Architecture and Modelling, new and next

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Agenda

RSA 2011 Highlights

What's New in RSA 8.5

- MDD
- BPMN
- Base Modeling
- Extensions
- What's New in RSA Design Manager 4.0

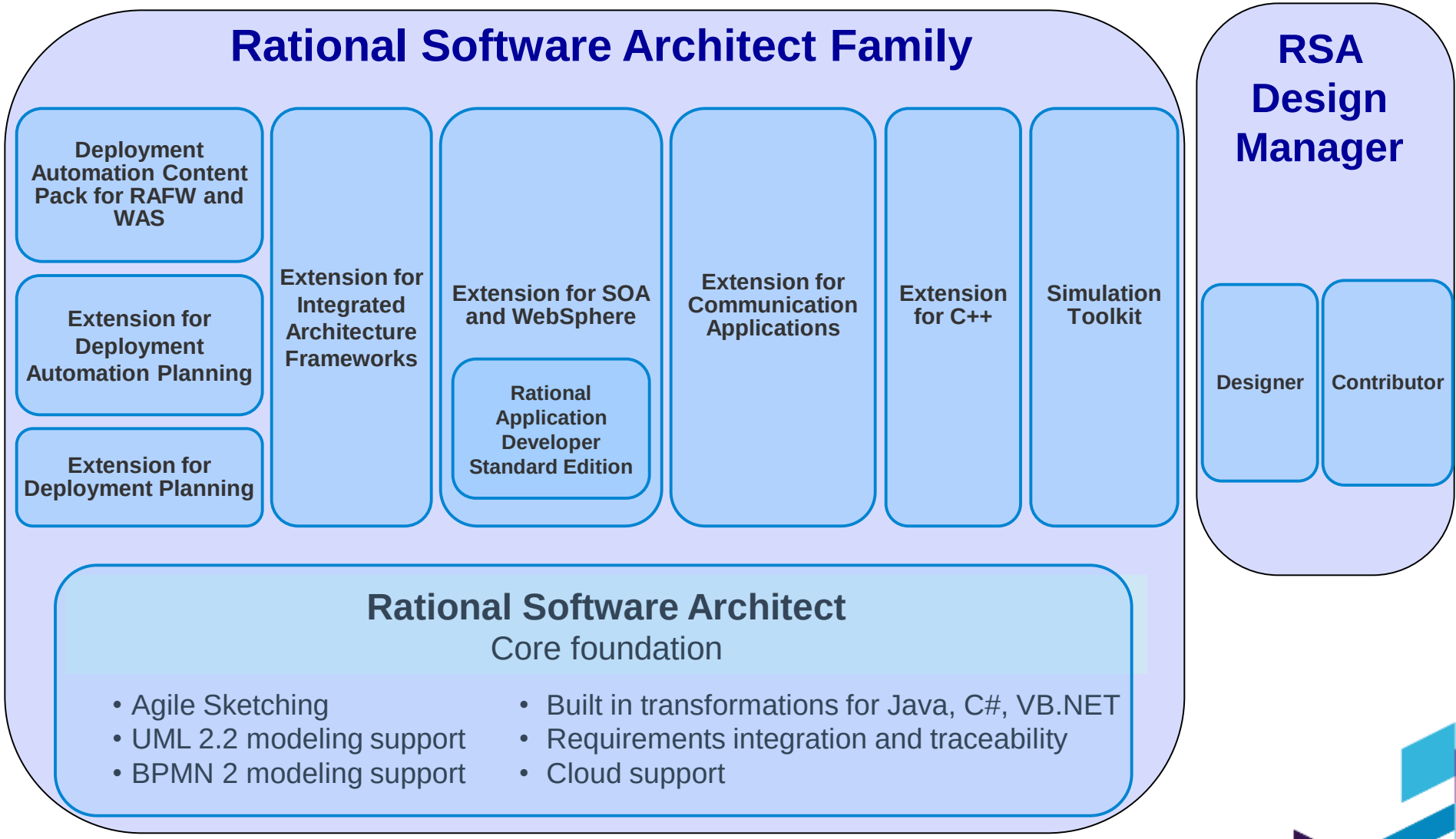
Topology Modelling

What is Rational Software Architect (version 8.x)

Rational Software Architect is a modelling tool that allows a user to create models of their applications, systems and deployments using UML, BPMN and other modelling notations. It also provides a Java development environment, a transformation engine that generates code, models and schemas.

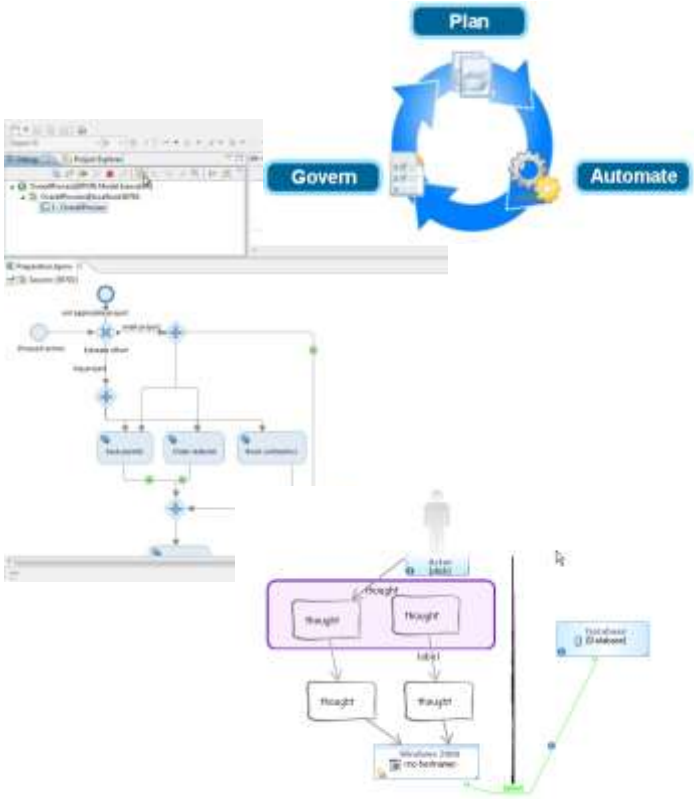
Rational Software Architect v8 family

An offering with extensions for specific domains, architectural needs and industry

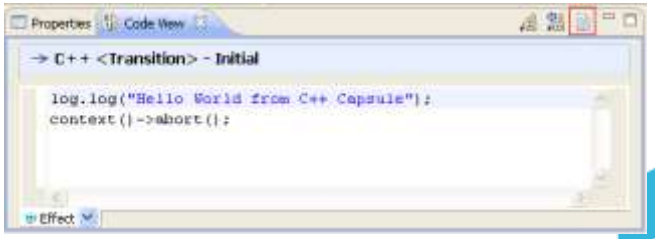


Rational Software Architect 2011 Highlights

- **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**

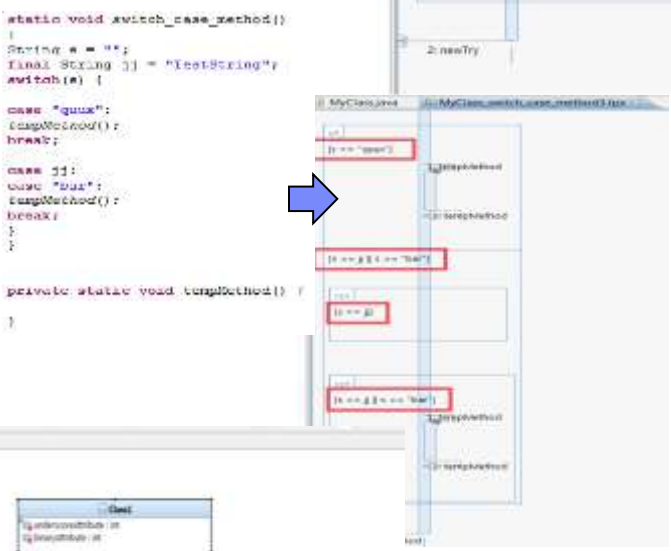


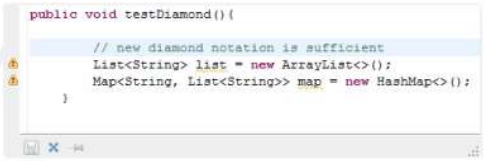
- **Rational Software Architect Real-Time Edition**
  - **Performance improvements** for very large real-time models
  - **Improved Code Viewers** and better support for long code snippets
  - RSA RTE **Jazz** enablement via **RSA Design Manager**

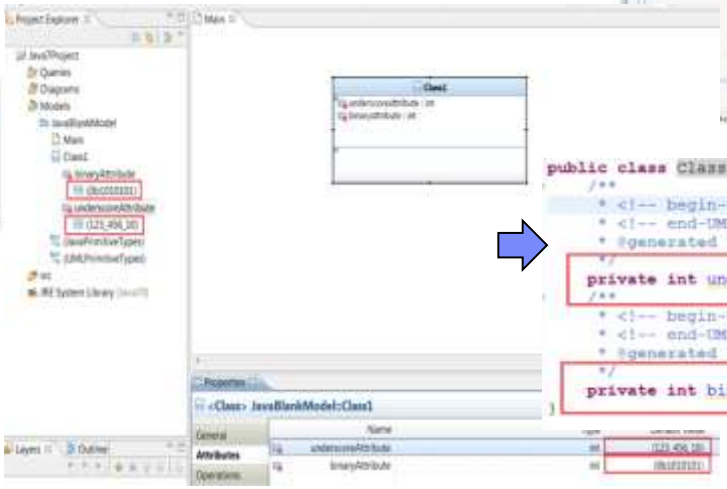


Java 7 support

- 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

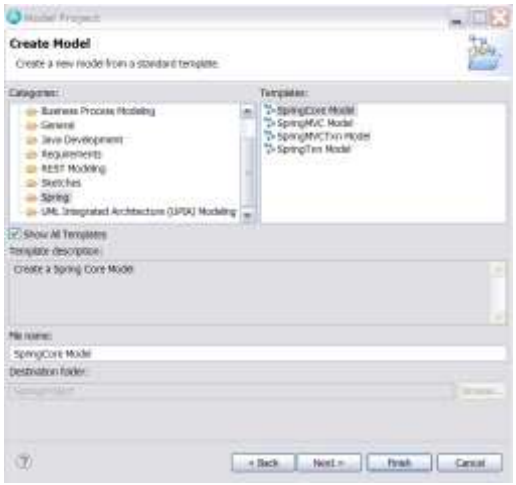


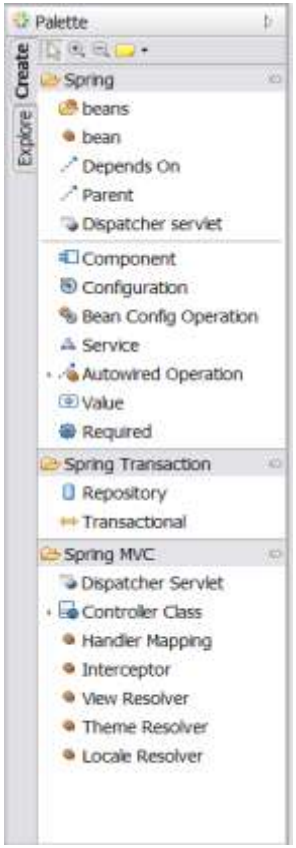


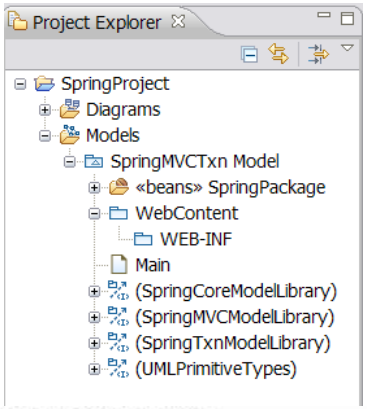


RSA Spring Framework Support

- 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



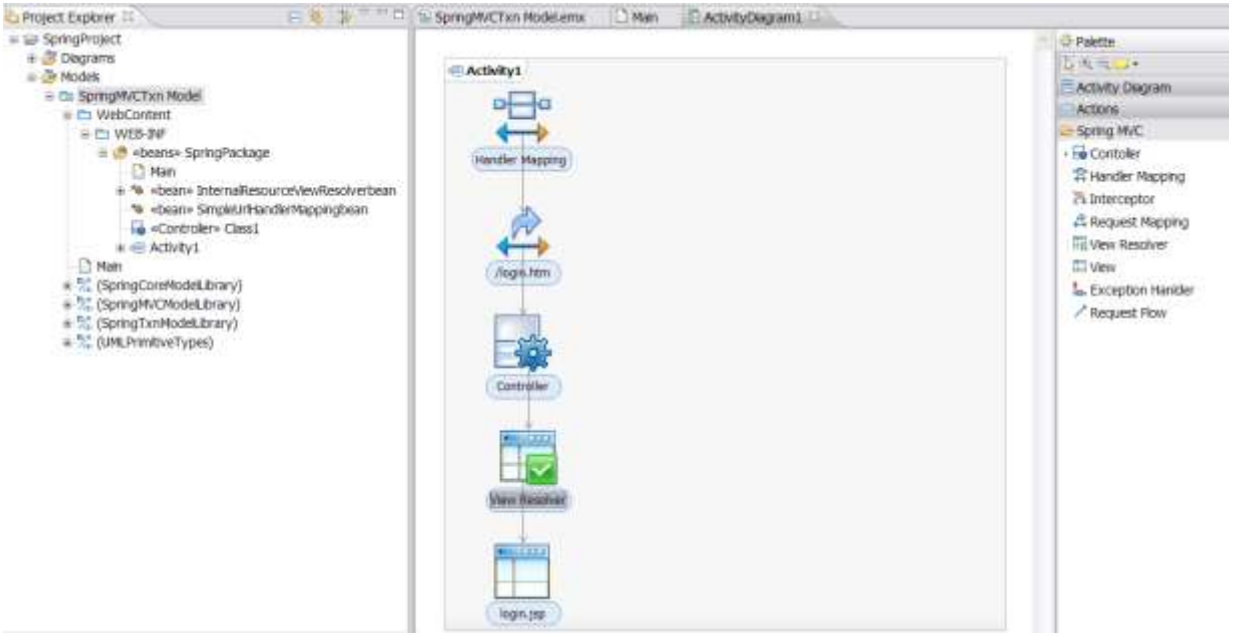


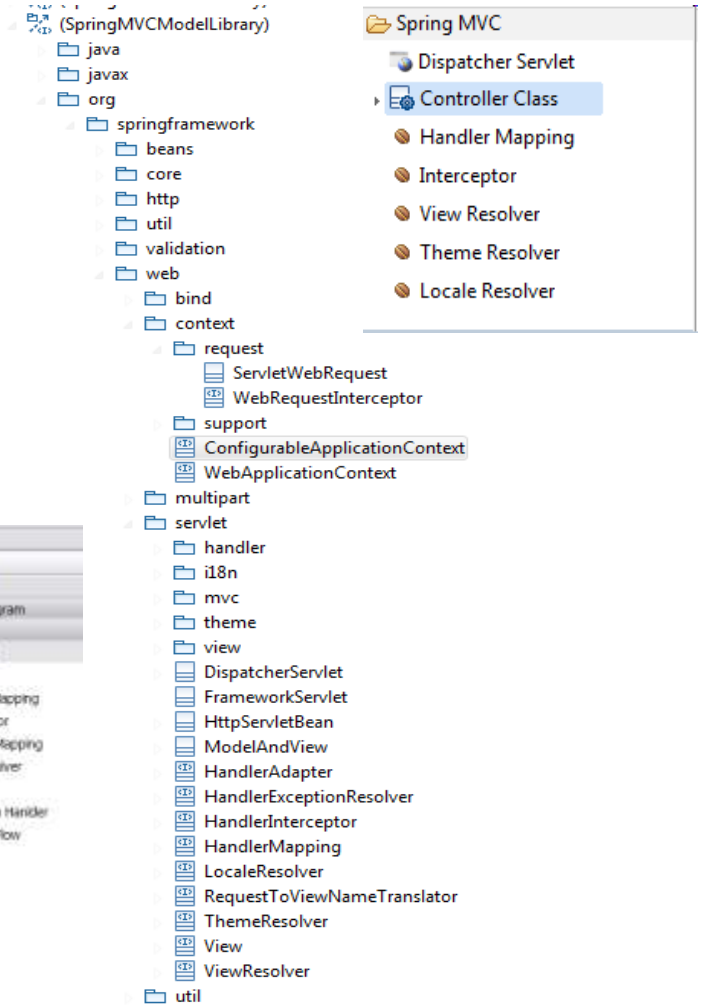


Spring Application Development Framework Reference Documentation: http://springsource.org

Spring MVC Model Designing

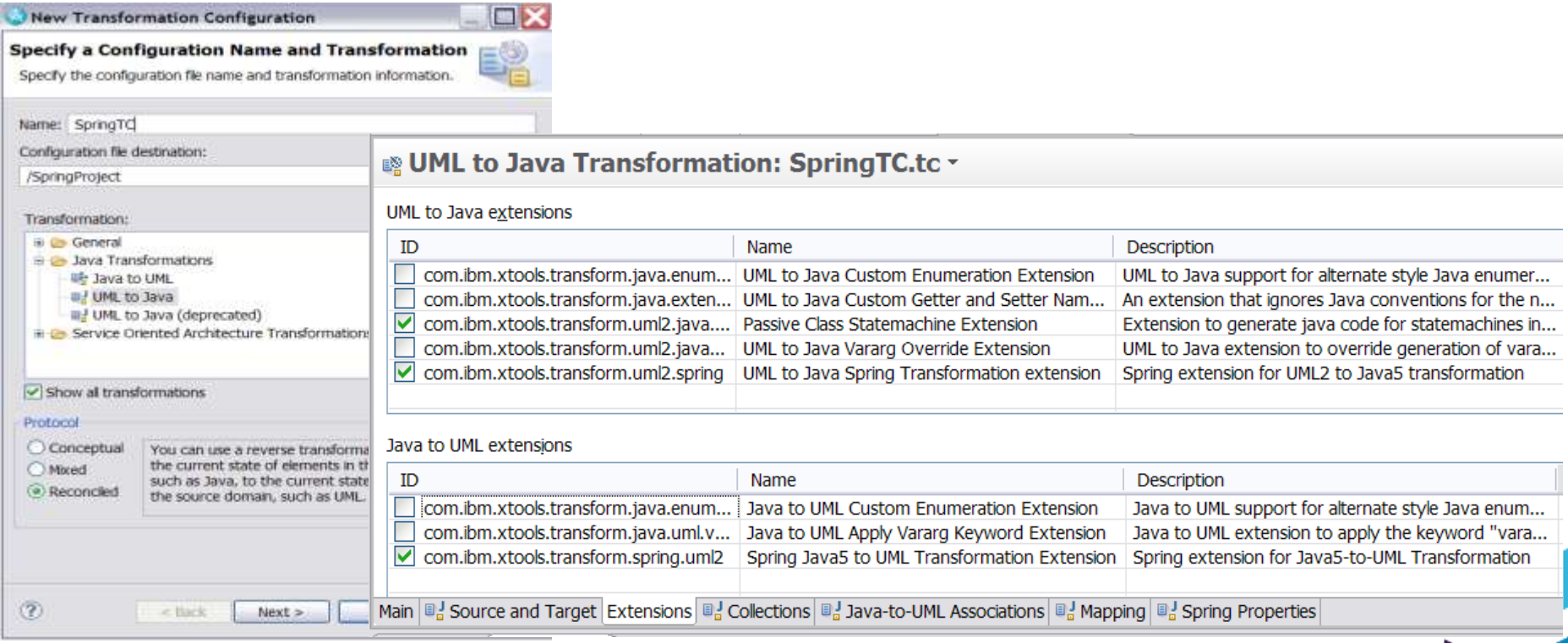
- Spring MVC models can be designed as an Activity Flow
- RSA supports designing of MVC models with Controller beans and annotations
- Core model Library supports Spring defined beans for Dispatcher Servlet, Controller, Handler Mapping, View Resolver, Theme Resolver, Locale Resolver etc.





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



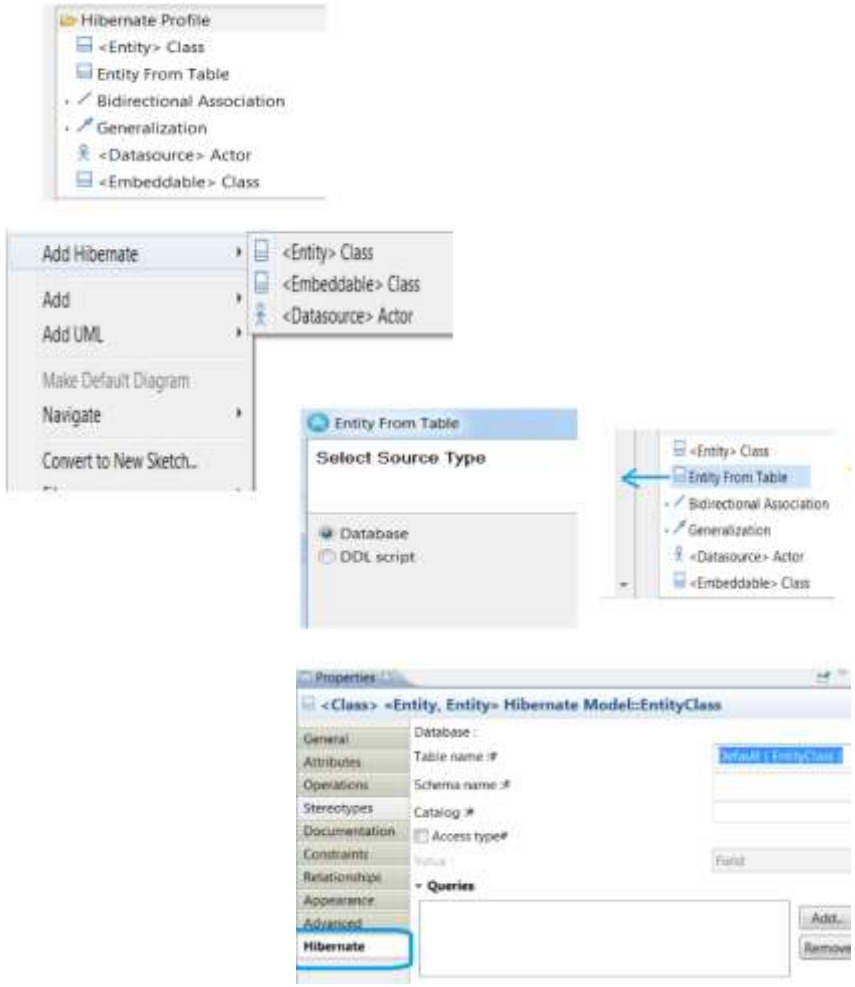
Hibernate Framework Support in RSA

- 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.



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

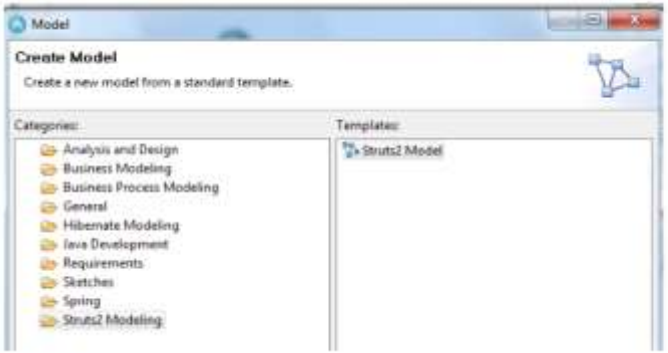
Struts2 Model Driven Development

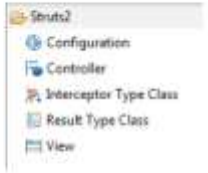
- *UML-to-Java transformation Extensions*
- *Assisted tooling for easier creation of Struts2 elements*
- *Forward & reverse transformation*
- *Generation of Struts2 configuration XML*
- *Generation of Struts2 Annotations*
- *Support of standard Struts2 validations on model data*

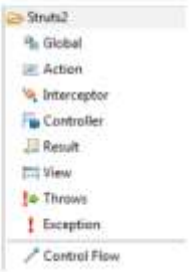
Struts 2 Reference Documentation: http://struts.apache.org

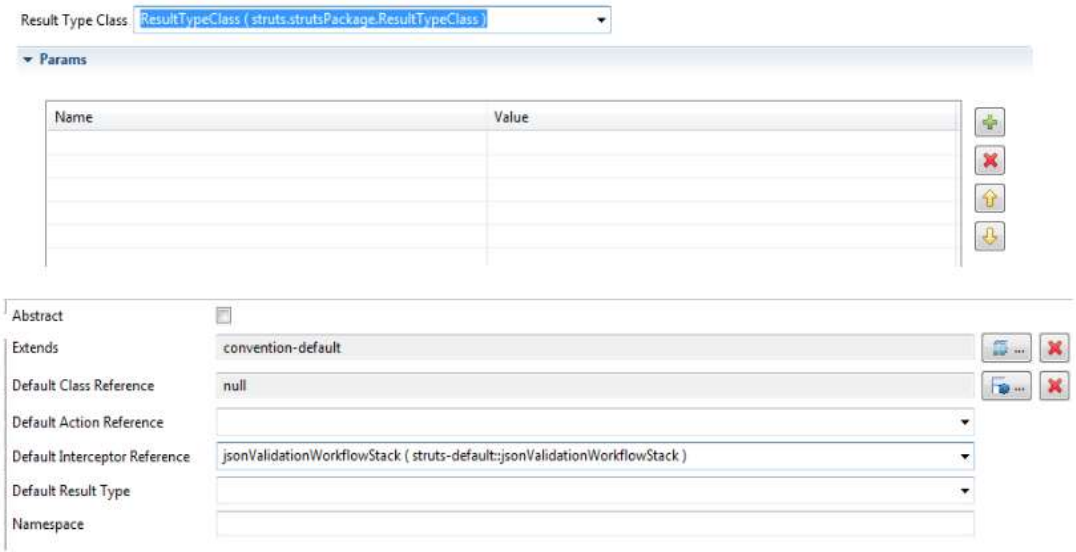
Struts2 Modeling Toolset

- 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



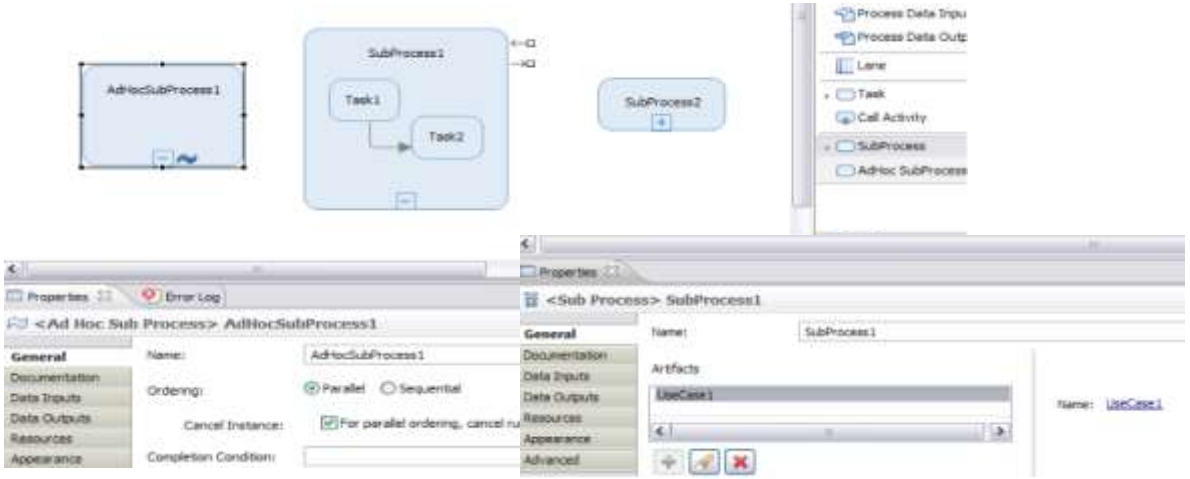




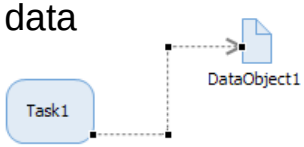


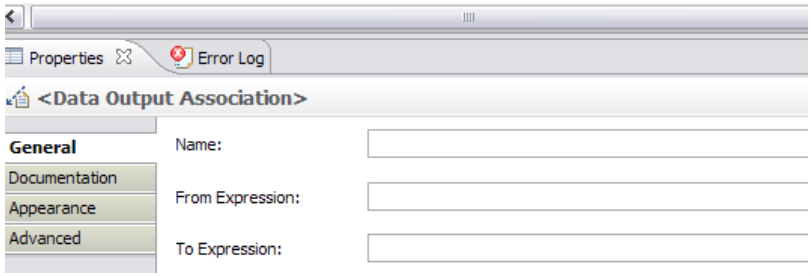
BPMN Modeling Enhancements

– BPMN SubProcess and Adhoc SubProcess



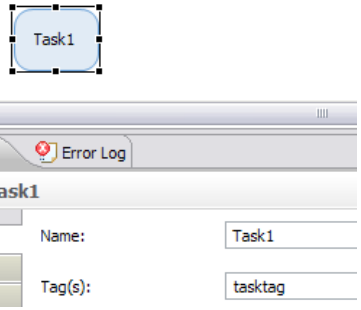
– Assignments can be provided for data associations. A From and a To Expression can be added for data associations from Properties view

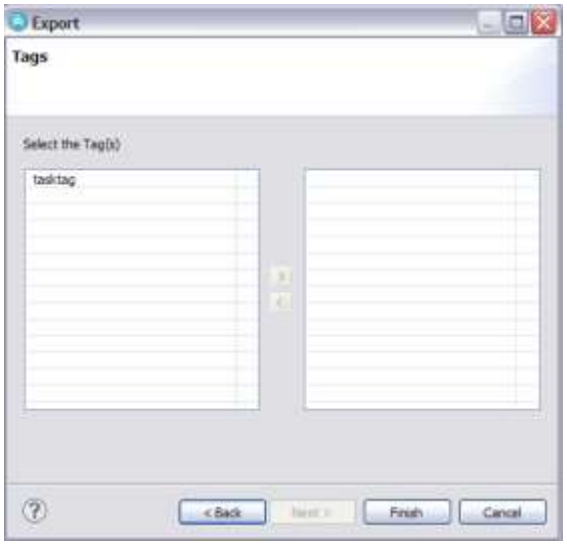




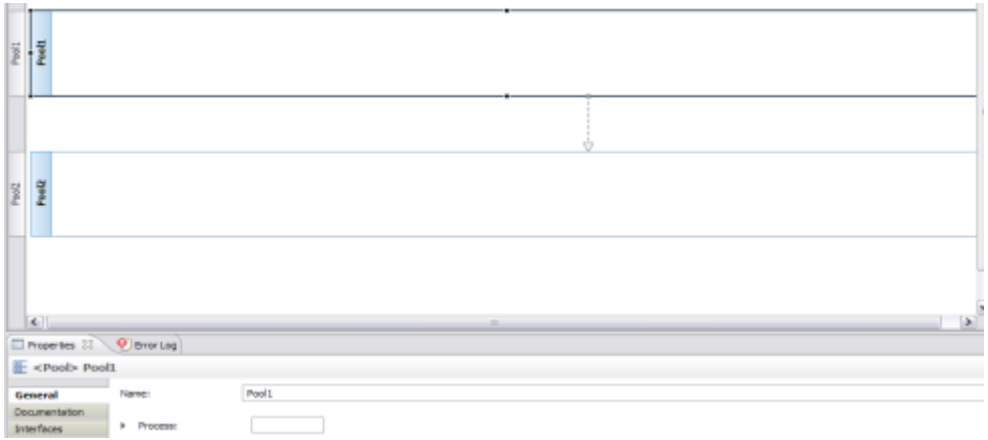
Support for tagging BPMN elements and scoped export of BPMN elements

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





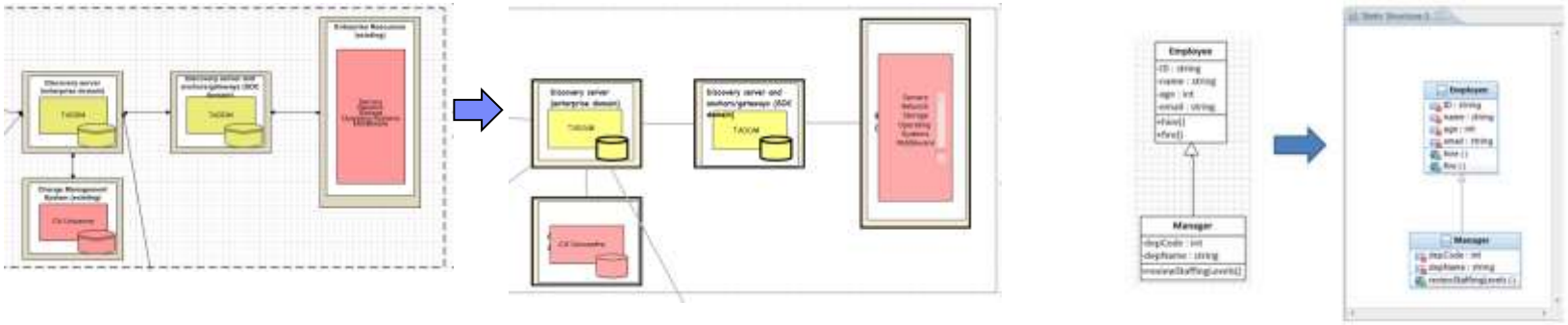
– Black box pools & message flows between pools



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

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".

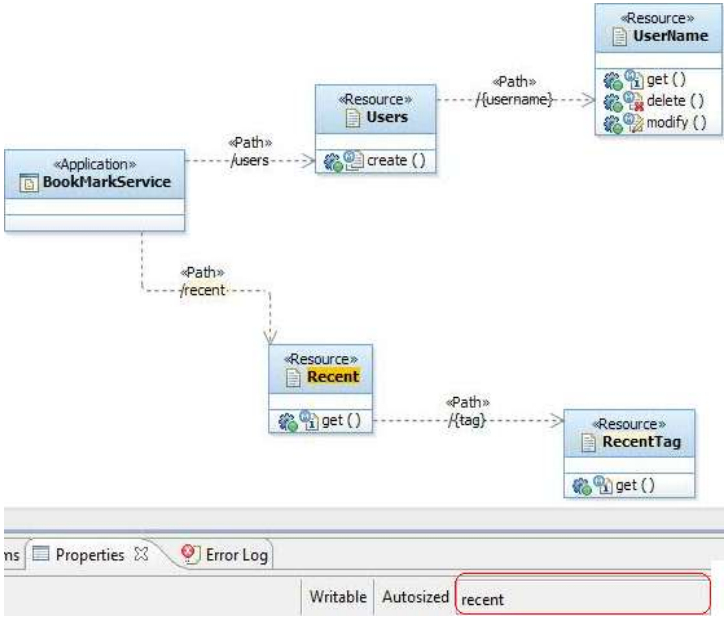
Import finished in 24 seconds with 4 information and 14 warning messages


10 items

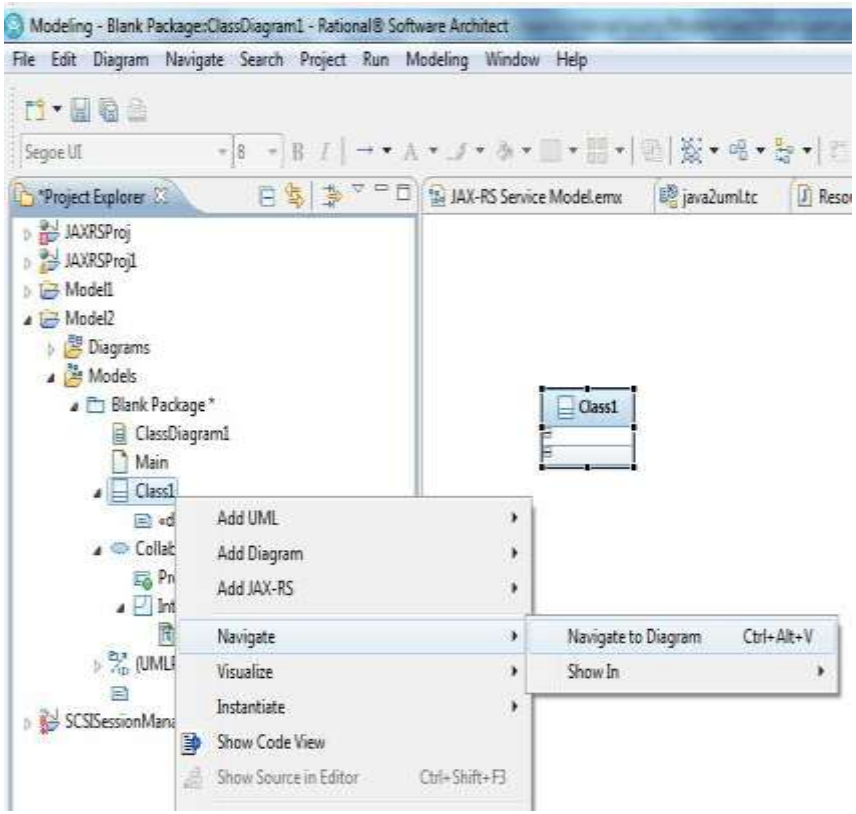
Description	Resource	Path	Location	Type
Edge created connecting "Server" to "Server".	Page-1.topologyv	/esf/Blueprint	Page-1	Visio Import Task
Edge created connecting "Server" to "Server (t...	Page-1.topologyv	/esf/Blueprint	Page-1	Visio Import Task
Edge created connecting "Server" to "SP".	Page-1.topologyv	/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

Usability Enhancements

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

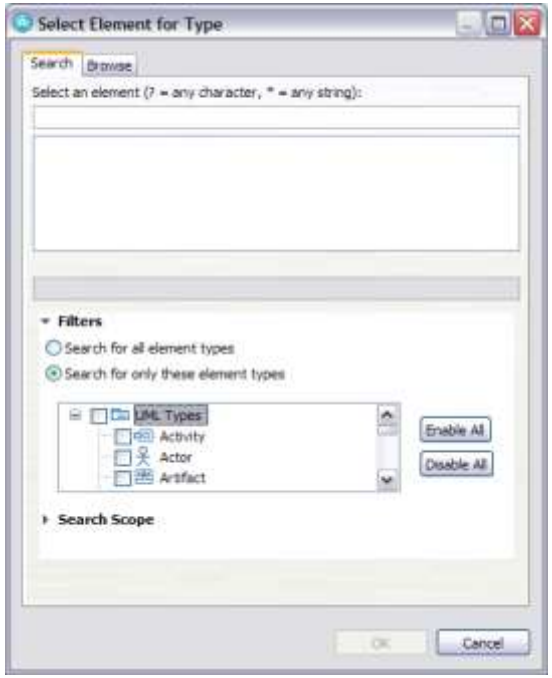


- `Navigate` To Diagram (Ctrl+Alt+V) PE action diagram
  - Multiple diagrams listed in search view

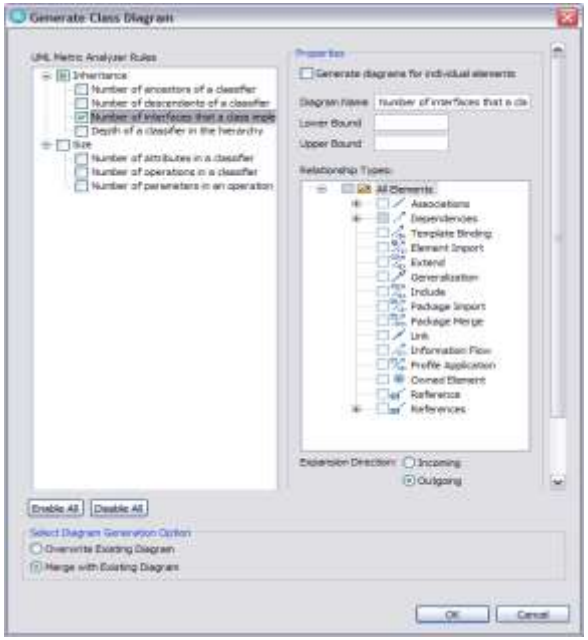


Usability Enhancements

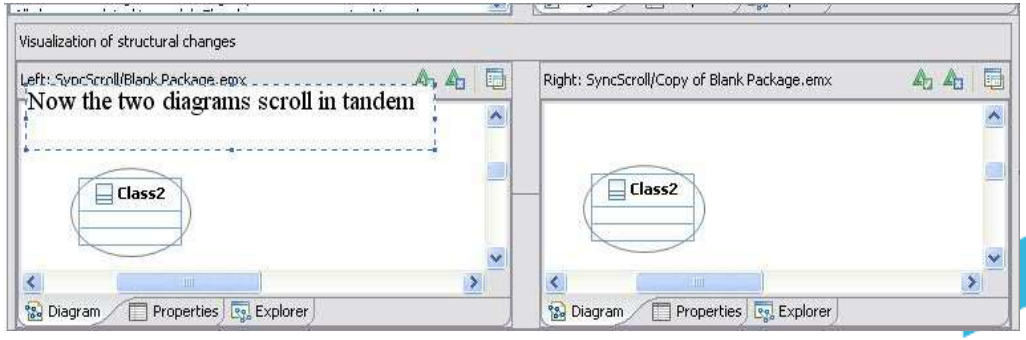
- UML type filters provided in Search element dialog
  - These filters will complement the 'text' search by adding type filters to list 'type(s)' of interest only in search result



- `Generate Class Diagrams` Preference Editor action
  - generate class diagram automatically based on model analysis rules



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

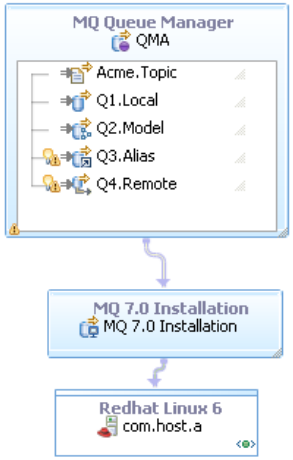


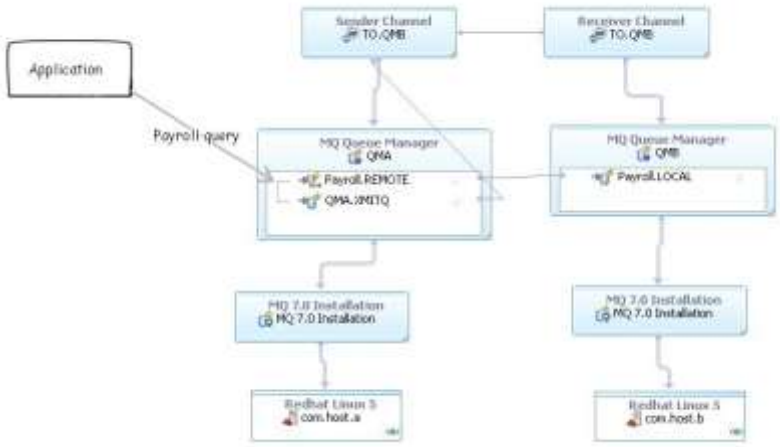
Other Usability Enhancements…

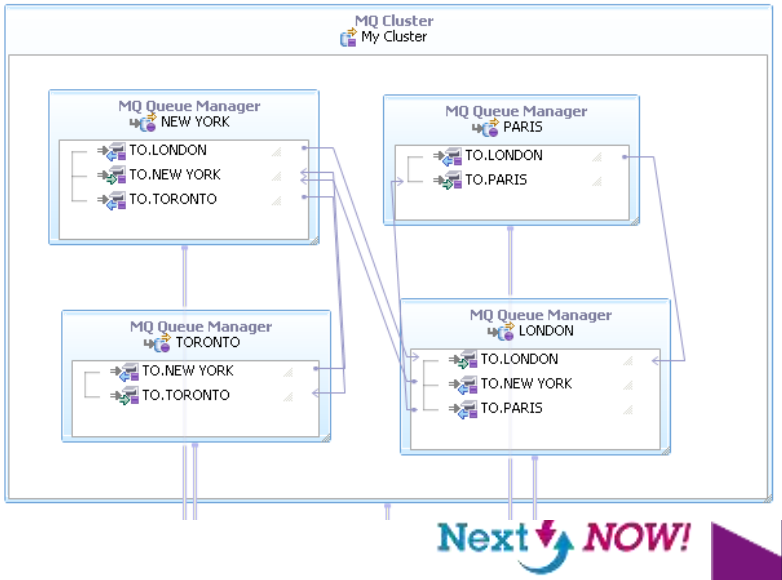
- Improved rich text support for HTML tags
  - Improved table formatting
  - Better handling of line break and paragraph breaks
  - Improved handling of HTML Lists (ordered and un-ordered)
  - Robust migration from 7.5.x to 8.5
- Ability to load multiple models and their sub-fragments at once
- Improved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

Deployment Planning: Support for WebSphere MQ Domain

- Modelling support for MQ Domain
  - Templates and palette entries, custom validations and resolutions, Unit filters, sample topologies
    - MQ Infrastructure: Installation, Queue Manager
    - MQ Destinations: Queues, Topic, Specify clusters
    - MQ Channels: Sender/Receiver, Server/Requester, …
    - MD Configuration: Process, Service, Namelist, Listeners (TCP, SPX, etc)
    - MQ Security: Authentication info (LDAP, OSCP), Security Authorization
    - MQ Clusters



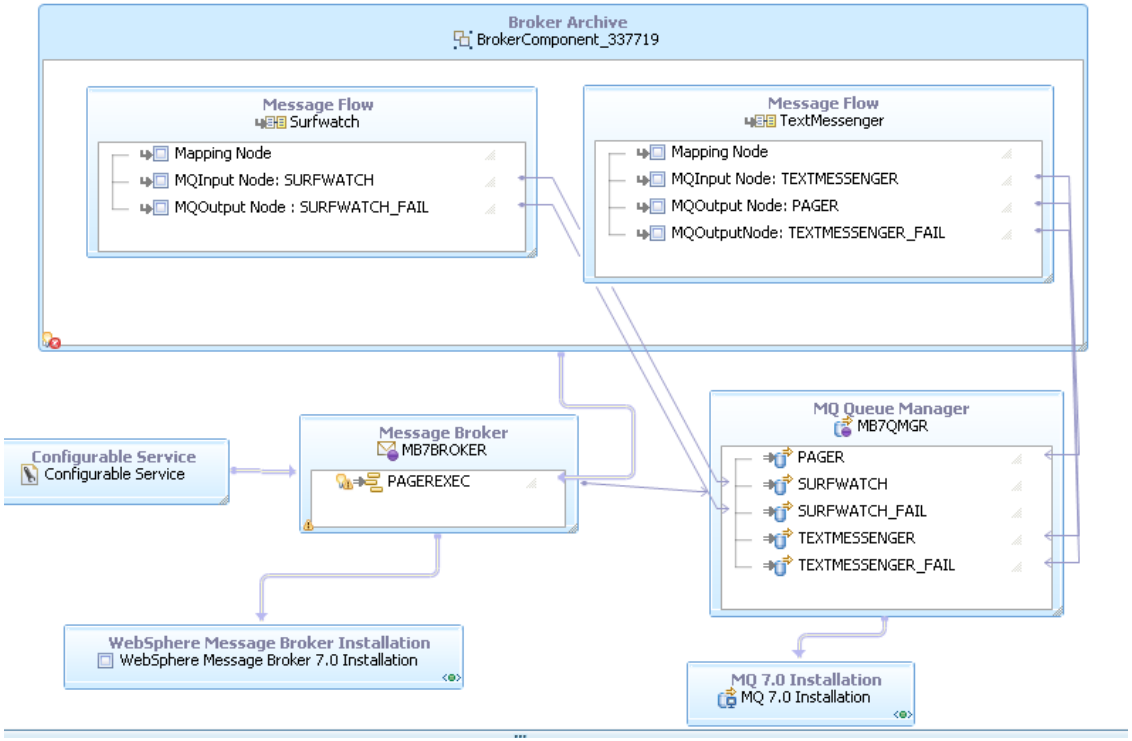




Next NOW!

Deployment Planning: Support for WebSphere Message Broker Domain

- Modelling support for Message Broker
  - Templates and palette entries, custom validations and resolutions, unit filters, sample topologies
    - MB Infrastructure: Installation, Message Broker
    - MQ Configuration: Execution Group, Configurable Services, Security Constructs (tokens, token bindings, etc)
    - MB Applications: Broker Archive files, Msg Flows, Msg Sets, Msg Flow Nodes

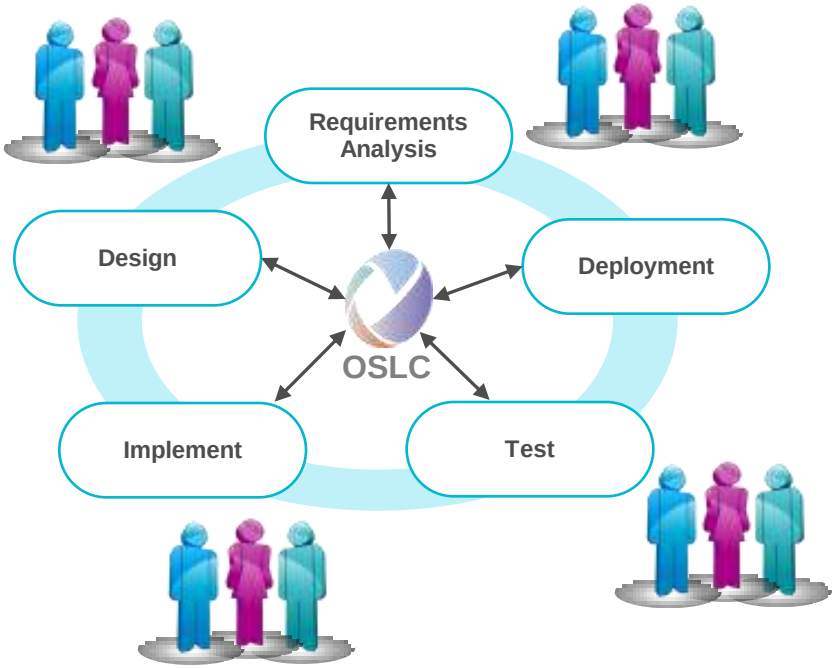


Collaborative Design Management Vision

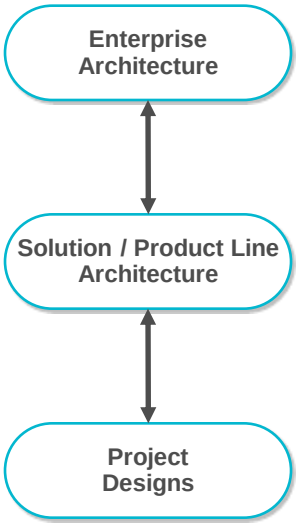
Integrating and collaborating on designs across…

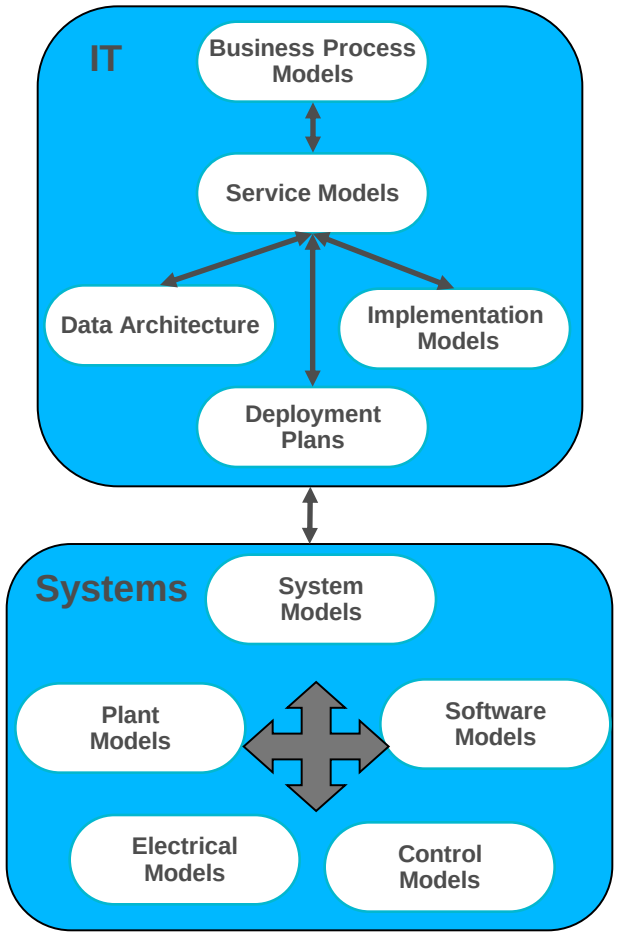
…and domains.

...the application and engineering lifecycles…



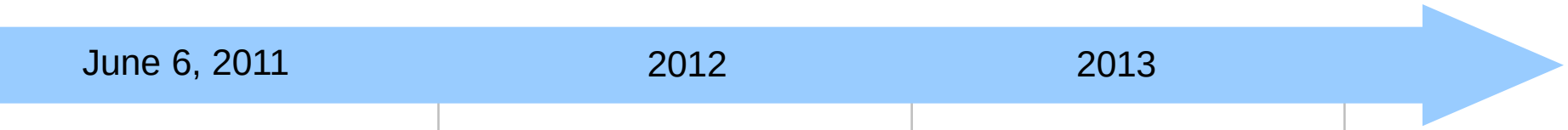
...levels of abstraction…





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

Collaborative Design Management Roadmap



Phase 1

- Design repository with Web based searching, viewing, and analysis
- Collaborate on designs with design reviews
- Lifecycle integration
- Integration with Rational Publishing Engine for document generation and reporting

Phase 2

- Unify designs across domains with support for additional design types (extensibility / toolkit)
- Additional OSLC linking
- Change management for designs (SCM optional)
- Embedded document generation and reporting

Phase 3

- Unify designs across domains with support for customizable domain modeling behavior and user interfaces
- Domain specific functional capabilities (transformations, simulation)
- Web based editing for some RSA, Rhapsody, and custom domain models
- Automation services

New in RSA Design Manager 4.0

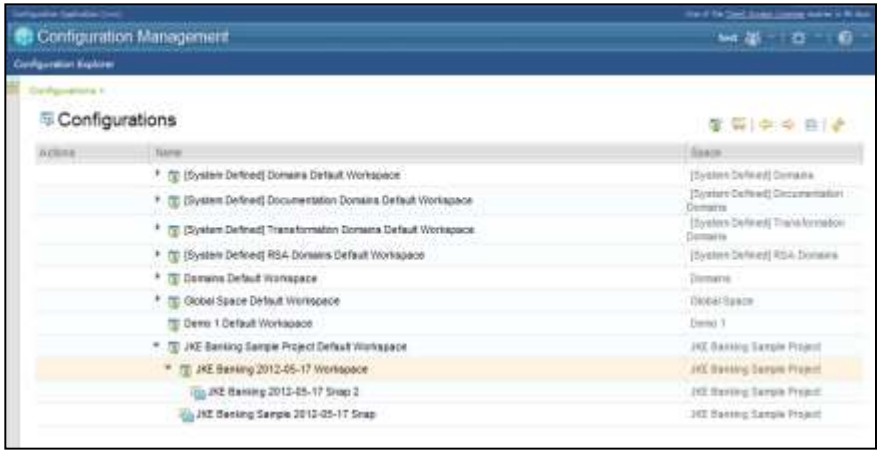
- Collaborative Lifecycle Management Integration
- Configuration Management for Designs
- Reporting and Document Generation
- Extensibility
- New Domains: Sketching, Rich Text Design Documents
- Search Improvements
- Impact Analysis
- RSA Transformations

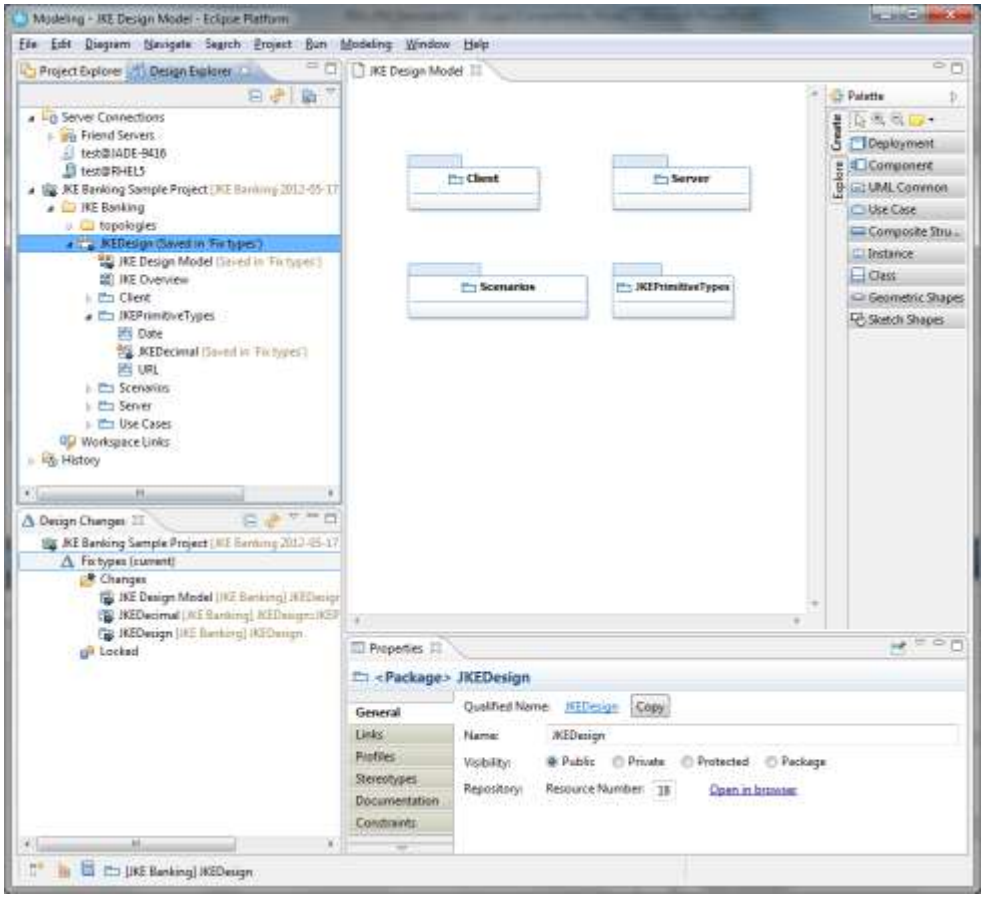
Collaborative Lifecycle Management Integration

- Common user administration
- Common deployment configurations
- Lifecycle project administration
- Bi-directional traceability with RRC
- TRS (Tracked Resource Sets) integration
- “Money that Matters” Sample Scenario

Configuration Management for Designs

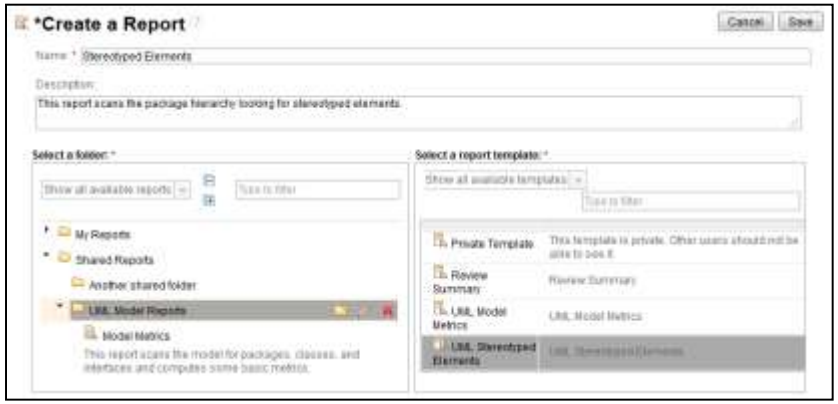
- Serial and parallel configuration management for designs
- Change history, compare and merge
- Design reviews on private changes prior to sharing





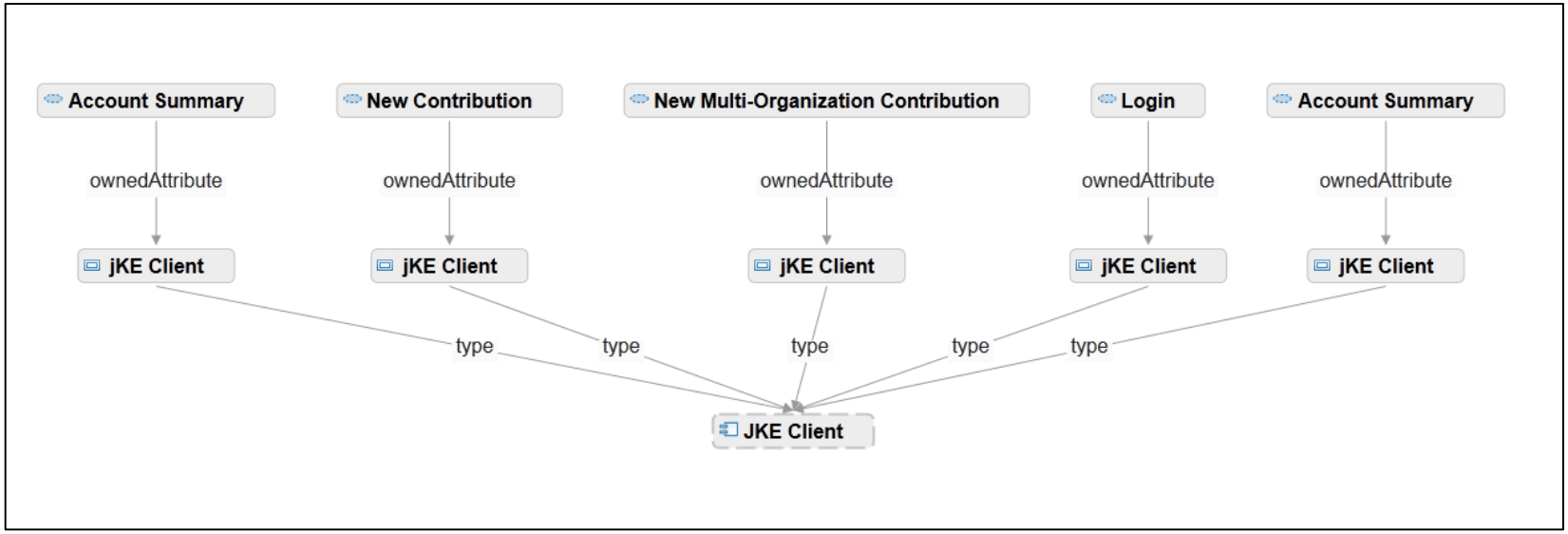
Reporting and Document Generation

- Document generation with RRDG (Rational Reporting for Document Generation)
- Report templates based on RPE (Rational Publishing Engine)



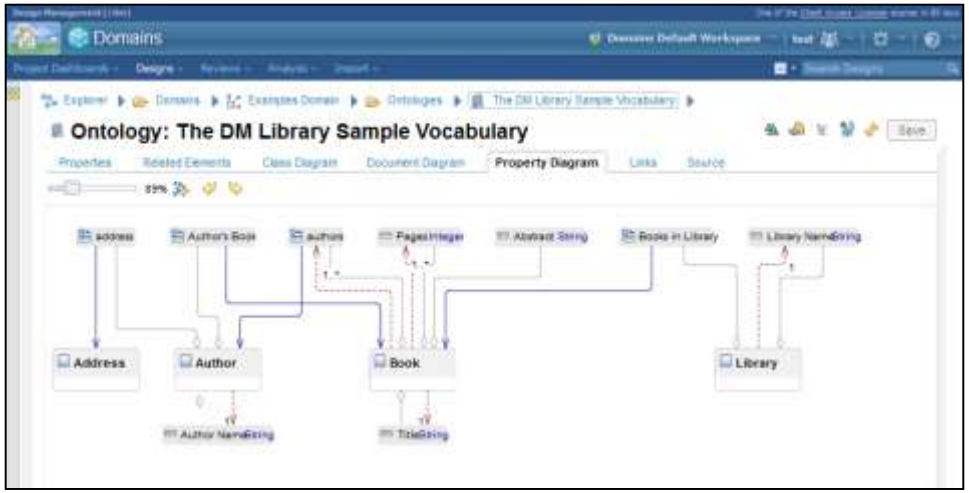
Impact Analysis

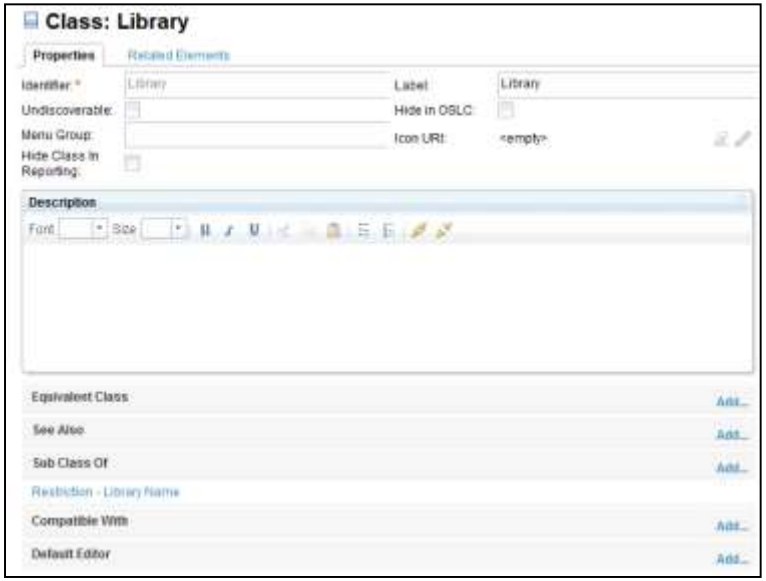
- Follow all links in DM repository and present them graphically (Impact Analysis Diagrams)
- Pre-define configurations that limit the links followed
- Variety of graph styles
- Persistence of configurations and diagram definitions



Extensibility

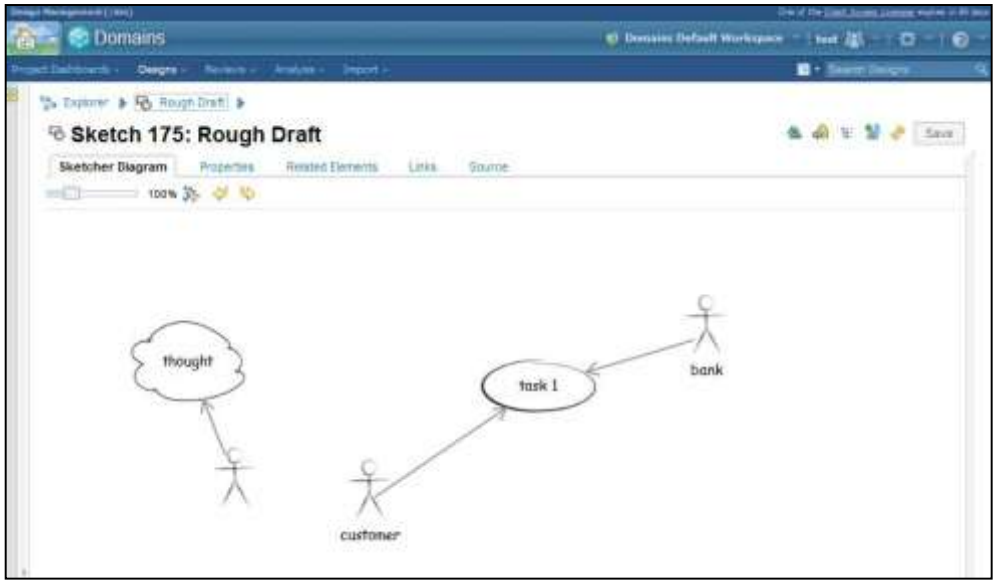
- Add custom domains via Domain Toolkit
- Add custom domains via EMF (SDK)
- Default generated web form editors for domains with basic user customization
- Model validation

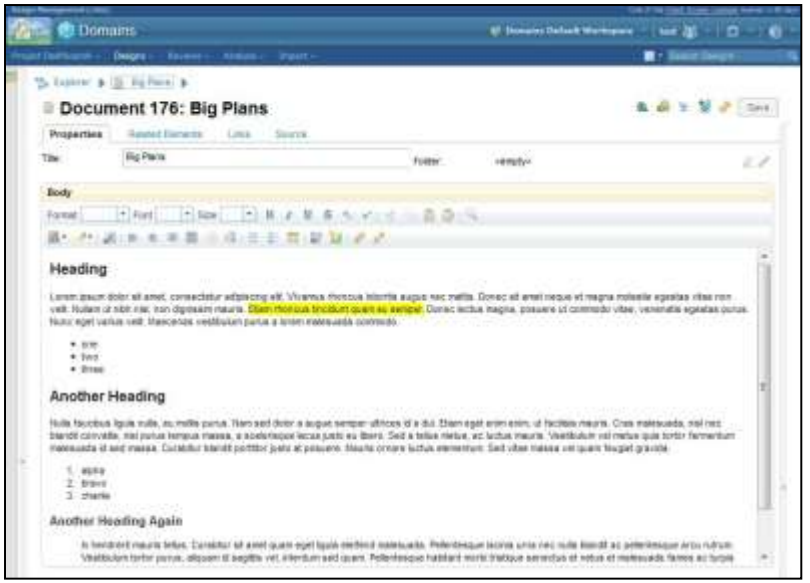




New Domains

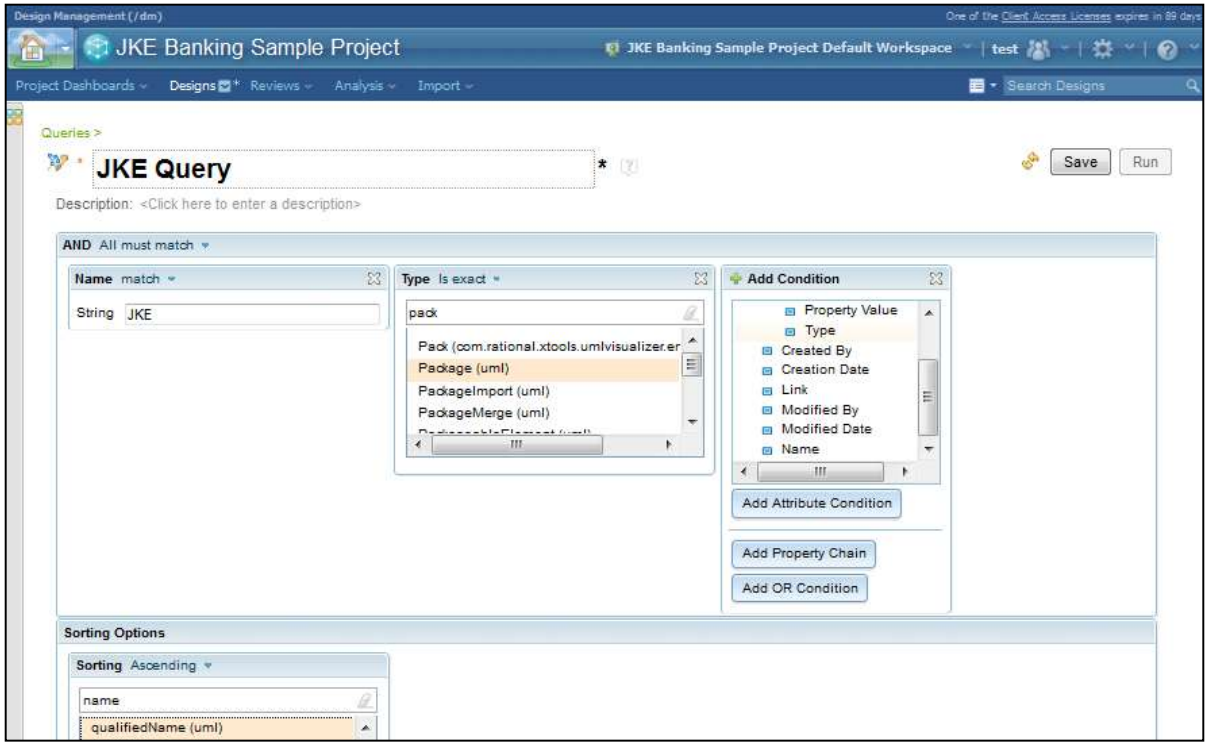
- Sketching
- Rich Text Design Documents





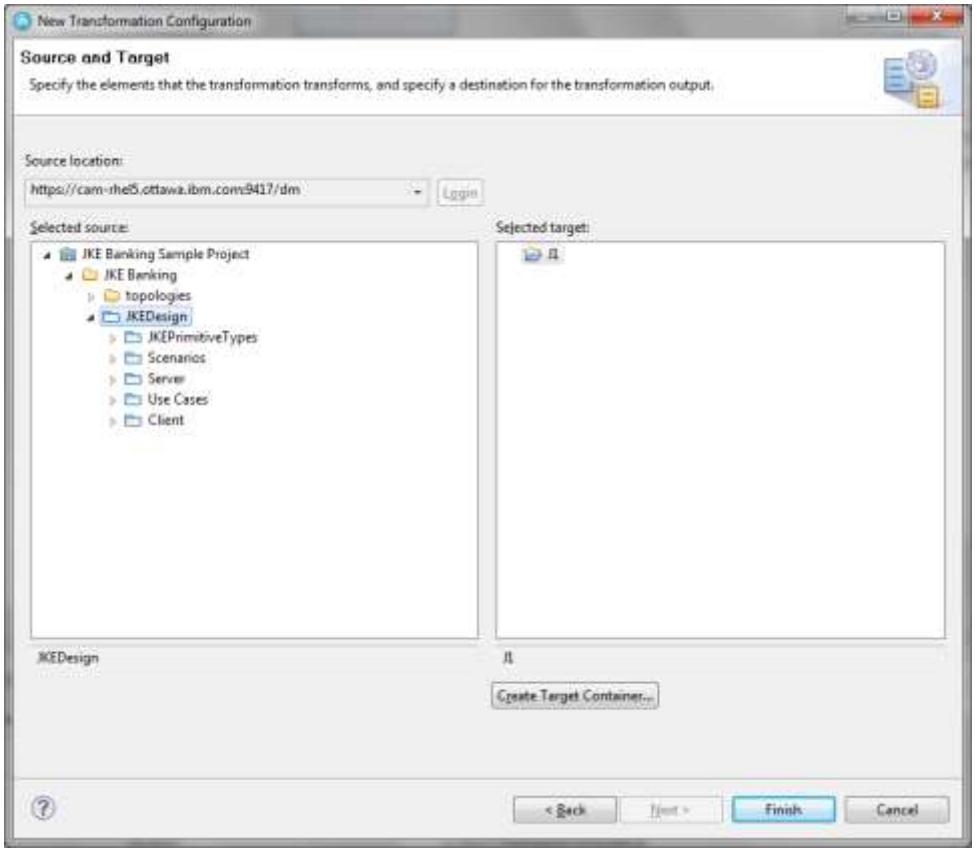
Search Improvements

- Cross project searching
- Query based searching



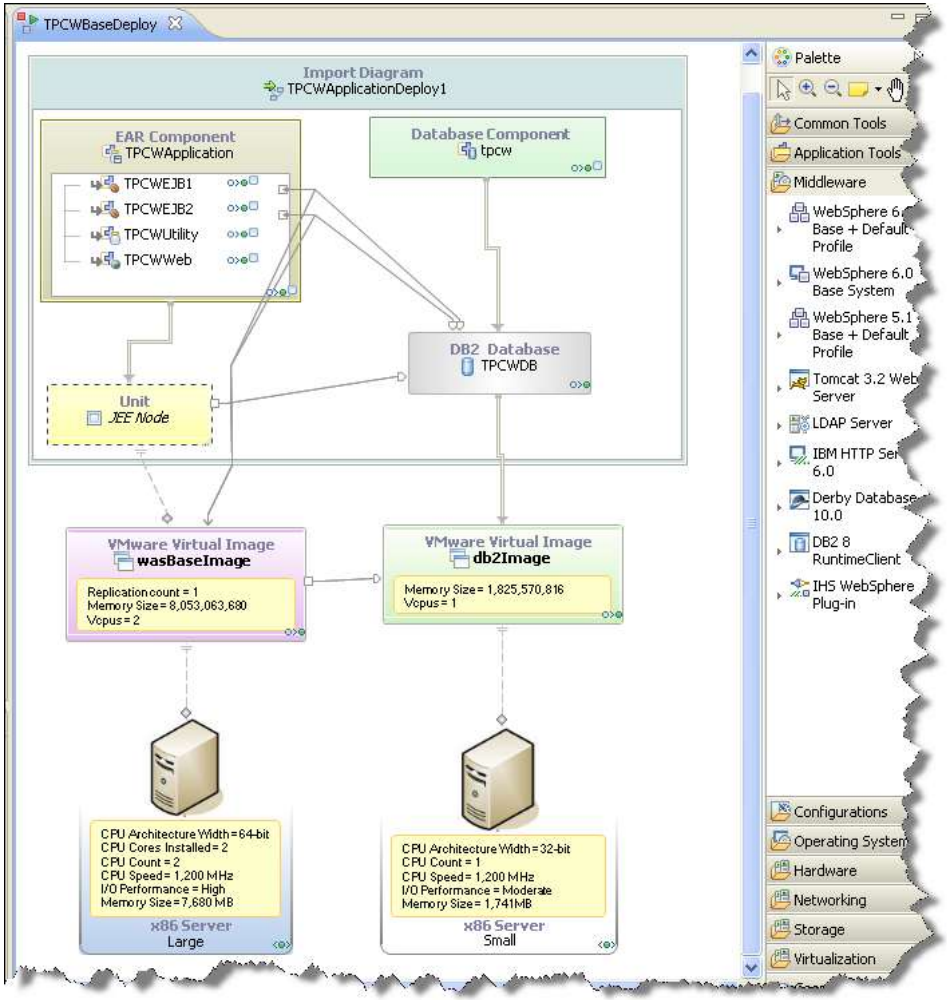
RSA Transformations

- Client side transformations against repository based designs
- Integration with RTC Build Engine

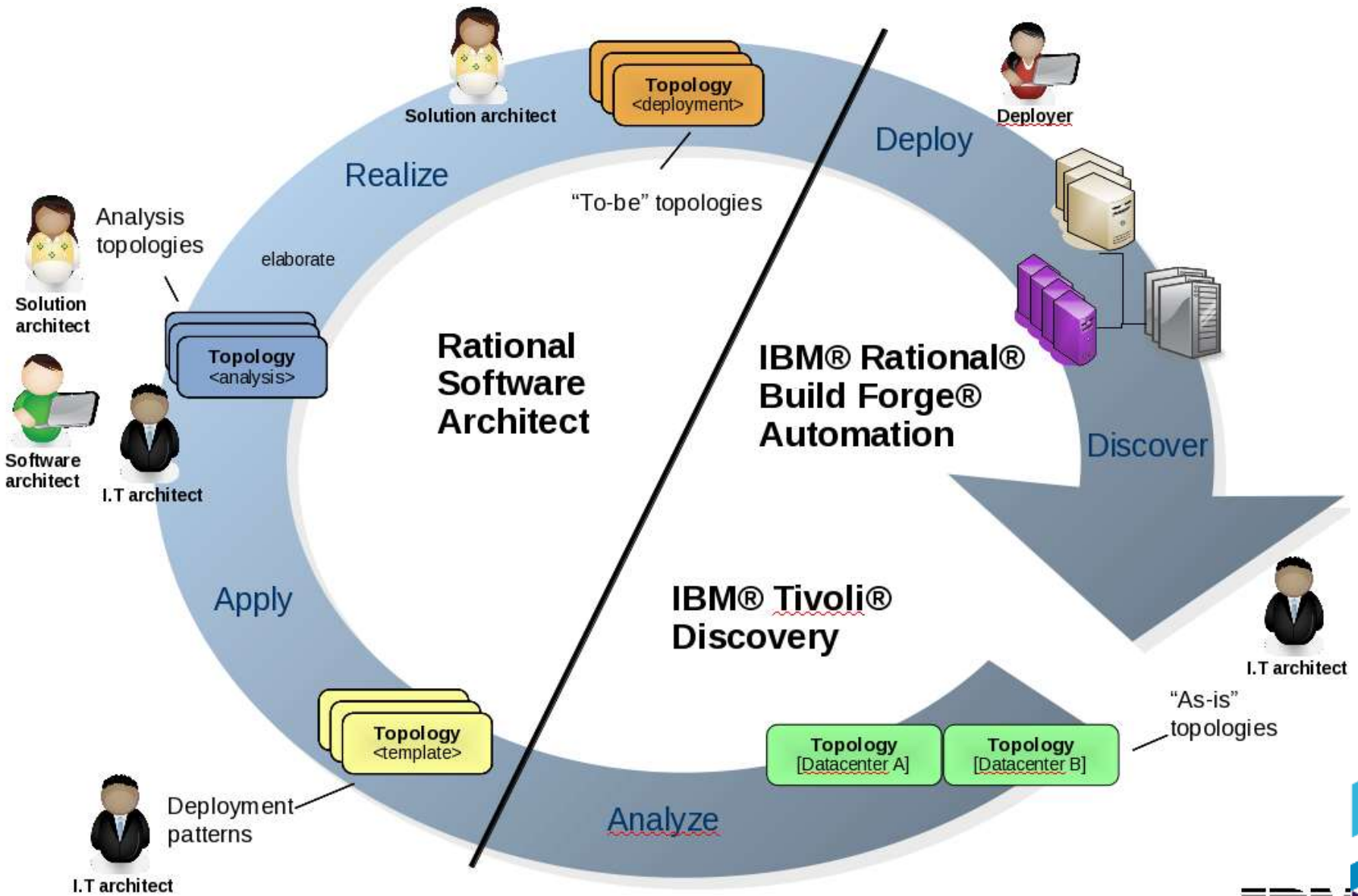


The IBM Rational Deployment Architecture Platform

- The IBM® Rational® Deployment Architecture Platform includes:
  - Smarter IT deployment topology design
  - Communicate and validate IT deployments designs to avoid costly problems late in the application lifecycle
  - Use technology-specific models and rich diagramming tools to construct topologies
- Topology template design and reuse
  - Define datacenter building blocks to quickly and easily create datacenter topology designs
- Deployment automation planning
  - Select, populate, and execute the automation tasks necessary for provisioning a topology design
- Datacenter discovery
  - Integrate with IBM® Tivoli® Application Dependency Discovery Manager to create topologies from live configuration data, which can be used as a starting point to design changes

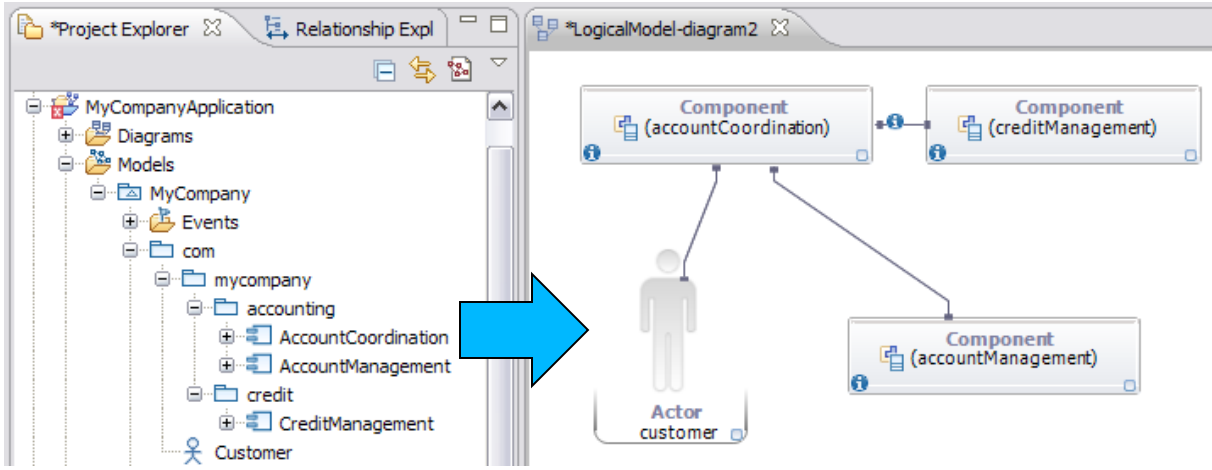


Phases of Deployment Architecture



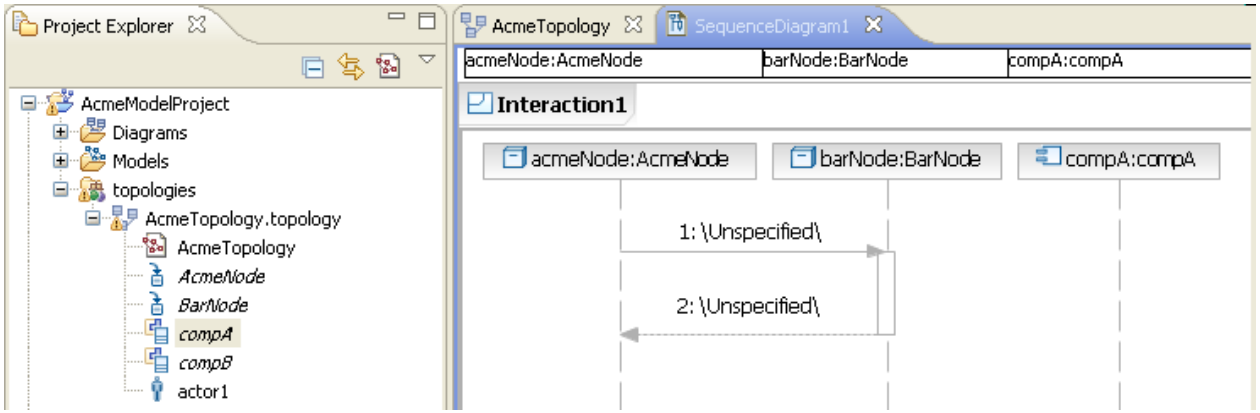
UML interoperability

- Reflect UML modeler elements into a deployment topology
  - Components and actors
- Validate reflected elements
  - Mismatched relationships
  - Mismatched stereotypes
- Quick-fixes to automatically resolve validation errors

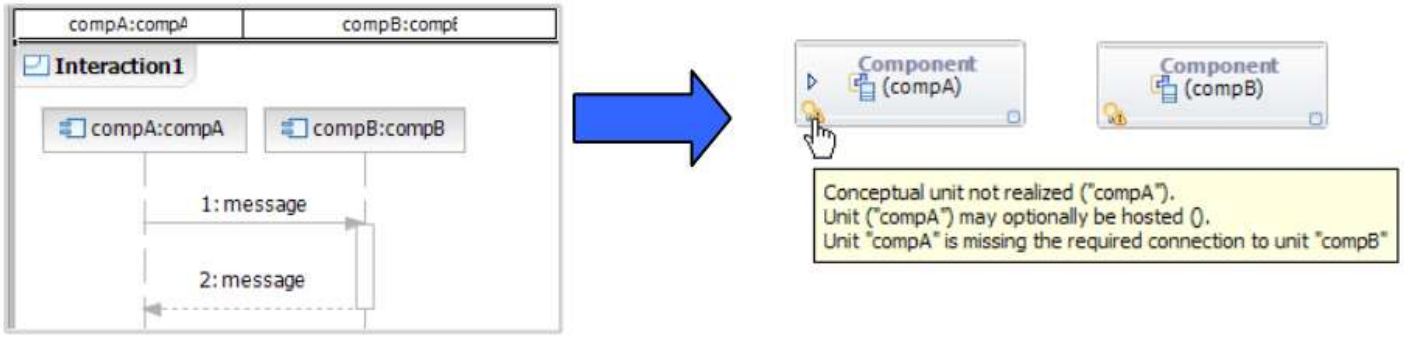


UML interaction models are enforced

- Deployment topology units may be visualized in UML interaction diagrams

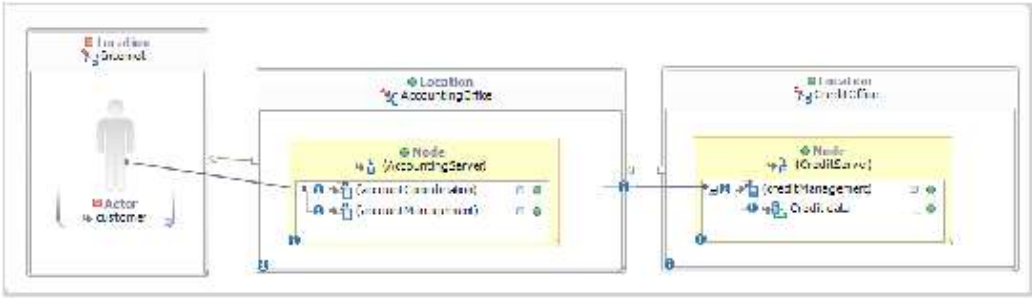


- Topologies may then be constrained by the UML modeled communications
  - Validate relationships prescribed in a sequence or interaction diagram

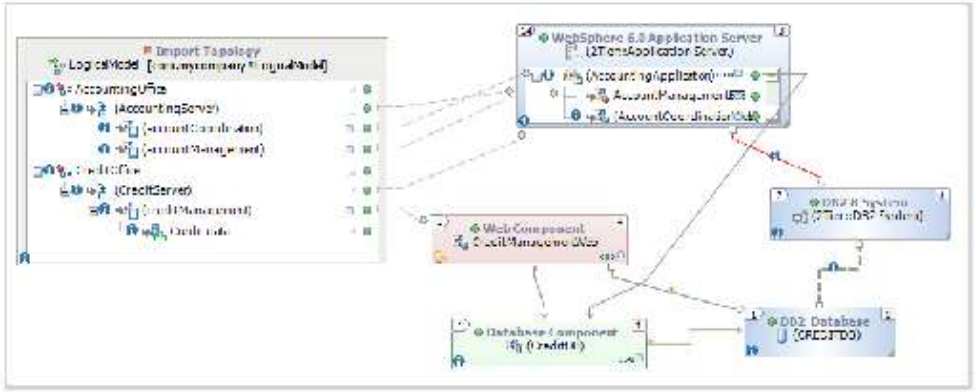


Model at the appropriate level of abstraction

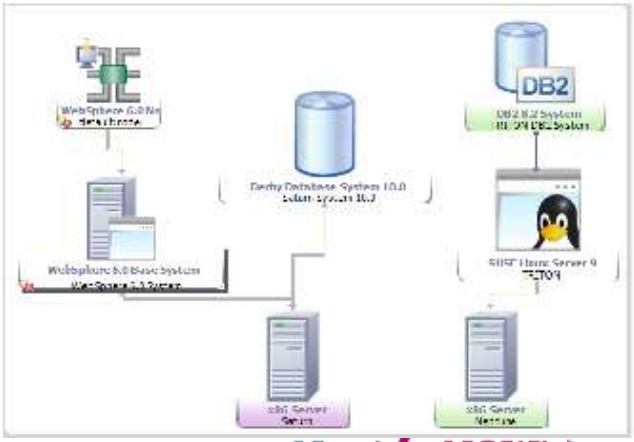
Logical modeling
- Analyze the problem



Physical modeling
- Capture technology choices

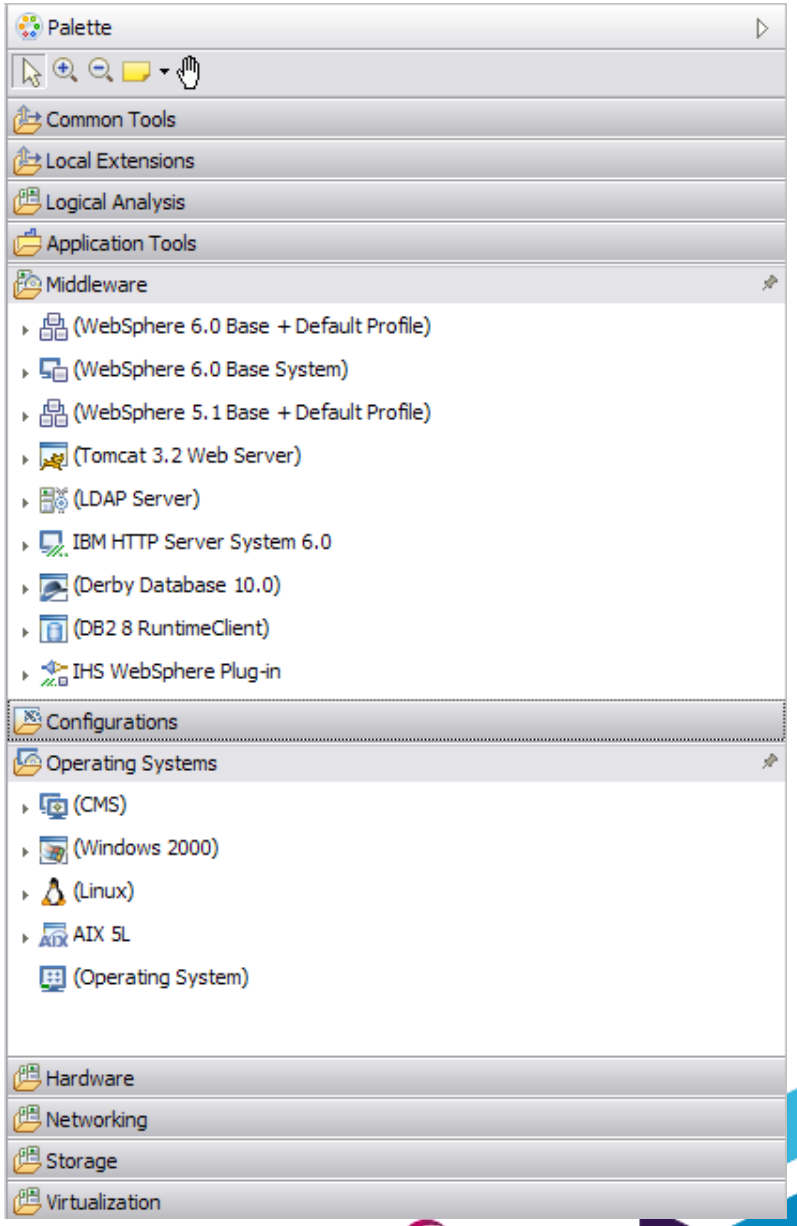


Deployment instance modeling
- Represent existing infrastructure



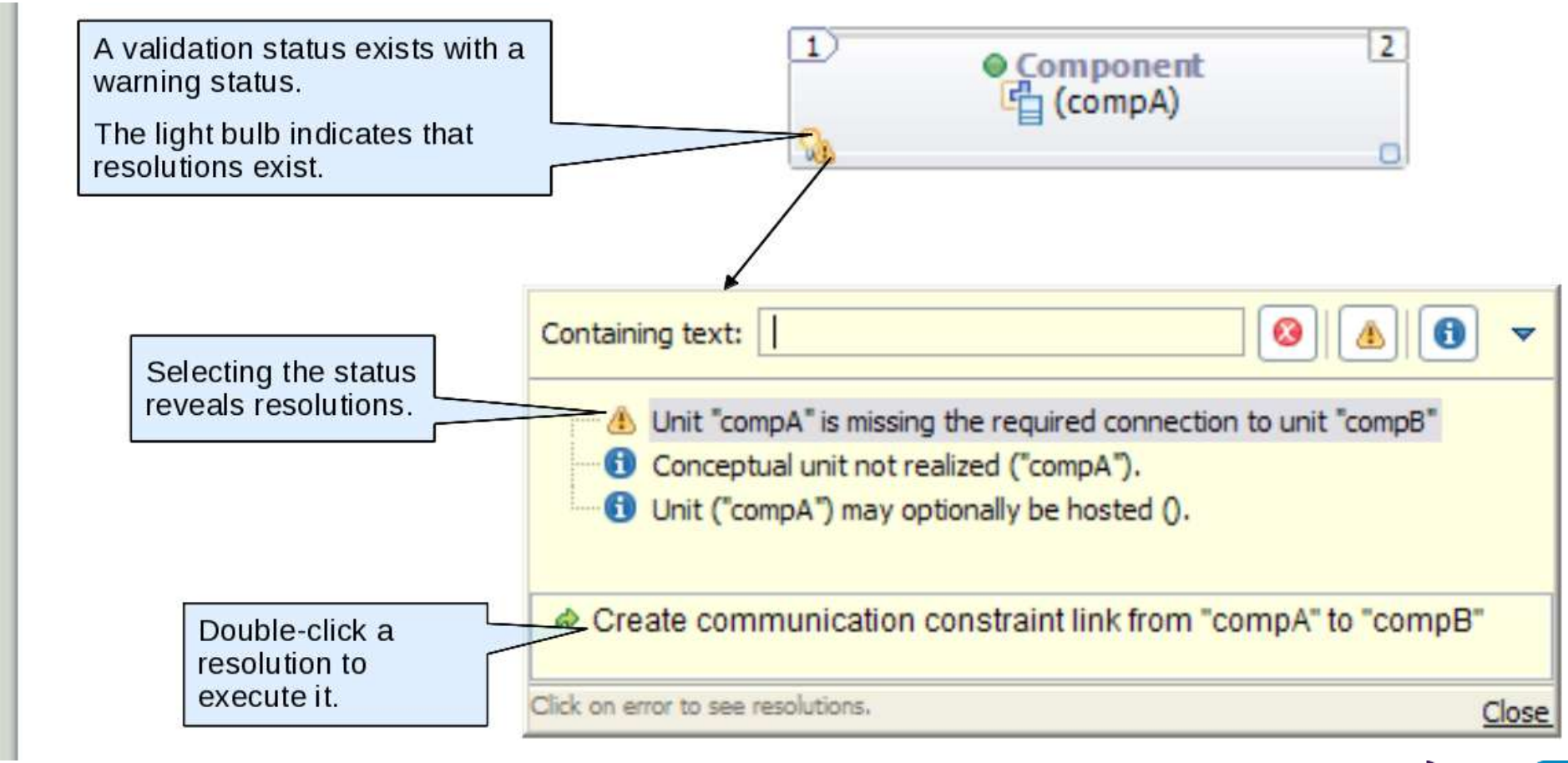
Domains

- Capture technology-specific capabilities and requirements
- Define templates or building blocks for constructing topologies
- Capture domain-specific validations and guidance
- Support for defining dynamic types (user defined extensions)



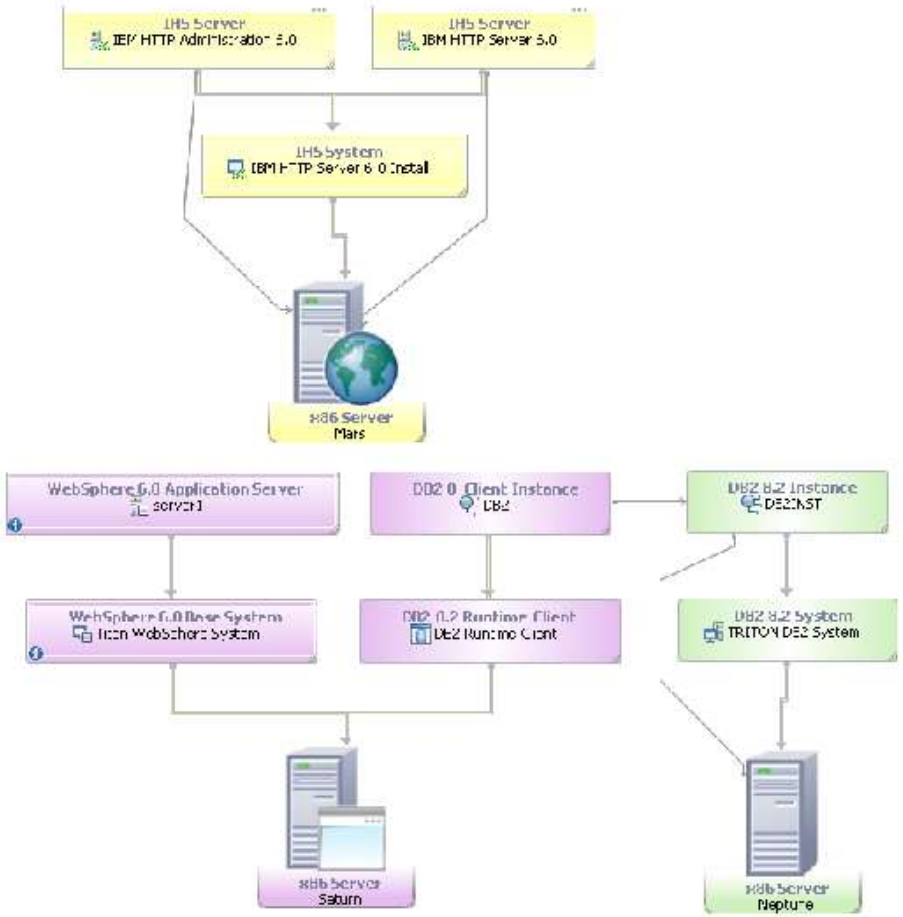
Topology validation and resolutions

- Validation statuses represent issues with a topology.
- Resolutions exists to correct validation statuses.



Infrastructure example: WebSphere & DB2

- Model multiple hosting stacks and their dependencies
- Under the diagram surface, the model captures configuration details for IBM® HTTP Server, IBM® WebSphere® Application Server, and IBM® DB2®



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