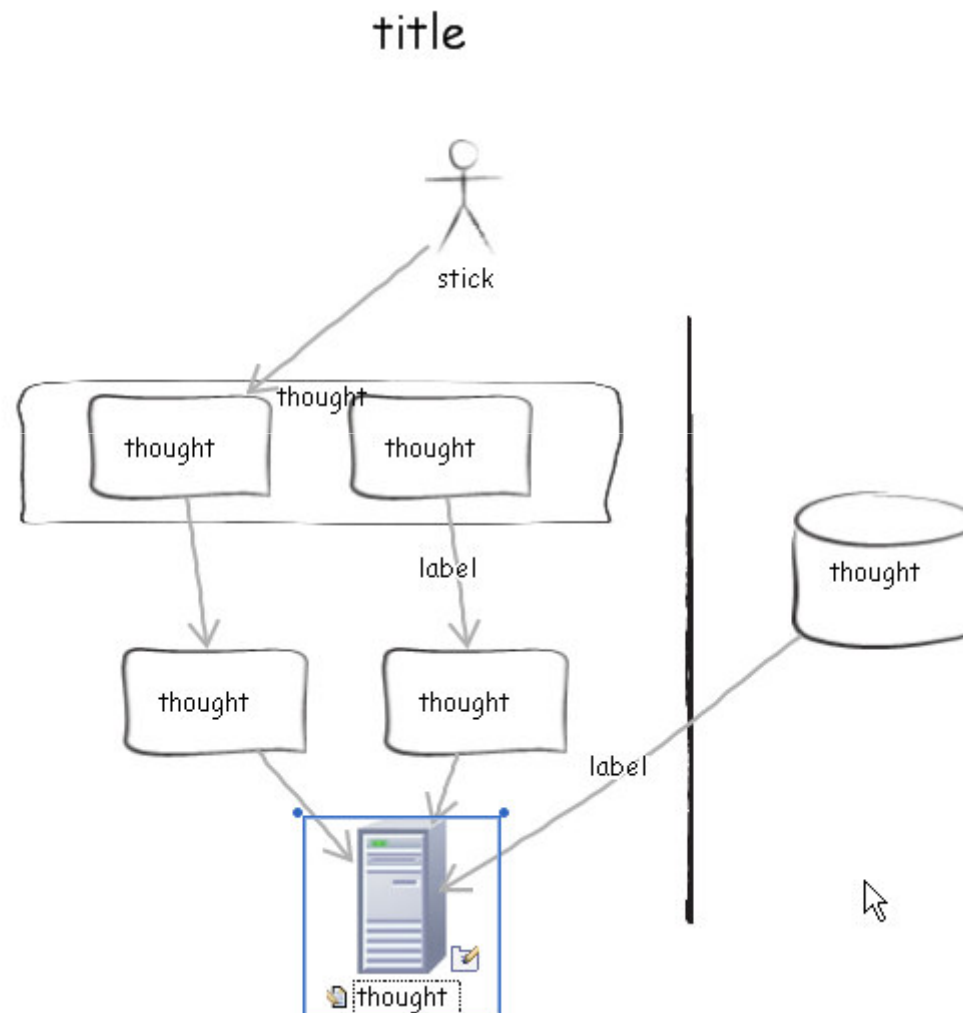- Benefits:
  - ▸ Extended heap size
  - ▸ Manage larger models

Example:

Model size – repeatedly duplicate a small sized model (200 classes, 100 packages, 200 components and 600 diagrams) until there is no memory left
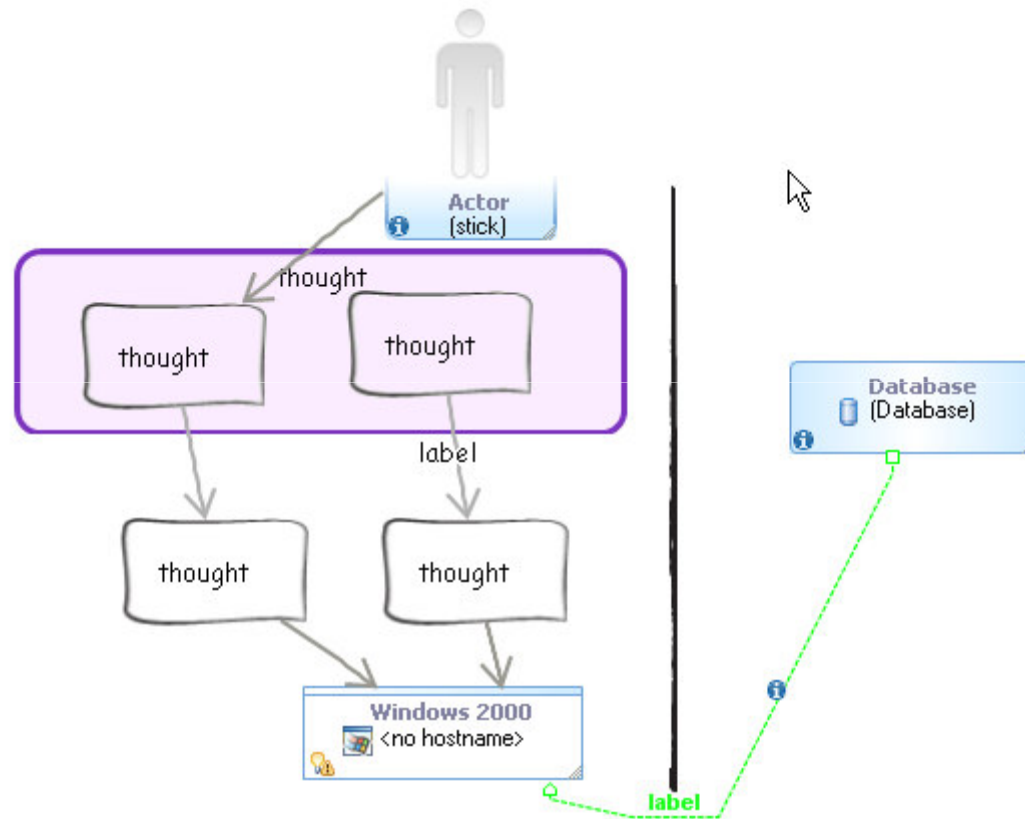
Product & Machine	Heap setting	# Elements	# Packages	# Diagrams
RSA 8.0.3 32 Bit **8GB RAM**	-Xmx**2000m**	135200	16900	101400
RSA 803 64 Bit **8GB RAM**	-Xmx**4000m**	396800	49600	297600

*NOTE, not all 8GB is available due to system requirements (e.g., OS)

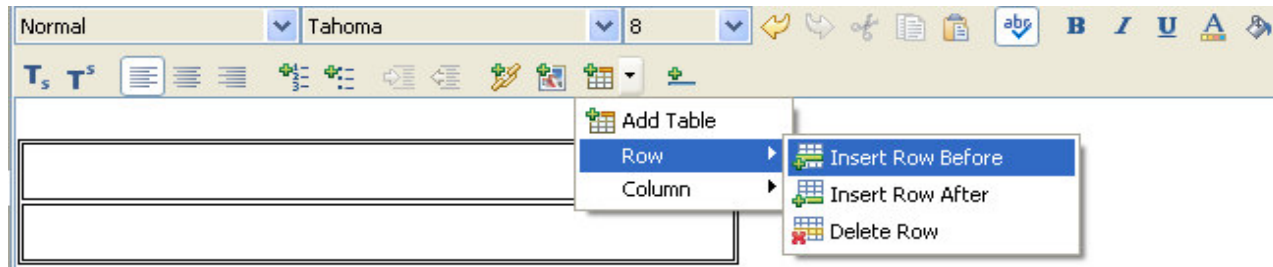# RSA Sketcher capability lets you quickly jot down a design….
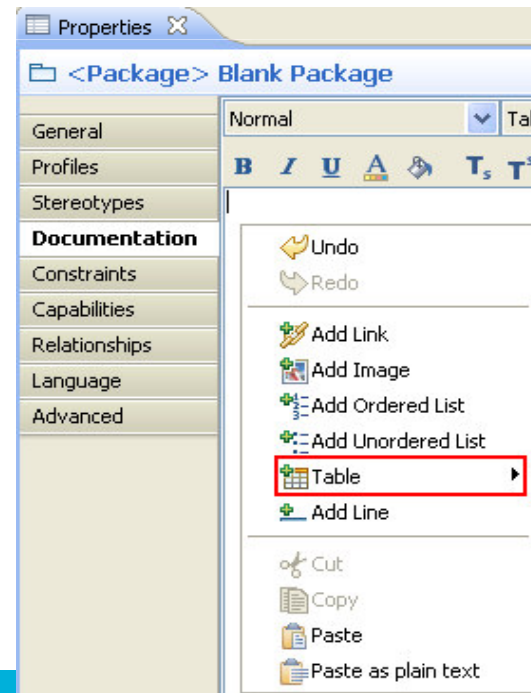
…before filling in the details…

Refactor: Convert to New Element

- For conversion of semantic elements:
  - ▸ Can choose scope of change: workspace (default), project or model.
  - ▸ Can un-select resources that would be affected by this operation.
  - ▸ If data loss occurs, like relationships that had to be deleted, or features that are not supported by the new element, it can be reviewed.

Rich Text Table support

- Added support for adding and removing columns and rows to tables

- Rows and columns can be inserted before and after the current selection

- Actions are in a toolbar dropdown menu and via the context menu

https://www.ibm.com/developerworks/wikis/display/RSA/Home

Sketching:
   https://www.ibm.com/developerworks/wikis/display/RSA/RSA+v8+-+What%27s+new#RSAv8-What%27snew-sketch

Convert-to & Rich Text:
   https://www.ibm.com/developerworks/wikis/display/RSA/RSA+v8+-+What%27s+new#RSAv8-What%27snew-usability

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- **What's New in 8.0.1, 8.0.2 and 8.0.3**
  - ▸ Modeling Platform
  - ▸ **UML Modeling**
    - **UML Enhancements**
    - **Model Management**
  - ▸ BPMN2 Modeling
  - ▸ Model Driven Development
  - ▸ Simulation
  - ▸ Deployment Planning and Automation

- RSA and Collaborative Design Management

UML Enhancements

- Added dot notation for UML Associations
  - ▸ Dot notation shows navigability of an association end.

- Added support for decorating attributes with their properties
  - ▸ Attributes and roles on the diagram can now display qualifier information such as whether they are static, ordered, non-unique, etc.
  - ▸ Attributes and roles can also display the redefined and subsettable properties assigned to them.
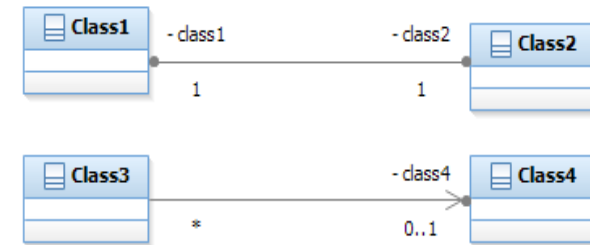
UML 2.3 IsConjugate Support

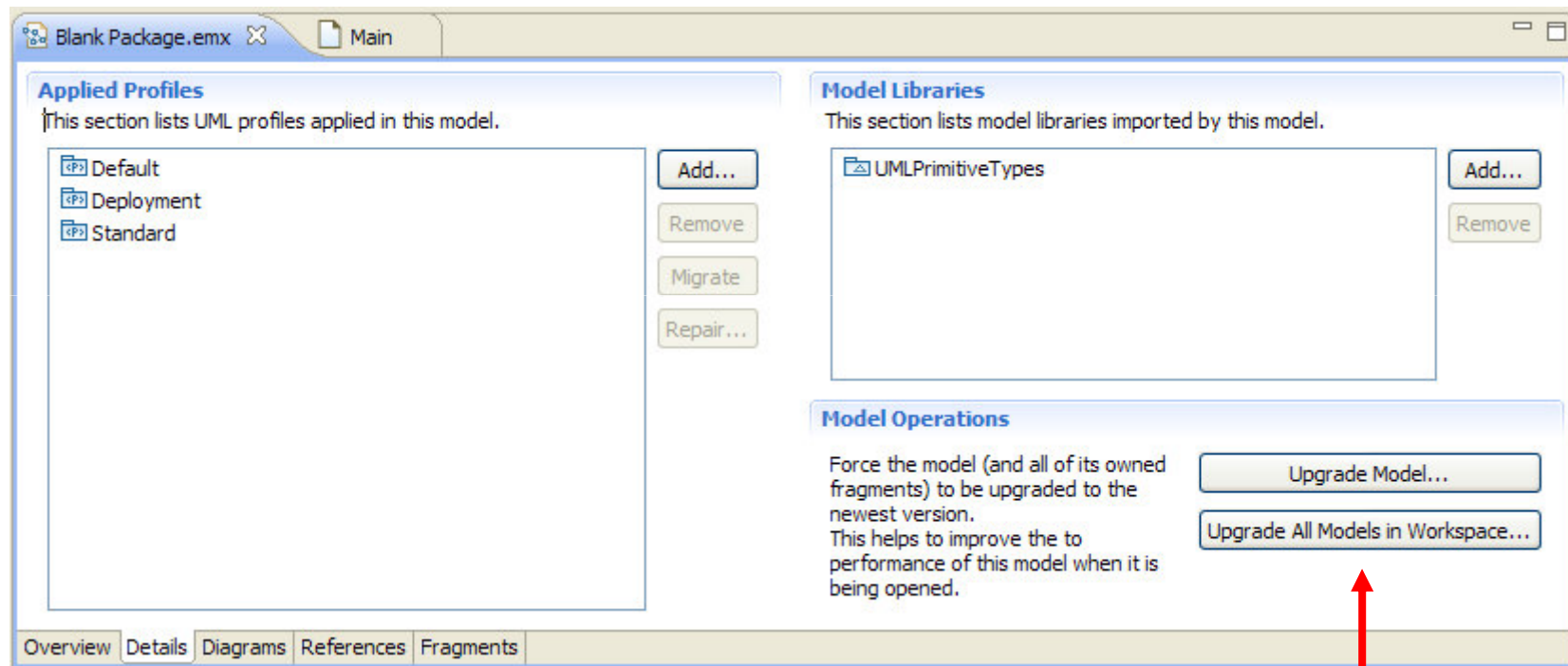- Extensions to Composite Structure and Component Diagrams to support port conjugation

UML UI Improvements

- Smart default value and value fields for literals
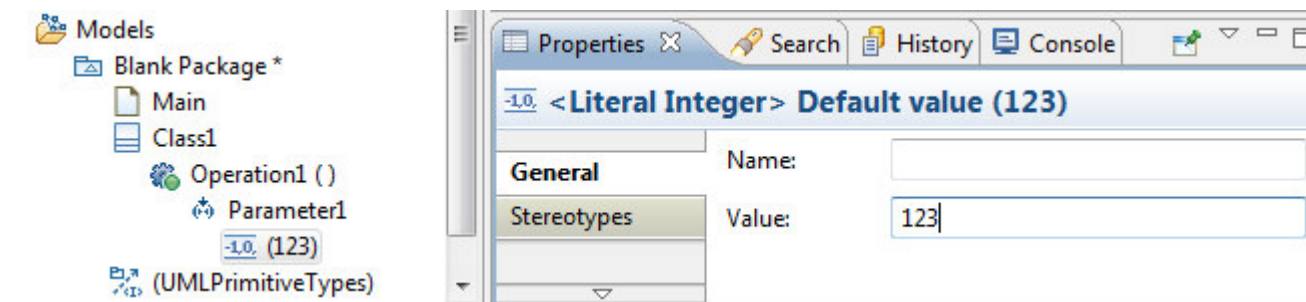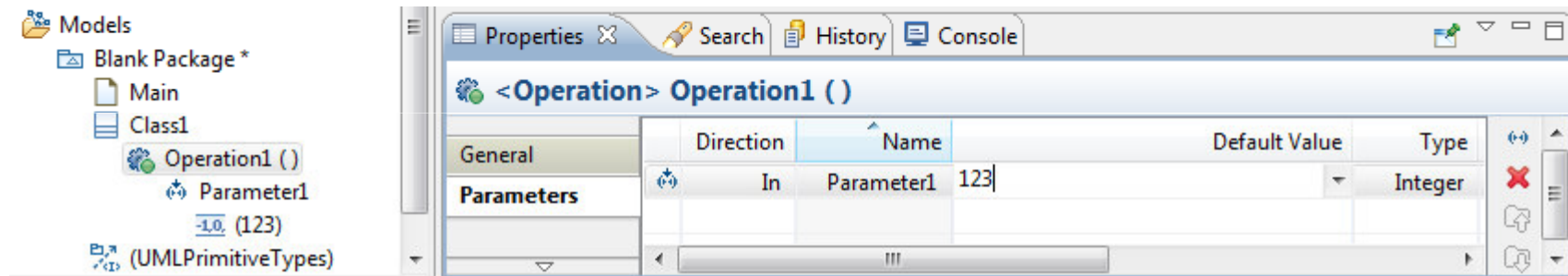
UML Model Management: Bulk Model Upgrade

- Upgrading UML models from previous RSA versions is now easier. You can now upgrade all models in the workspace at once.

- User will be notified when the upgrade is complete.

UML MM: Relationship Repair

- The existing Unresolved Relationships decoration can now be disabled

- New "Relationships must connect to correct semantic elements" validation rule

  ▸ Relationships will be annotated after validation is run

  ▸ A quick fix is provided for the new rule.

  ▸ The quick fix allows the user to select a scope to find similar problems to fix in a single operation
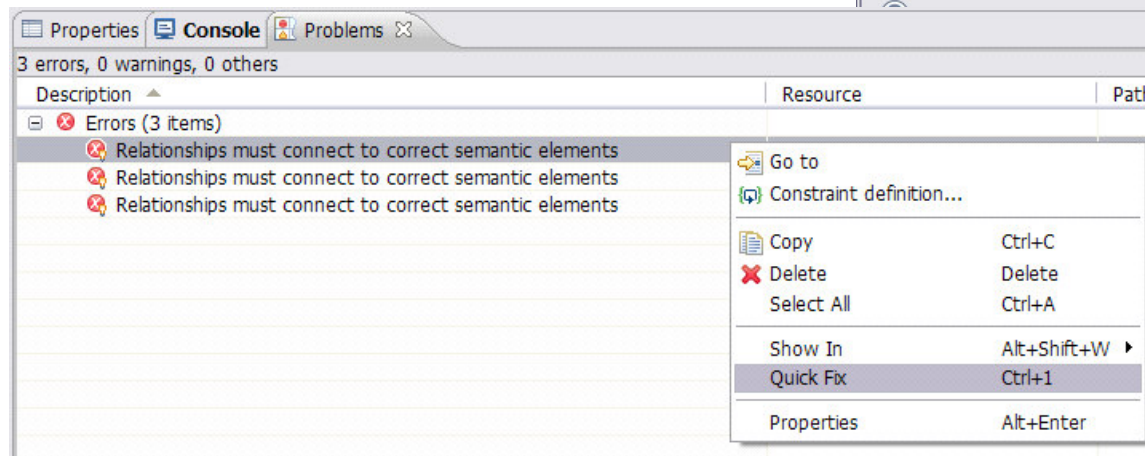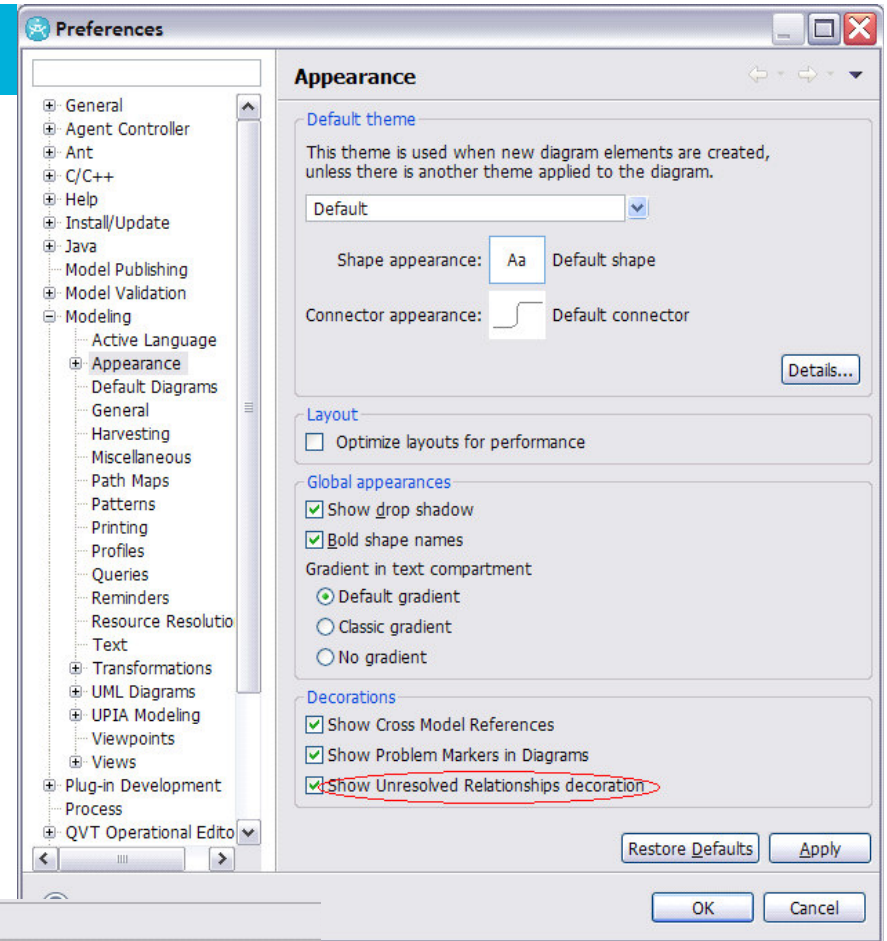
UML MM: Richtext Compare Merge support

- Compare merge now includes a Rich Text sub-merge capability
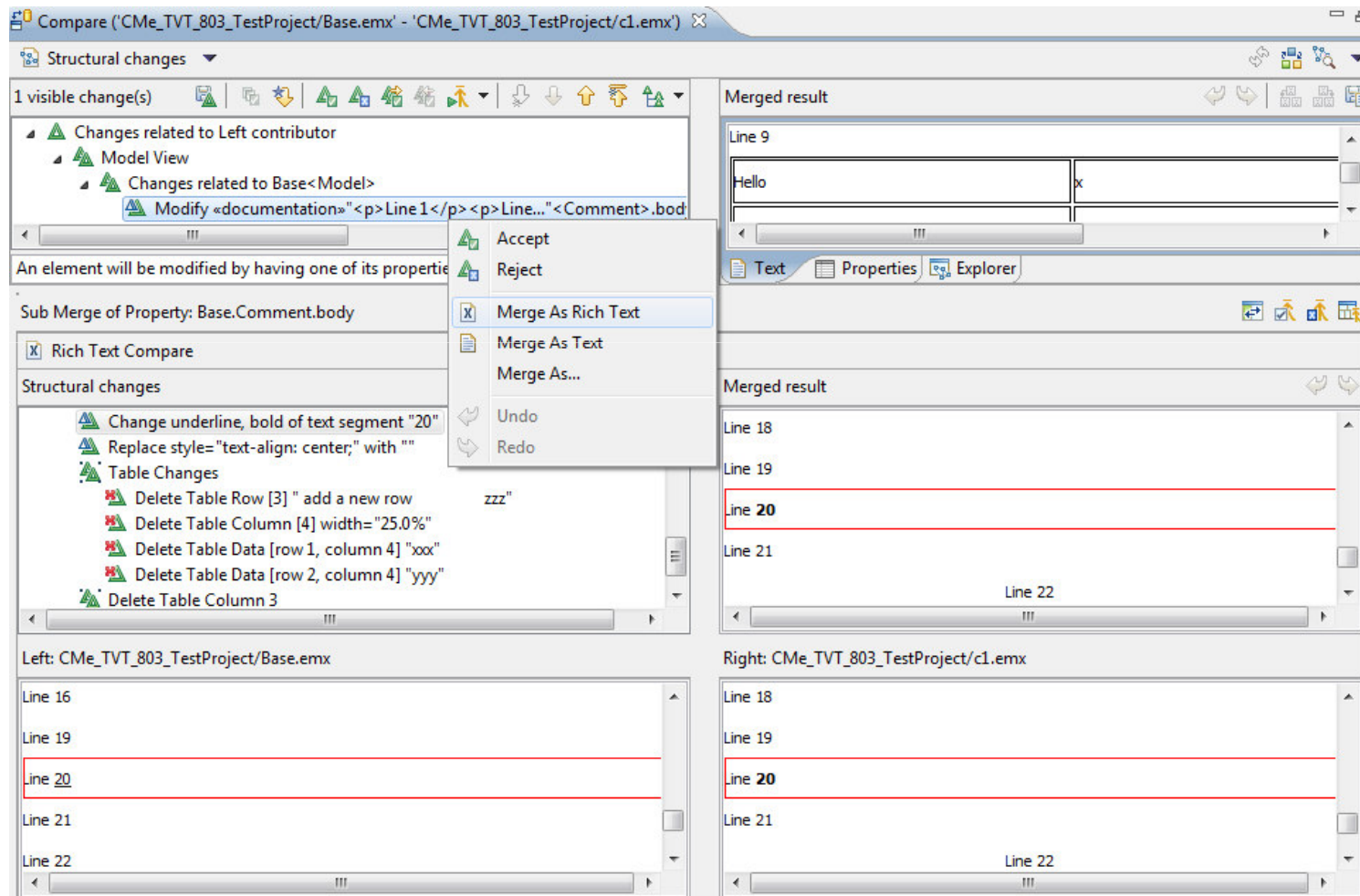
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- **What's New in 8.0.1, 8.0.2 and 8.0.3**

  - ▸ Modeling Platform

  - ▸ UML Modeling

  - ▸ **BPMN2 Modeling**

  - ▸ Model Driven Development

  - ▸ Simulation

  - ▸ Deployment Planning and Automation

- RSA and Collaborative Design Management

# BPMN 2.0 Standard Import and Export

- RSA now supports standard BPMN 2.0 format

- RSA can import standard BPMN 2.0 files generated from other tools
  - ▶ Supports a single BPMN file, a folder or project that contains multiple BPMN files
  - ▶ Preserves the wsdl/xsd linkages
  - ▶ Preserves the file structure

- RSA can export standard BPMN 2.0 files that can be consumed by other tools
  - ▶ Can handle single bpmx model, a folder / a project that contains multiple bpmx model
  - ▶ Uses WSDL/XSD transformation to generate the required artifacts from dependent UML elements
  - ▶ Preserves the file structure

- The BPMN Import/Export is built using RSA's Model-to-Model transformation framework
  - ▶ Can be extended through transformation extensions

Integration between BPMN and UPIA

- **New functionality to map BPMN process model to UPIA elements**
  - ▸ **needs BPMN and UPIA installed**
  - ▸ **BPMN: process, lane, task, call activity, service task, data association**

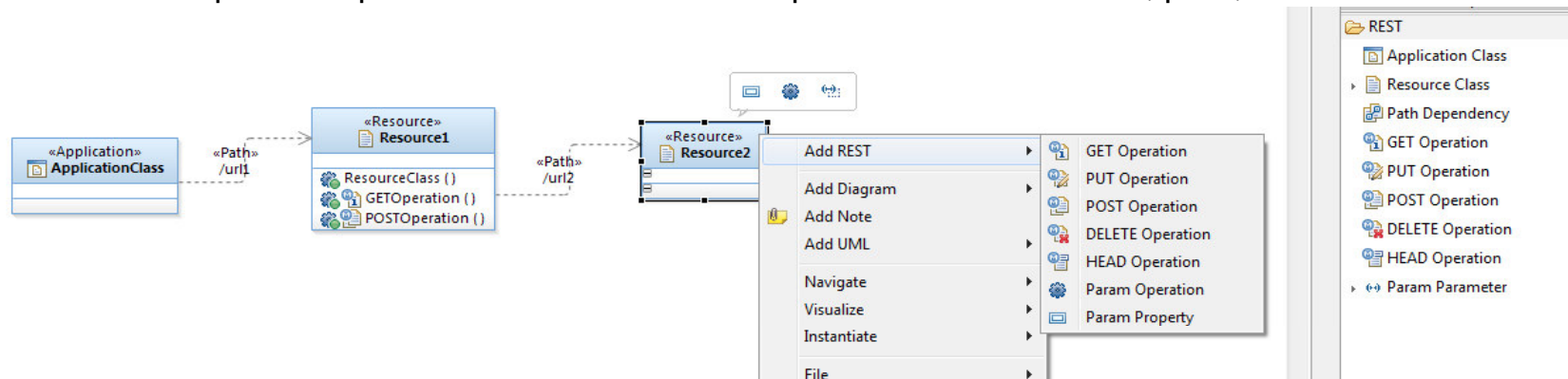- **Accessible from Project Explorer or diagram**
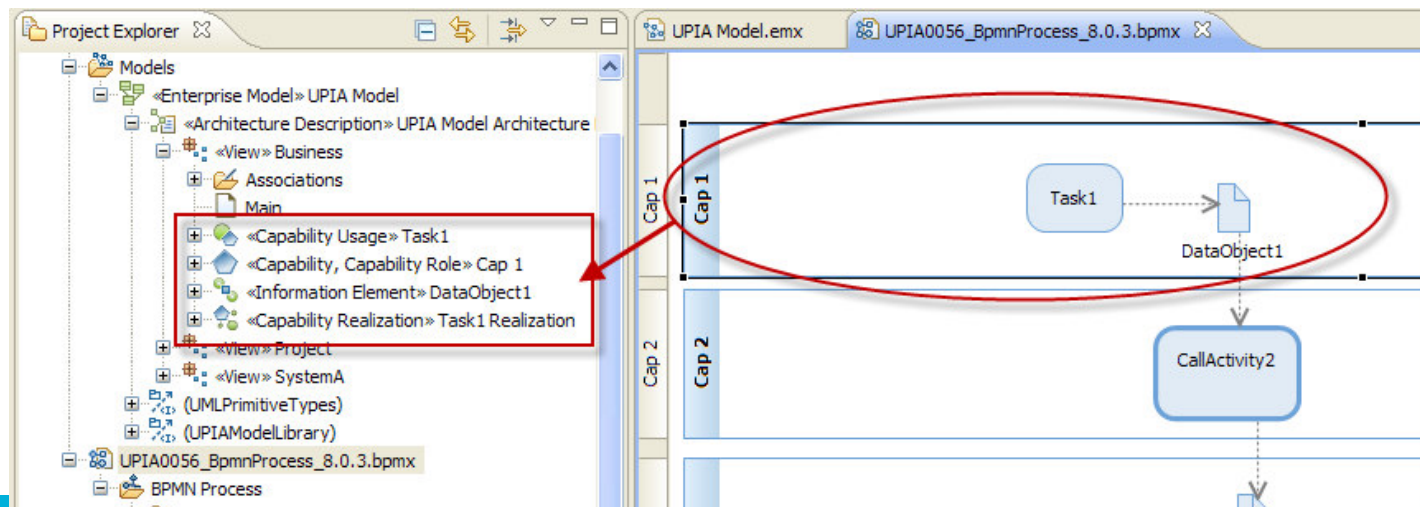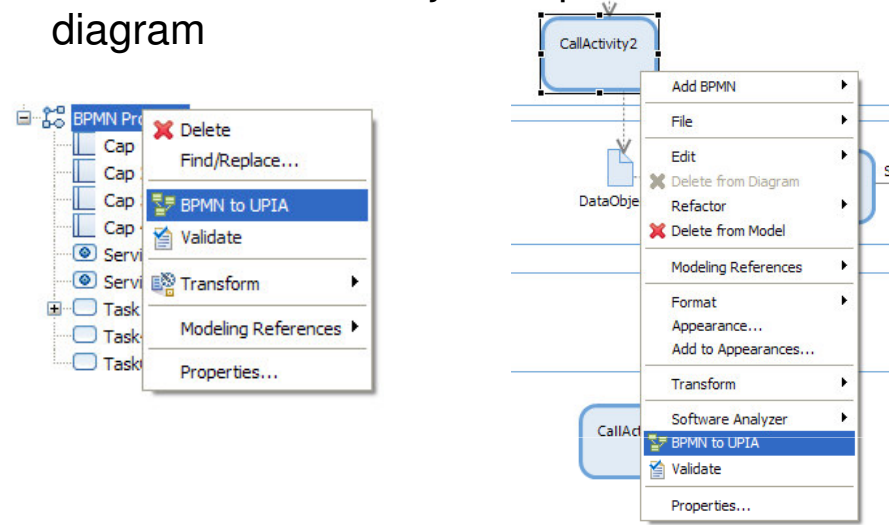
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    - ▶ Modeling Platform Improvements
    - ▶ UML Modeling
    - ▶ BPMN2 Modeling
    - ▶ **Model Driven Development**
        - REST Modeling
        - JAX-RX Modeling and transformation
        - Struts Modeling and transformation
        - UAL Support Improvements
    - ▶ Simulation
    - ▶ Deployment Planning and Automation

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REST Modeling

- Model web services according to the Representational State Transfer (REST) architecture style.

- The REST profile captures REST domain concepts such as: resources, path, REST methods.

REST Support in sequence diagrams

- URI, headers and message bodies can be specified on Sequence diagrams
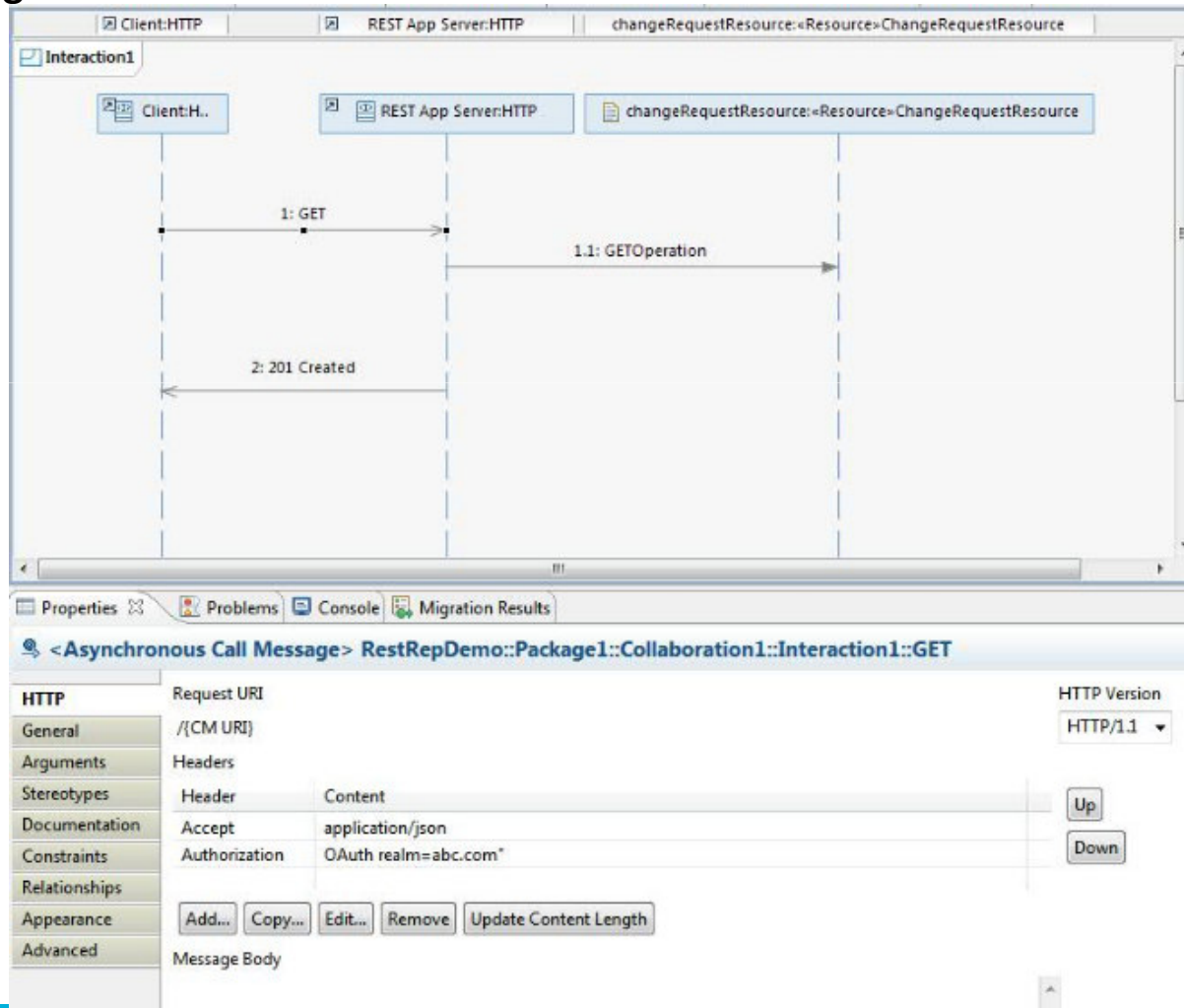
BIRT reports for REST services

- Includes a custom BIRT template to generate an API report from the REST model

REST Resouce Report

Resource	ChangeRequestResource
URL	/{CR URI}
Description	Change Management resources define the change requests, activities and tasks of the software delivery lifecycle. They represent individual change requests, activities and tasks, along with their relationships to other shared resource types such as project, category, release and plan. The intent of this specification is to define the set of HTTP-based RESTful interfaces in terms of HTTP methods: GET, POST, PUT and DELETE, HTTP response codes, mime type handling and resource formats. The capabilities of the interface definitions are driven by key integration scenarios and therefore don't represent a complete setup of operations on resources or resource types. The resource formats and operations may not match exactly the native models supported by change management service providers but are intended to be compatible with them. The approach to supporting these scenarios is to delegate operations, as driven by service provider contributed user interfaces, as much as possible and not require a service provider to expose its complete data model and application logic.

Parameters

Name	Type	Default Value
oslc_cm.pageSize	QueryParam	

Return Codes

Code	Content	Description
200 OK	Change Request resource	A representation of the change request resource
404 Not Found	Error message	Either the root URI is invalid or the service can't locate the specified change request resource
405 Method Not Allowed	Error Message	Server can not fulfill the request due to it's Accept headers
410 Gone	Error Message	The resource no longer exists in the system

Method	Description
PUT	Update the referenced change request resource with the request's body.

Updating a change request resource involves replacing the current value with the value supplied.

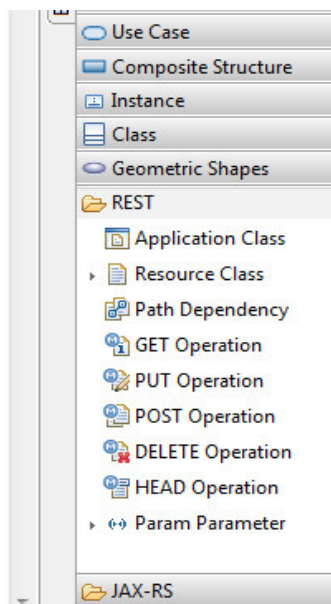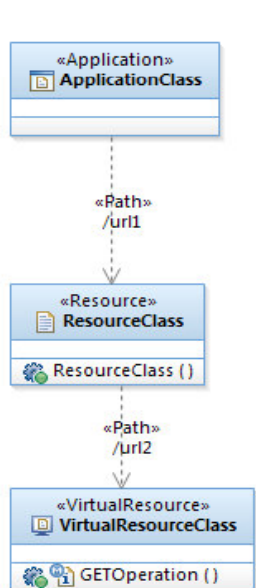|	
Produces	application/x-oslc-cm-change-request+xml application/x-oslc-cm-change-request+json
Consumes	application/x-oslc-cm-change-request+xml

Parameters

Name	Type	Default Value
oslc_cm.query	QueryParam	
oslc_cm.properties	QueryParam	
oslc_cm.pageSize	QueryParam	

JAX-RS support for modeling and transformation

- Modeling support for JAX-RS implementation has been added.

- The "JAX-RS" profile provides implementation-specific information to the model.

- UML-to-JAX-RS and JAX-RS-to-UML transformation support has been added. Both the transformations have to be configured as extensions on the Java transforms.

MDD Support for Struts in RSA

- Architects can communicate Struts application design and configuration using UML Class diagrams

- Code, web deployment descriptors and Struts configuration can be generated for Struts application

- The generated code and deployment descriptors can be consumed by RAD

- Support for Struts v 1.38

- New 'Struts Profile' for modeling Struts elements

- Code Generation

- Reverse Engineering

Support for Struts Modeling

- The Struts tooling enables developers to quickly model their application:
    - ▸ Struts Palette
    - ▸ Menu Action
    - ▸ Custom Property Sheet
    - ▸ Struts Model Template
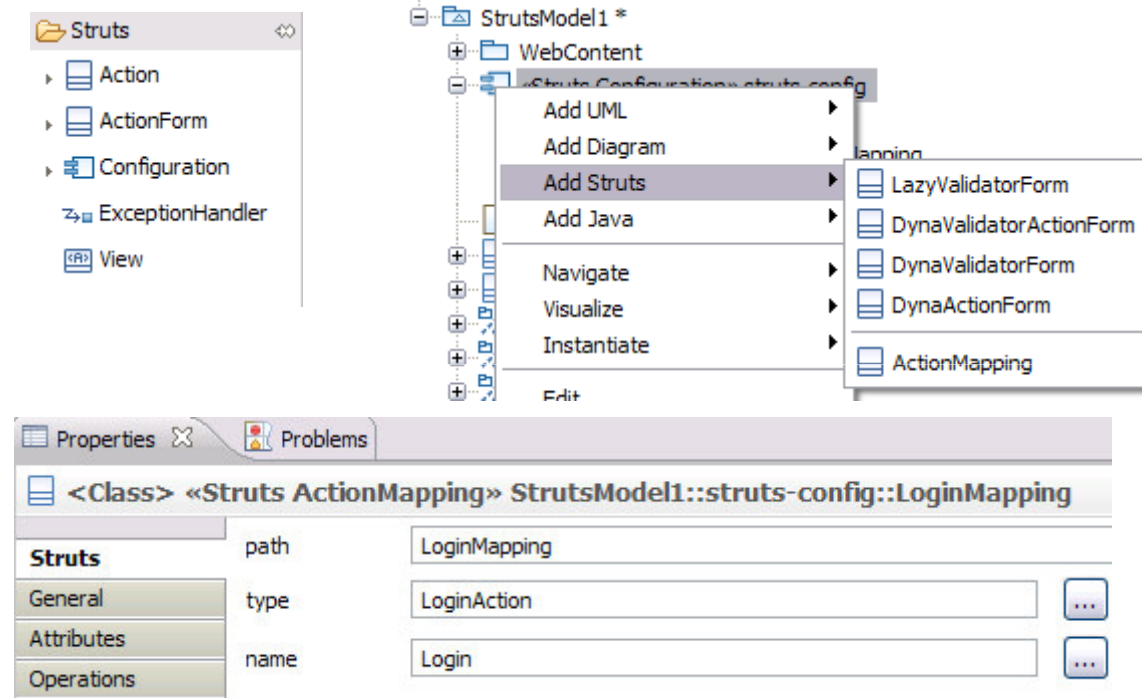
- The Struts Profile allows users to model Struts concepts such as:
    - ▸ Actions, Action Forms, Exception Handlers
    - ▸ Struts Configuration, Form Bean, Action Mappings
   - ▸ Local & Global Exception Handlers, Forwards

Struts Profile

- The Struts Profile allows users to model Struts concepts such as:

  ▸ Actions, Action Forms, Exception Handlers

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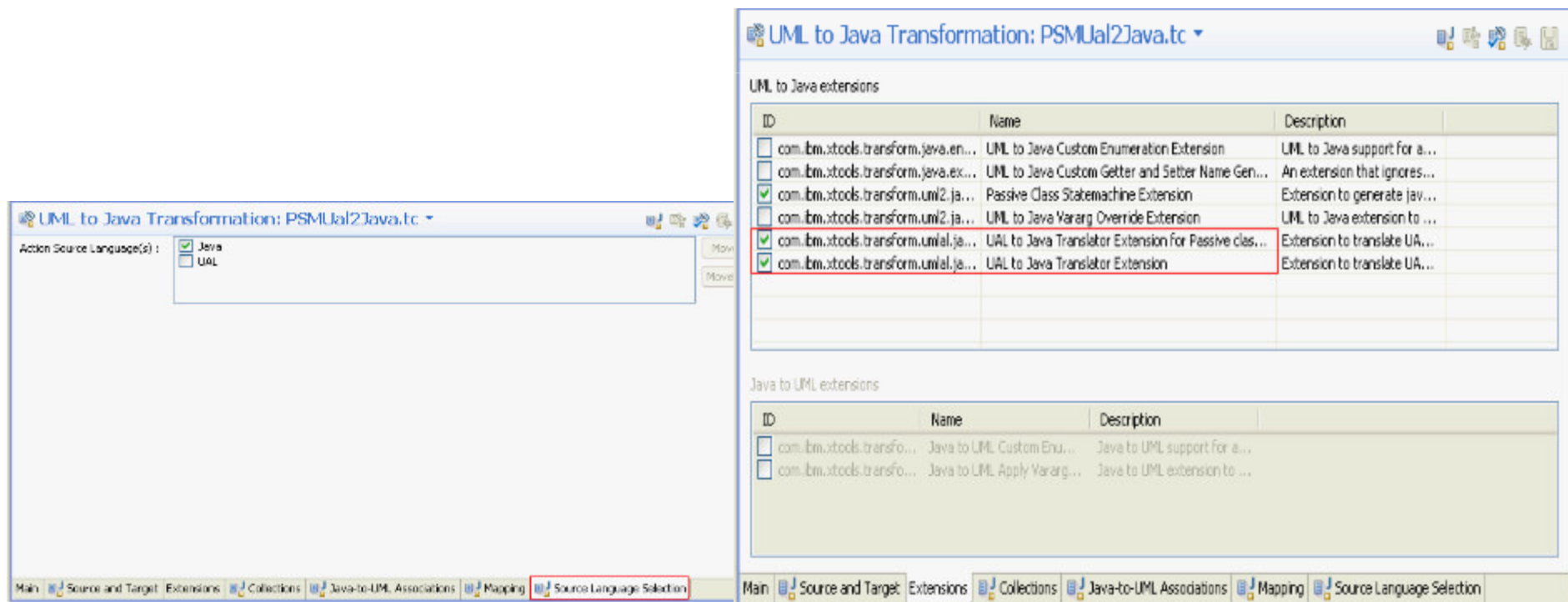 ▸ Local & Global Exception Handlers, Forwards
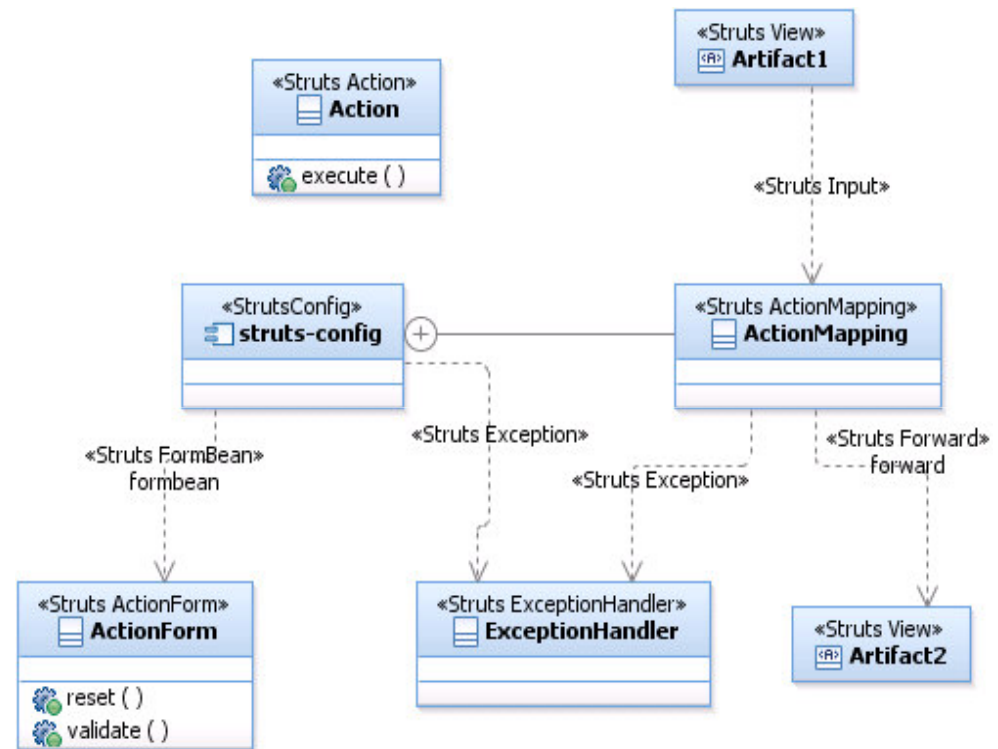
Struts Transformation

- Extensions to UML-to-Java & Java-to-UML transformation

- UML to Java Struts extension: To generate/update Struts configuration, web deployment descriptor

- Struts to UML extension: Reverse engineer code and struts configuration to UML model
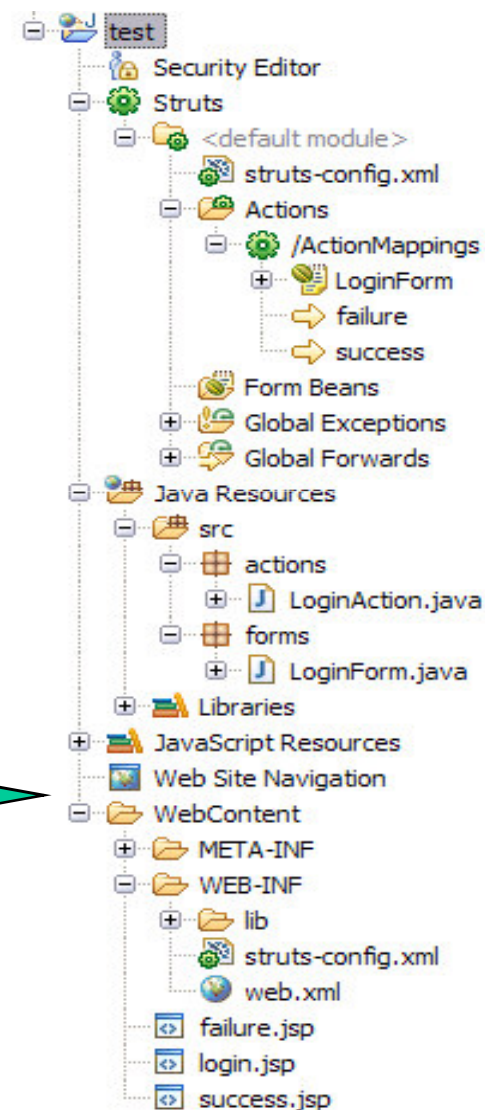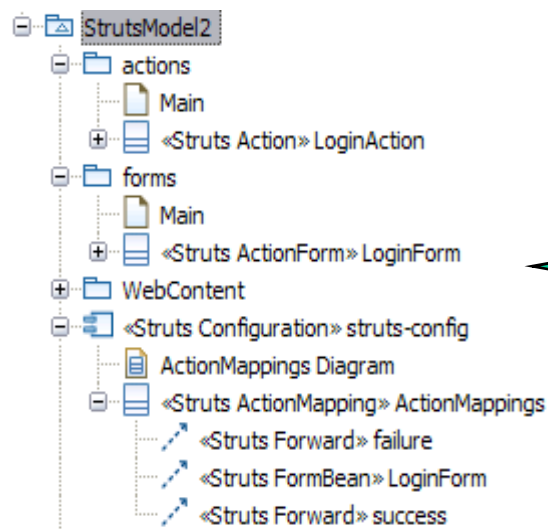
UML Action Language Improvements

- Support for UAL generation in Java Transformation, including passive state machine generation

- Support UAL Step commands, breakpoint halts

- Line level mapping markers between UAL code snippets and generated Java code

https://www.ibm.com/developerworks/wikis/display/RSA/Home

REST: https://www.ibm.com/developerworks/wikis/display/RSA/RSA+v8+-+What%27s+new#RSAv8-What%27snew-rest
1. Create a REST based application
    1. Model the structure (classes, resources, GET, PUT, POST, DELETE)
    2. Model the behaviour (HTTP calls)
2. Create REST API: define input/output types, return codes, etc

Struts: https://www.ibm.com/developerworks/wikis/display/RSA/RSA+v8+-+What%27s+new#RSAv8-What%27snew-struts
1. Demonstrate available tooling
2. Model a struts application
3. Visualize a struts model & create action mappings
4. Code generation
5. Reverse engineering

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  ▸ Modeling Platform

  ▸ UML Modeling

  ▸ BPMN2 Modeling

  ▸ Model Driven Development

  ▸ **Simulation**

  ▸ Deployment Planning and Automation

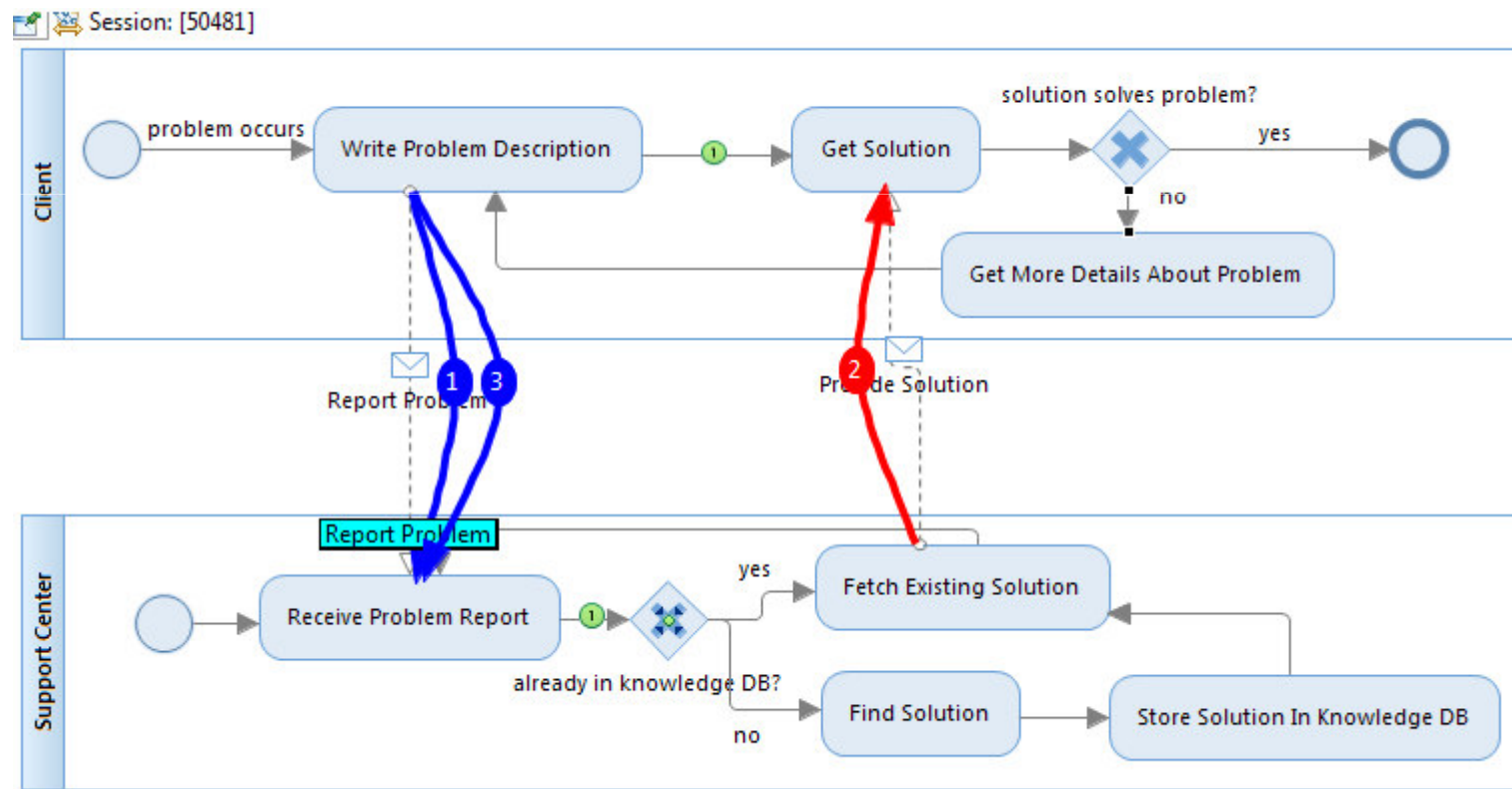- RSA and Collaborative Design Management

BPMN Simulation

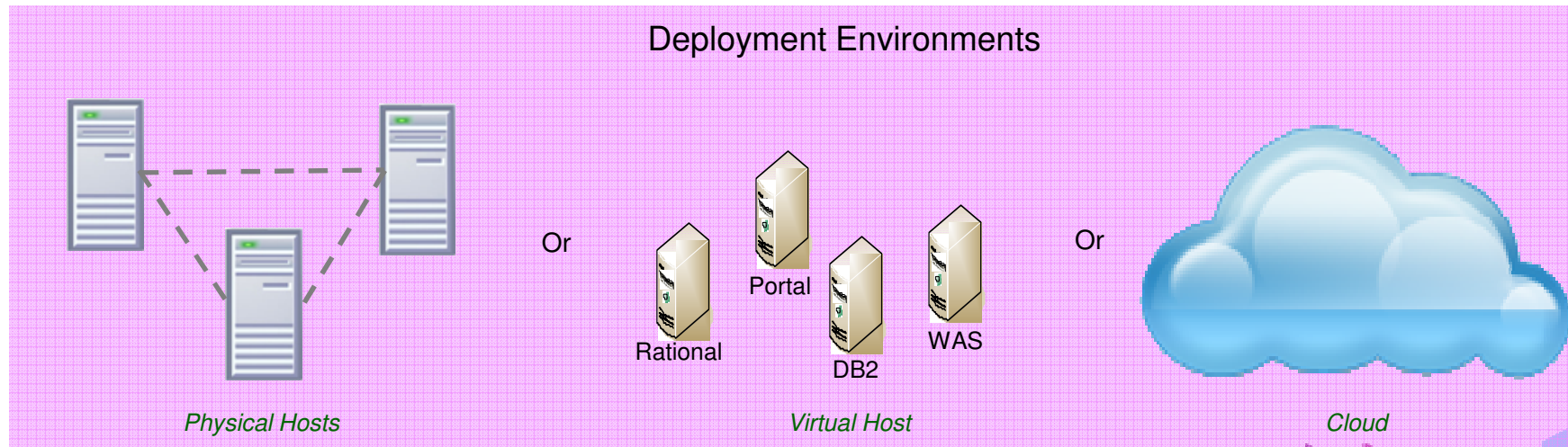- Users can now execute their BPMN process models.
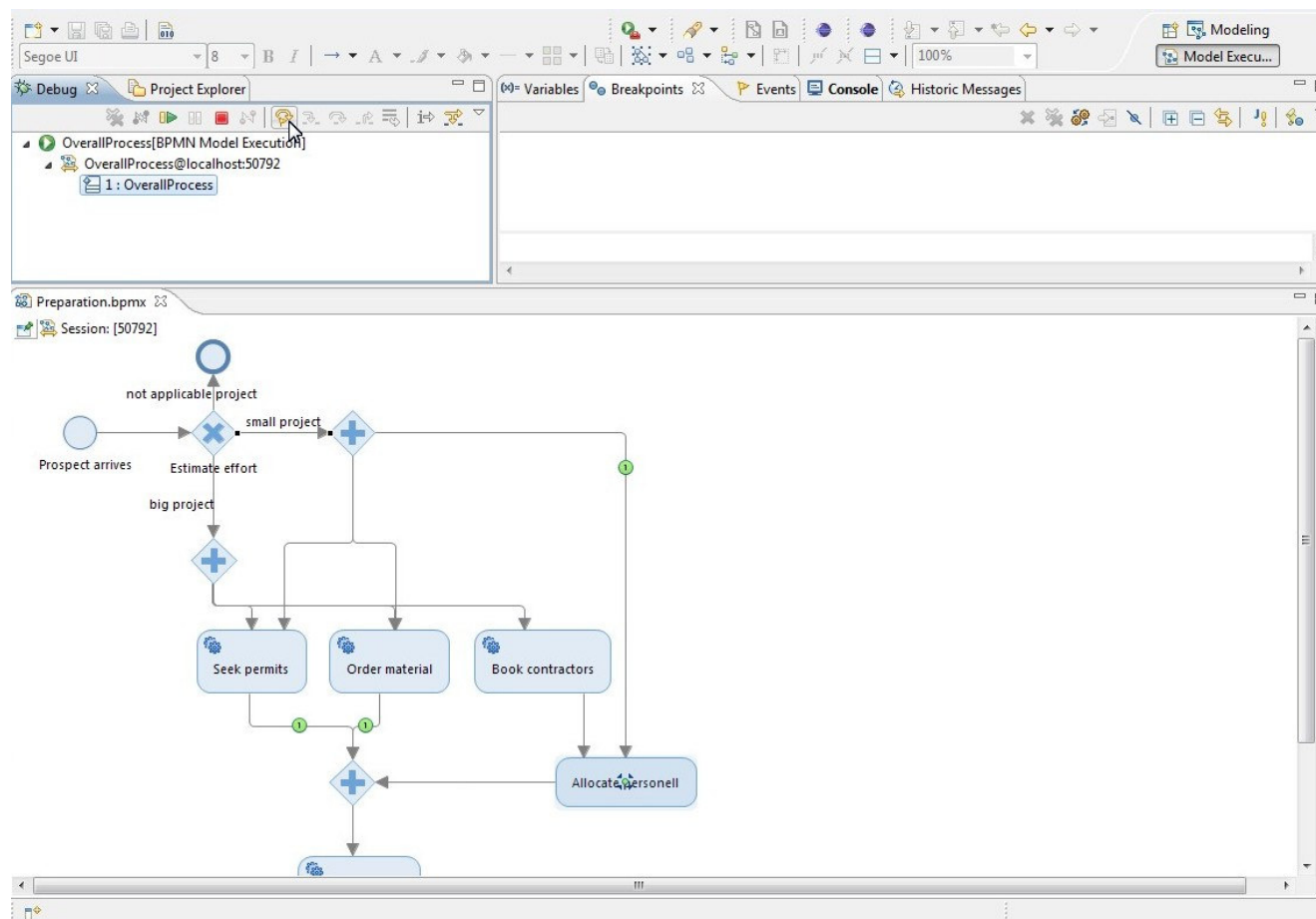
BPMN Collaboration Simulation

- BPMN collaboration diagrams can now be simulated

- Message flows between collaboration participants are animated (both current and historic)

Topology Animation for BPMN Collaboration Simulation

- Communication by means of message flows between collaboration participants can be visualized in a topology
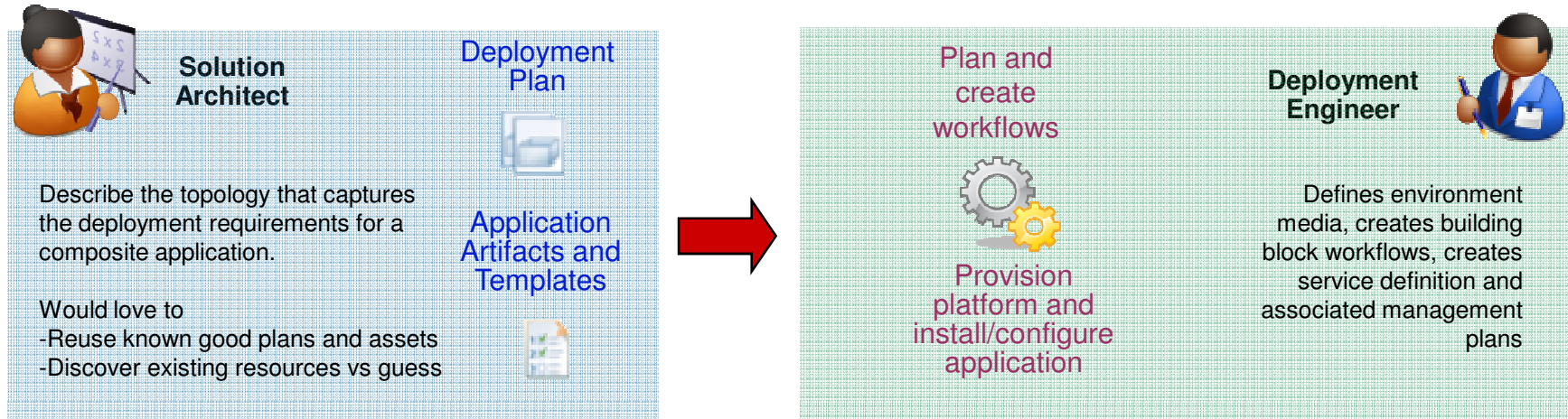
- Support for historic message arrows to see the communication history
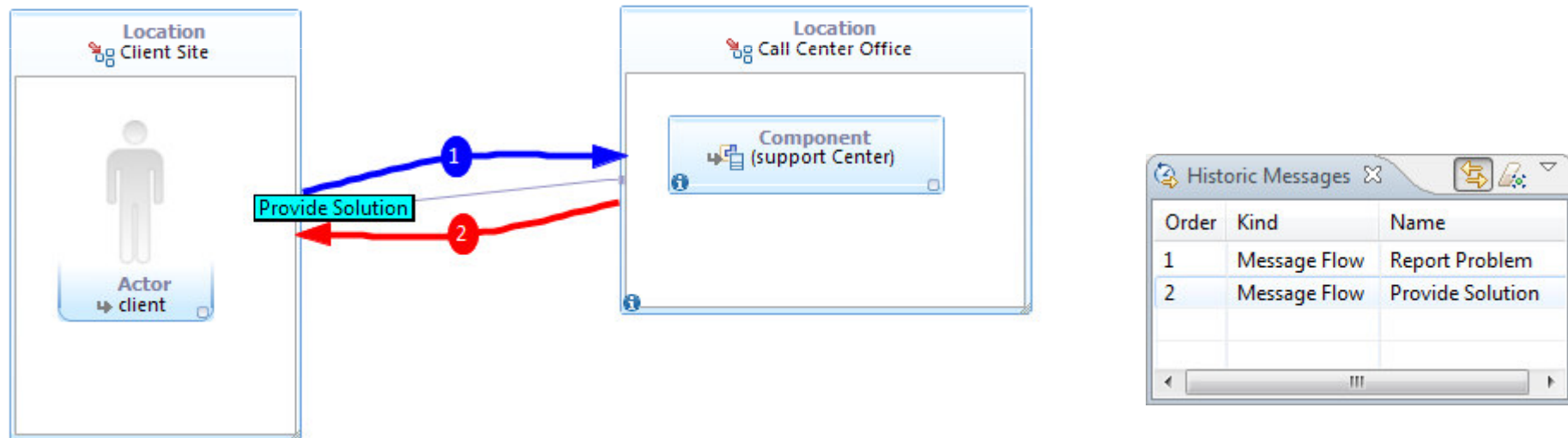
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  - ▶ UML Modeling Improvements

  - ▶ Model Driven Development

  - ▶ BPMN Simulation

  - ▶ Real-Time Extension

  - ▶ **Deployment Planning and Automation**

- RSA and Collaborative Design Management

Deployment Planning and Automation
@ 50,000 Foot

Solution Architect

Deployment Plan

Describe the topology that captures the deployment requirements for a composite application.

Application Artifacts and Templates

Would love to
-Reuse known good plans and assets
-Discover existing resources vs guess

Plan and create workflows

Provision platform and install/configure application

Deployment Engineer

Defines environment media, creates building block workflows, creates service definition and associated management plans

Deployment Environments

Or

Portal

Rational

DB2

WAS

Or

Cloud

Physical Hosts

Virtual Host

Cloud

Automation Planning
*Extension for Deployment Automation Planning &
Deployment Automation Content Pack for RAFW and WAS*

- Intelligent tools to help organizations automate the deployment of a topology

- Out of the box support for many RAFW actions

- IBM WebSphere Application Server v6.1 and 7.0
  - ▸ Improved support for ND configurations

- Derive workflow parameter values from Deployment Topology

- Pre-deployment validation and problem identification

- Post-generation adjustments allowed
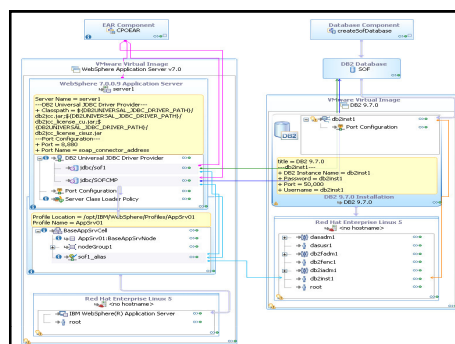
Analyze & Generate

Deployment Topology

Reference

Automation Plan

Datacenter Discovery

- Reduce manual creation of topologies representing the current state of the datacenter

- Improved integration with Tivoli Application Dependency Discovery Manager

  ▸ Advanced WebSphere environment discovery

  ▸ "Refresh" action now available
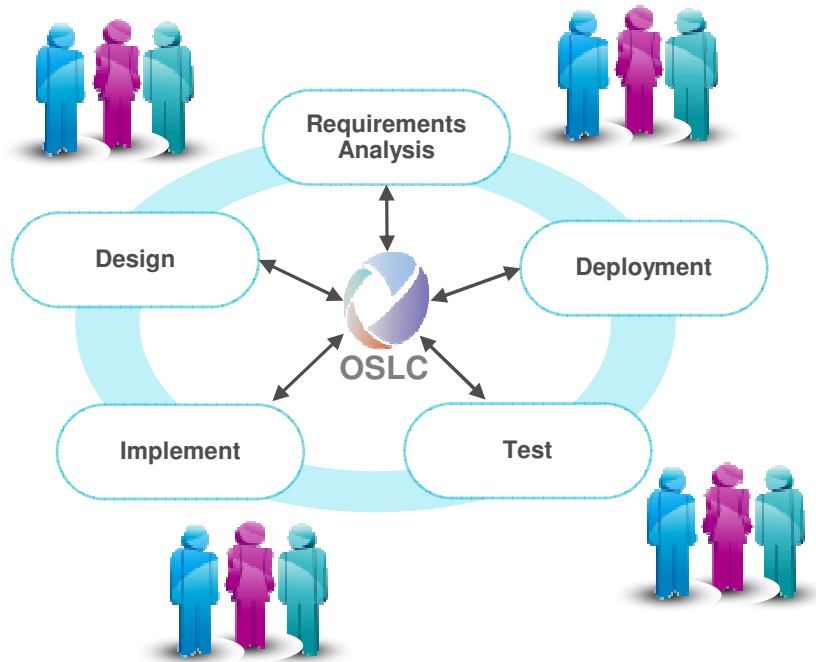
- Introduction of spreadsheet importer
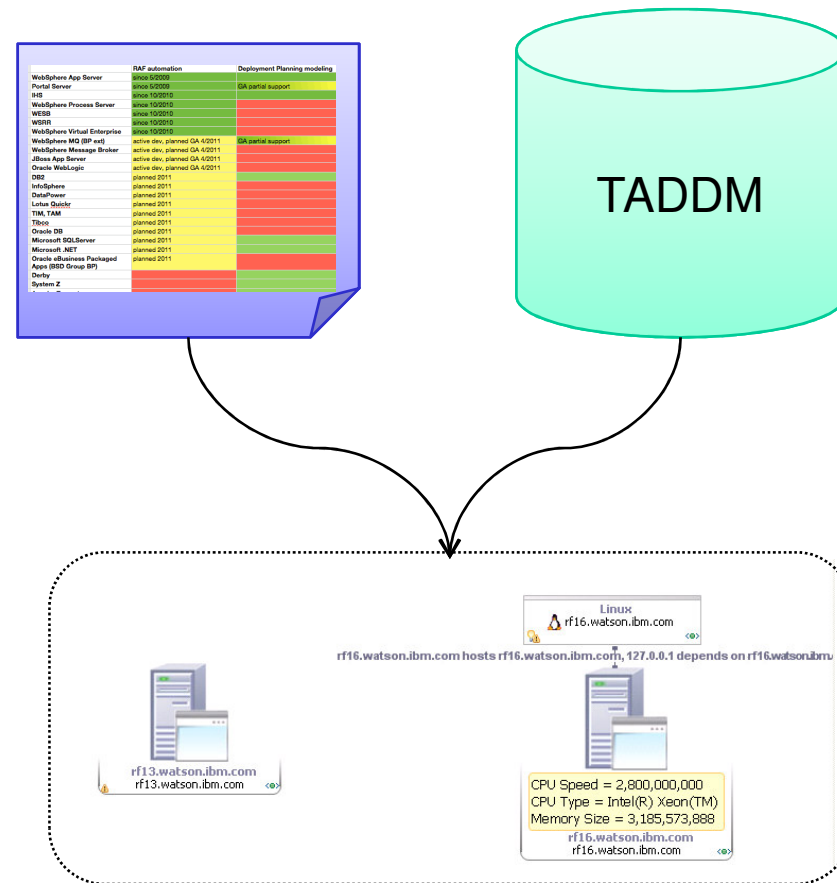
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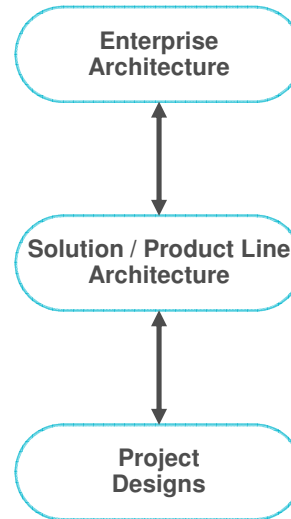
- **RSA and Collaborative Design Management**

Collaborative Design Management Vision
Integrating and collaborating on designs across…

...and domains.

...the application and engineering lifecycles…

...levels of abstraction…

IT

Business Process Models

Service Models

Data Architecture

Implementation Models

Deployment Plans

Requirements Analysis

Design

Deployment

OSLC

Implement

Test

Enterprise Architecture

Solution / Product Line Architecture

Project Designs

Systems

System Models

Plant Models

Software Models

Electrical Models

Control Models
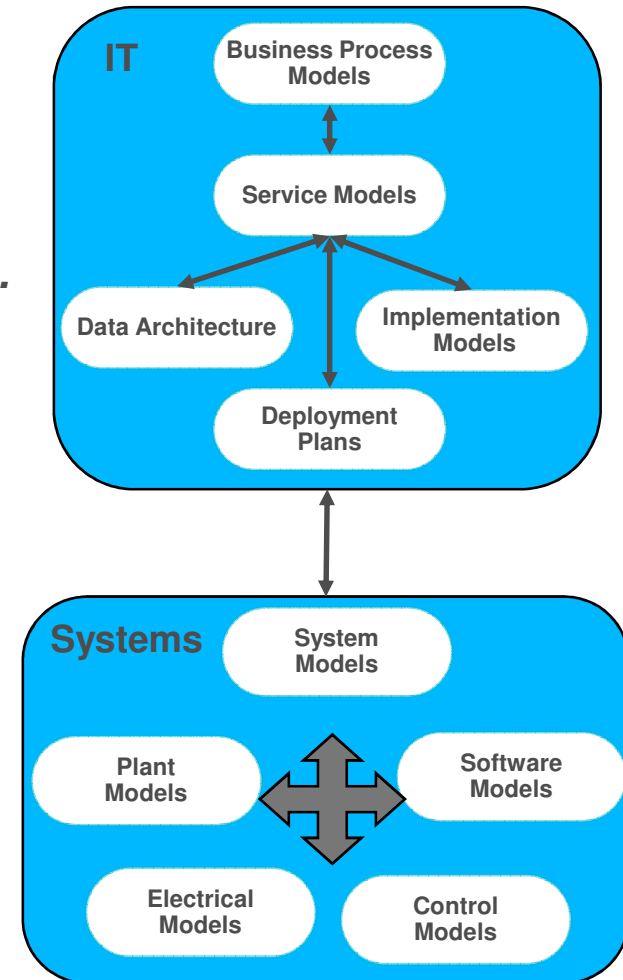
Enabling better collaboration, automation, reporting, and agility while reducing complexity and risk.

Collaborative Design Management
Enhance cross-team collaboration on software and systems design

Central Design Hub

✓ *Enterprise-wide design storage for search, review, analysis, and reuse*

✓ *Links design elements to lifecycle artifacts*

✓ *Navigate and visualize relationships*

Stakeholder Collaboration

✓ *Automated design reviews at all stages of development*

✓ *Intuitive extended team web client for broader access to designs*

Document Generation and Reporting

✓ *Create documents directly from the development lifecycle*

✓ *Draw from information and assets linked through OSLC*
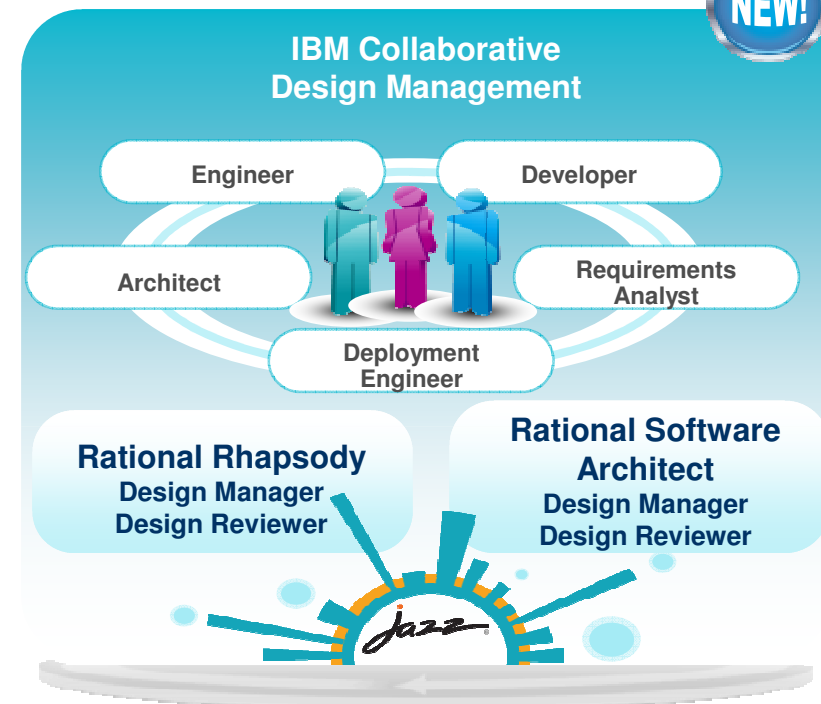
"The ability to review and comment on models from the Web client encourages feedback from a wide array of stakeholders... leading to faster consensus and improved quality of solution designs."

– Lars Tufvesson, Sellegi

Design Management Project on **jazz.net**

- Jazz Design Management project is a technology initiate that integrates design teams into Jazz and…
  - ✓ Applies Jazz technology to further break down organizational silos
  - ✓ Allows teams to collaborate on a common design approach
  - ✓ Improves stakeholder access to design data with Web-based searching & viewing
  - ✓ Links designs to other lifecycle resources for improved productivity and reuse

  jazz.net/projects/design-management

- Visit the project to participate and…
  - ✓ Learn more
  - ✓ Download milestones and try it out with RSA or Rhapsody
  - ✓ Get your questions answered in the forum and participate in discussions
  - ✓ View release plans and dashboards
  - ✓ Help shape the future by opening enhancement requests

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www.ibm/software/rational