AM10

Practical Experiences Migrating Unified Modeling Language Models to IBM® Rational® Software Architect

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IBM Rational Software Development Conference 2008

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Agenda

- Motivations and Mechanisms
- Migration Process
- Migration from Rational Rose and Rational XDE to RSA
- Migration from 3rd Party UML Tools
- Basic Rules
- Conclusions

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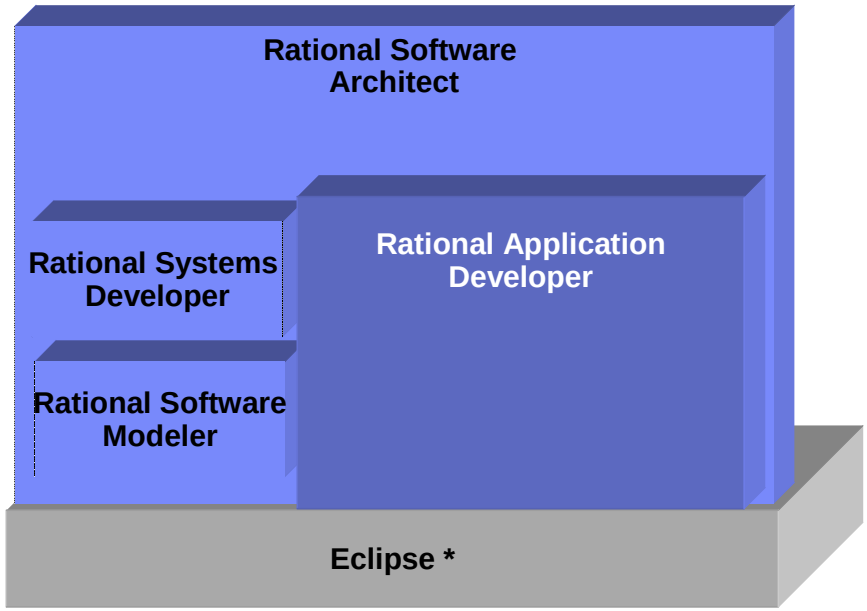
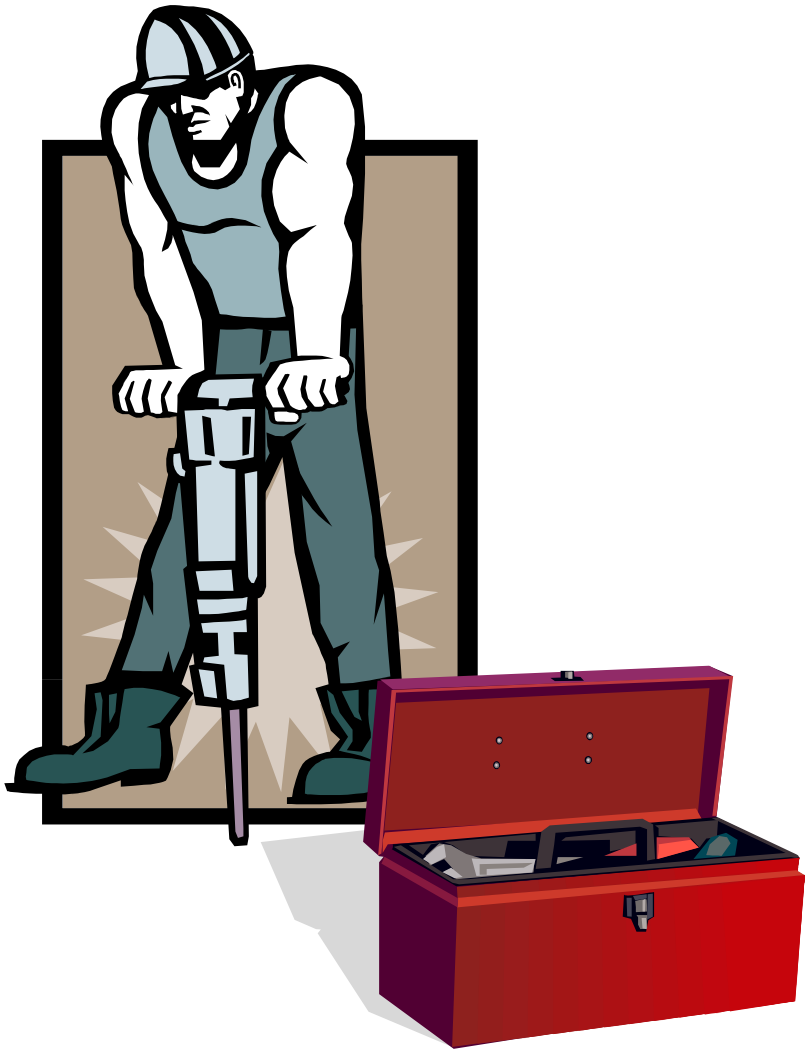
Motivations – Why Migration Matters

- **Modernization**.
  - Existing platforms, tools, or methods have reached end-of-life
- **Standardization/corporate governance**.
  - A project is not aligned with corporate standards and is consequently forced to migrate.
- **Improved functionality/automation**.
  - Existing solutions do not offer the degree of automation or functionality required to support the project, e.g. Model Driven Architecture (MDA) or UML2.
- **Improved interoperability/lifecycle support**.
  - A change in the tool environment is made in one discipline in order to improve interoperability and lifecycle support with the other disciplines.



Migration Mechanisms

- Model Migration Mechanisms
  - Manual migration
  - XMI export/import
  - Built-in Model export/import tool
  - Third party tool
  - Home-grown migration scripts
- The various mechanisms are not exclusive.
  - Migration of the bulk set of data can be done using a built-in export/import mechanism or a third party solution.
  - Manual migration, can then be used for bits and pieces of information that are not covered by the migration tool.
  - Home-grown scripts can be used in context of an existing migration tool either to pre-process the data (e.g. to clean up a UML model) or to post-process it.



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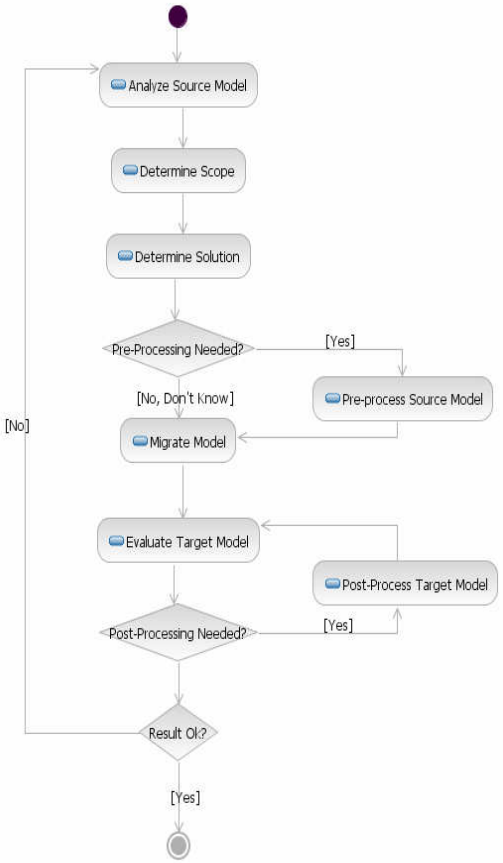
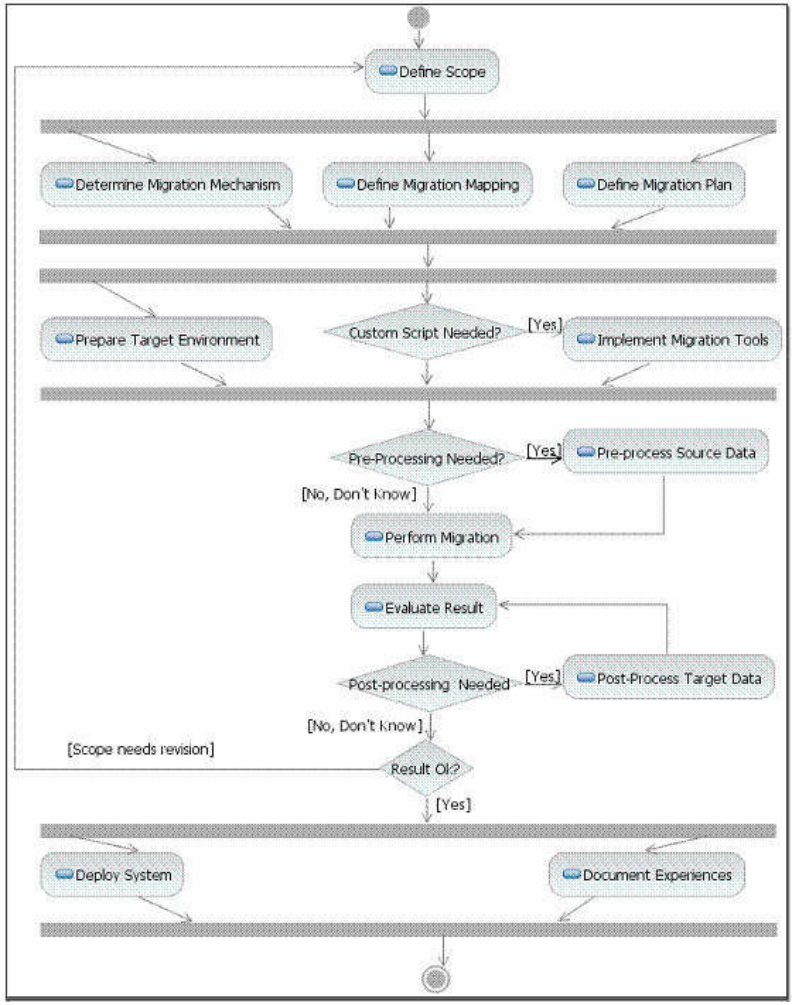
Migration Process

- Fast-path (Ideal process)
  - Analyze source model
  - Determine Scope
  - Define migration solution
  - Apply Migration Tool
  - Check target model
  - Finished
- Real-path
  - A bit more complicated
  - Requires more steps
    - Pre-processing
    - Post processing
  - Highly Iterative
  - Requires special skills
  - .. and willingness to compromise.



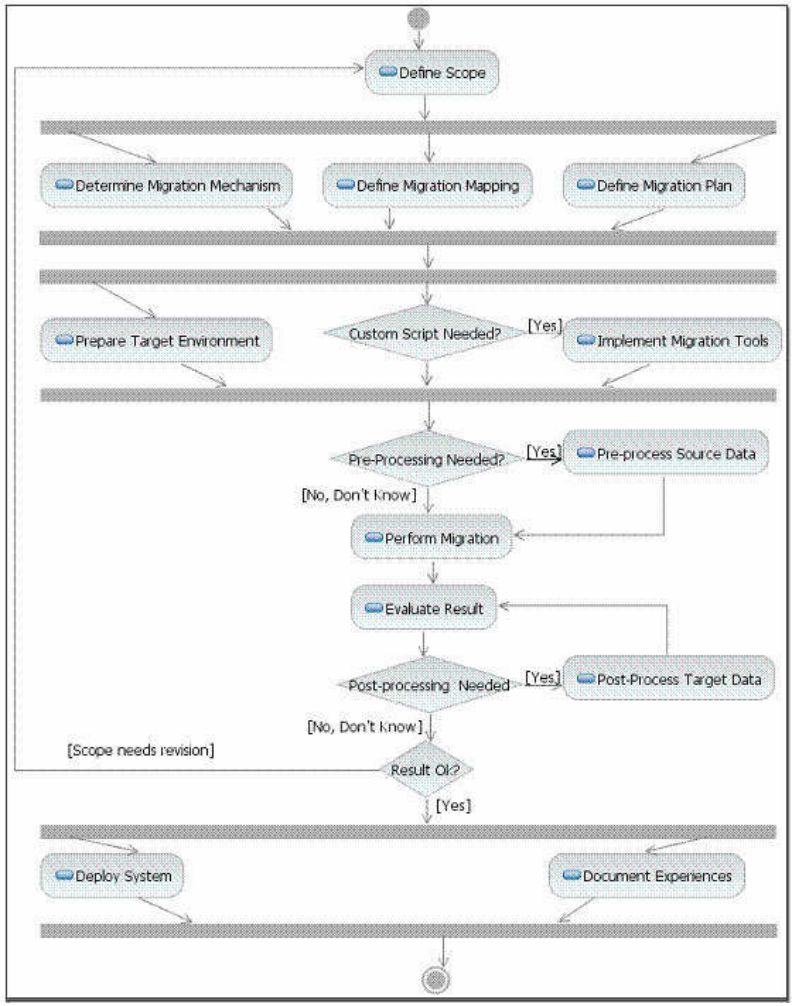
Realpath Migration Process

- **Define scope**.
  - Interview the various stakeholders and collect the requirements.
  - Analyze the existing and new tool environment and define the scope.
- **Define migration mapping**.
  - Analyze source data and identify the data that need to be migrated.
  - Define the *mapping* between the source data and the target data.
- **Determine migration mechanisms**.
  - Analyze and evaluate possible migration mechanisms and determine the migration solution.
- **Define migration plan**.
  - For large or complex migrations it may be relevant to define a migration plan identifying the various steps involved



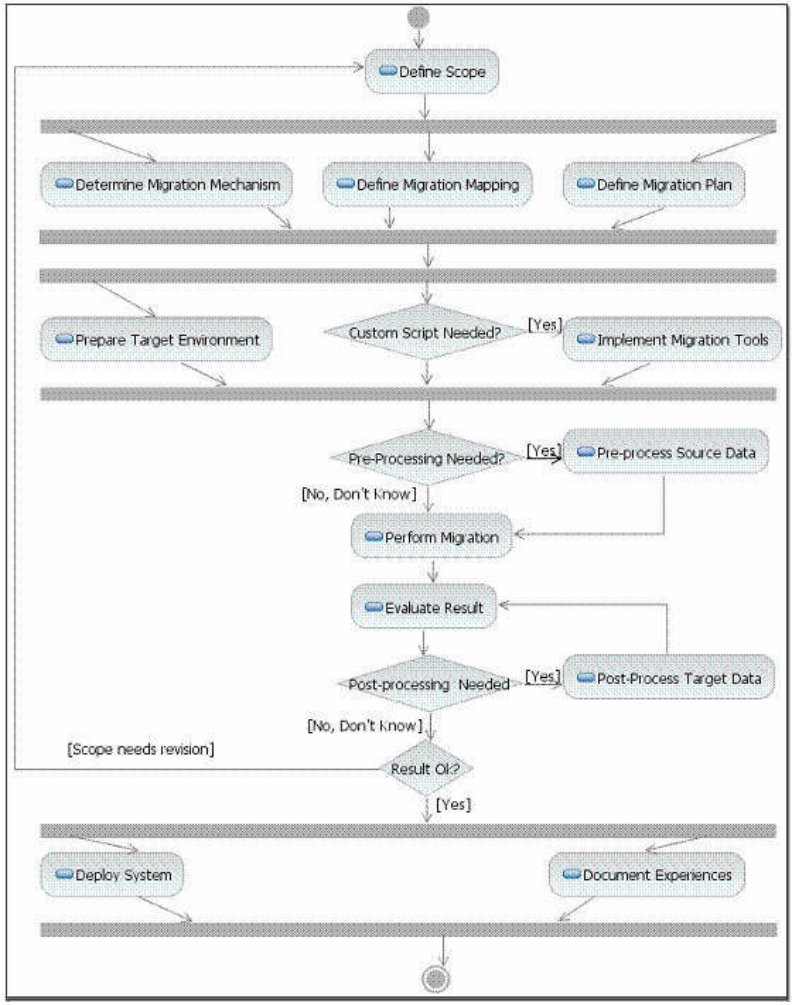
Realpath Migration Process - continued

- **Prepare target environment**.
  - Install, setup and configure target environment (e.g. RSA with ClearCase and RequisitePro).
- **Implement conversion scripts**.
  - Any missing tools needed in order to migrate or pre-/post-process the data are implemented or adapted from existing scripts and tested.
- **Pre-process source data**.
  - Get source data in a form where it can be migrated (e.g. partition of large models).
  - Validate source data and remove errors.
- **Perform migration**.
  - Call the migration tools with the relevant parameters and produce initial target model as result.
  - Check migration log.



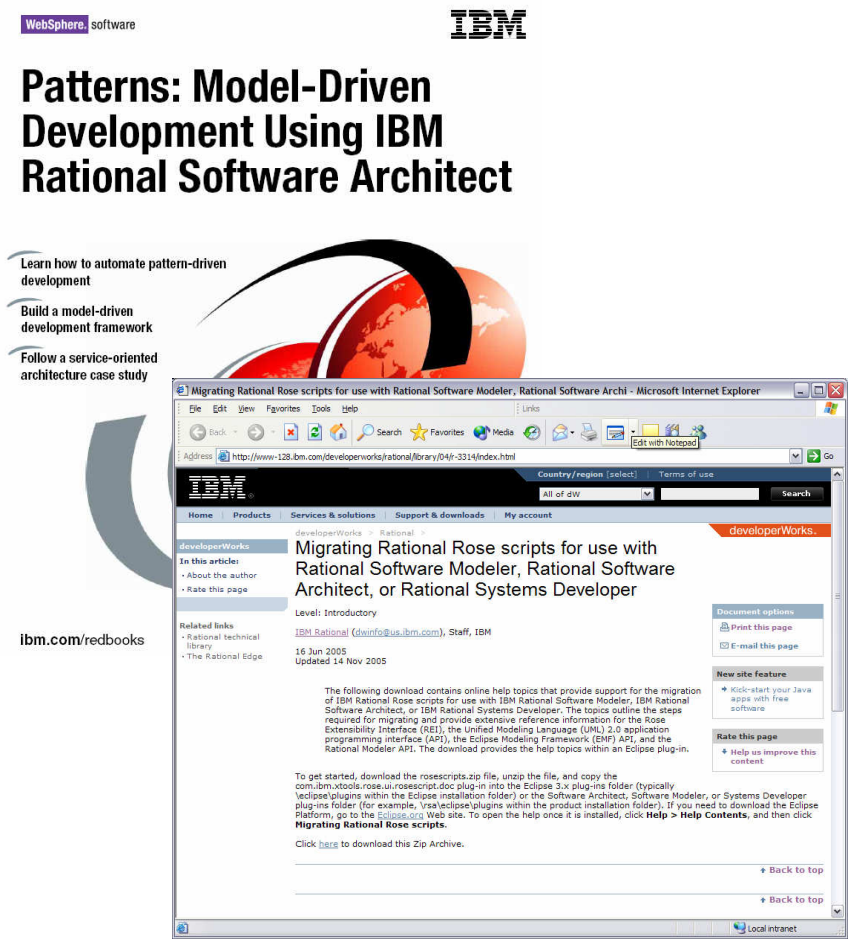
Realpath Migration Process - continued

- **Evaluate result**.
  - Evaluate target model e.g. with respect to the scope looking into target model.
  - Check migration log (errors, warnings).
  - Invoke the validation function of RSA
  - Split the evaluation work among several team member or actual users of the tool.
- **Post-process target data**.
  - Check and remove validation errors - either manually or automatically by running a script.
  - Partition of large models into fragments.
- **Document experiences**.
  - Write documentation in form of migration guides and tips and tricks required to finally succeed.
- **Deploy Solution**



Beyond Model/Data Conversion

- Training of Users
- Definition of Process
- Definition of Model Guidelines
- Setup for Working in Teams
- Resolution of UML 1.x/2.1 differences
- Migration of UML Profiles
- Migration of Scripts
- Development of new Scripts
- Migration of Reports
- Migration and Synchronization with Code
- Peer-Review of the Migrated Models



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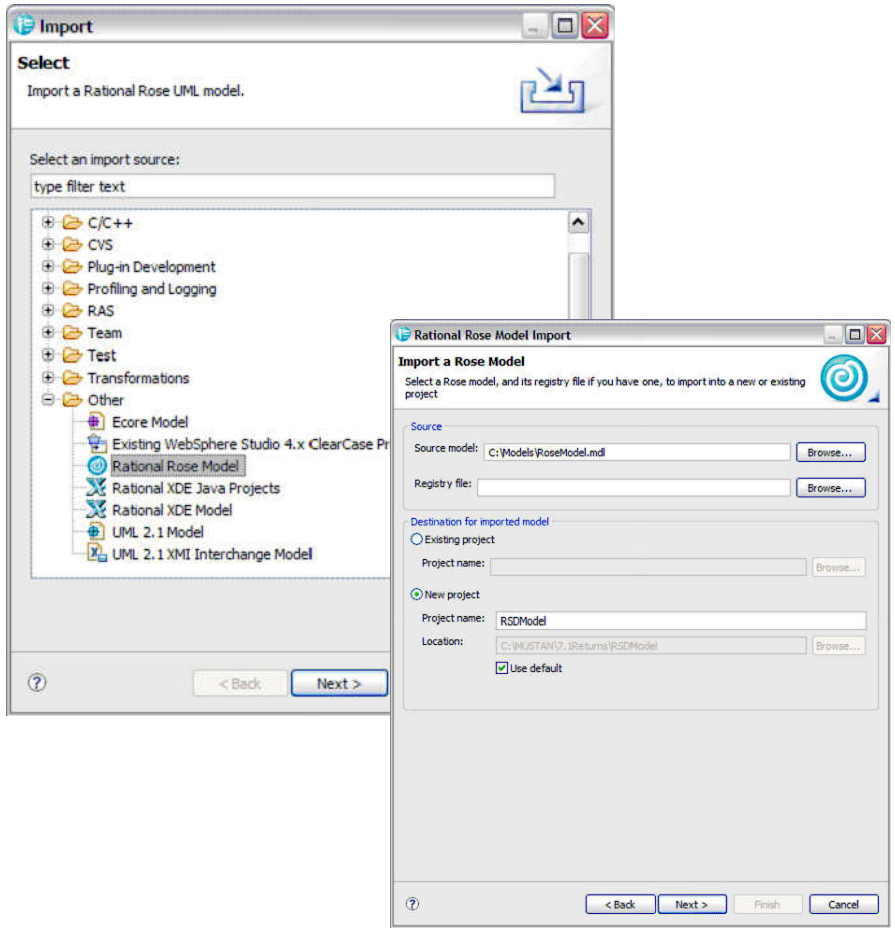
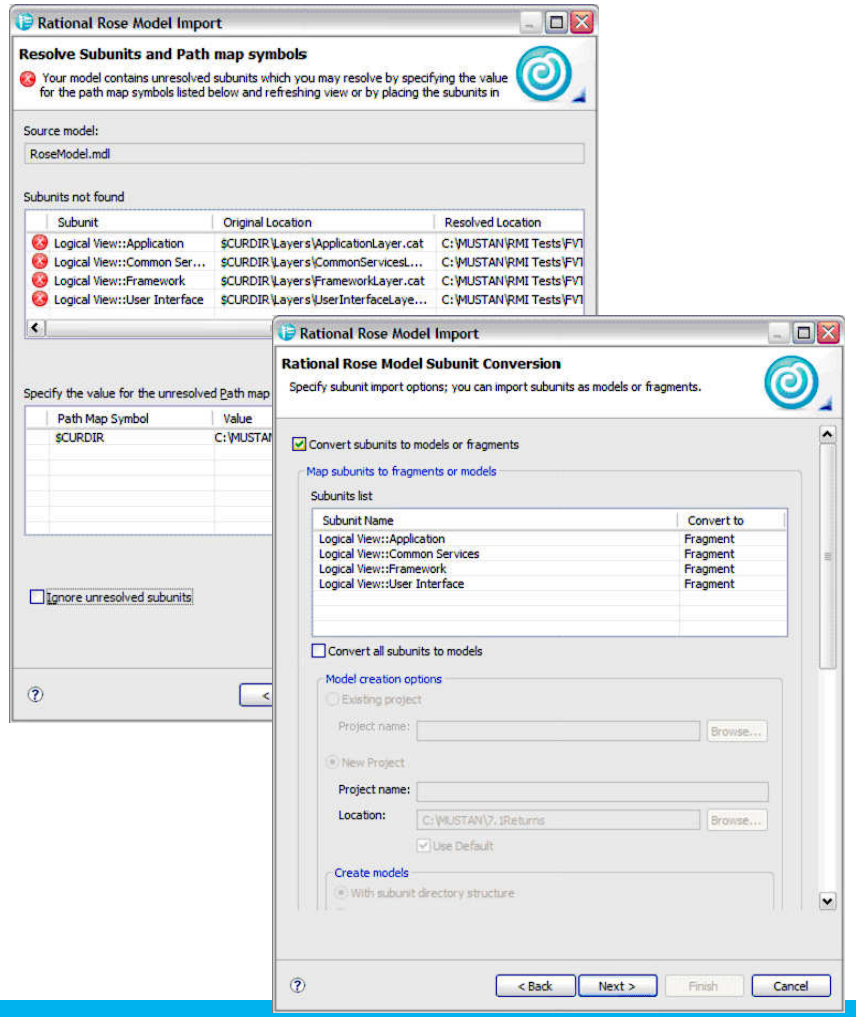
Rose Import – Getting Started

- Invoke File>Import and select source Rose model to import
- Specify target Project and target Model
- Tip: Before doing this step,
  - identify the models that are subject to migration
  - validate source models and remove
    - Validation errors
    - Broken references
- Tip: Increase heap size of RSA in context of large models



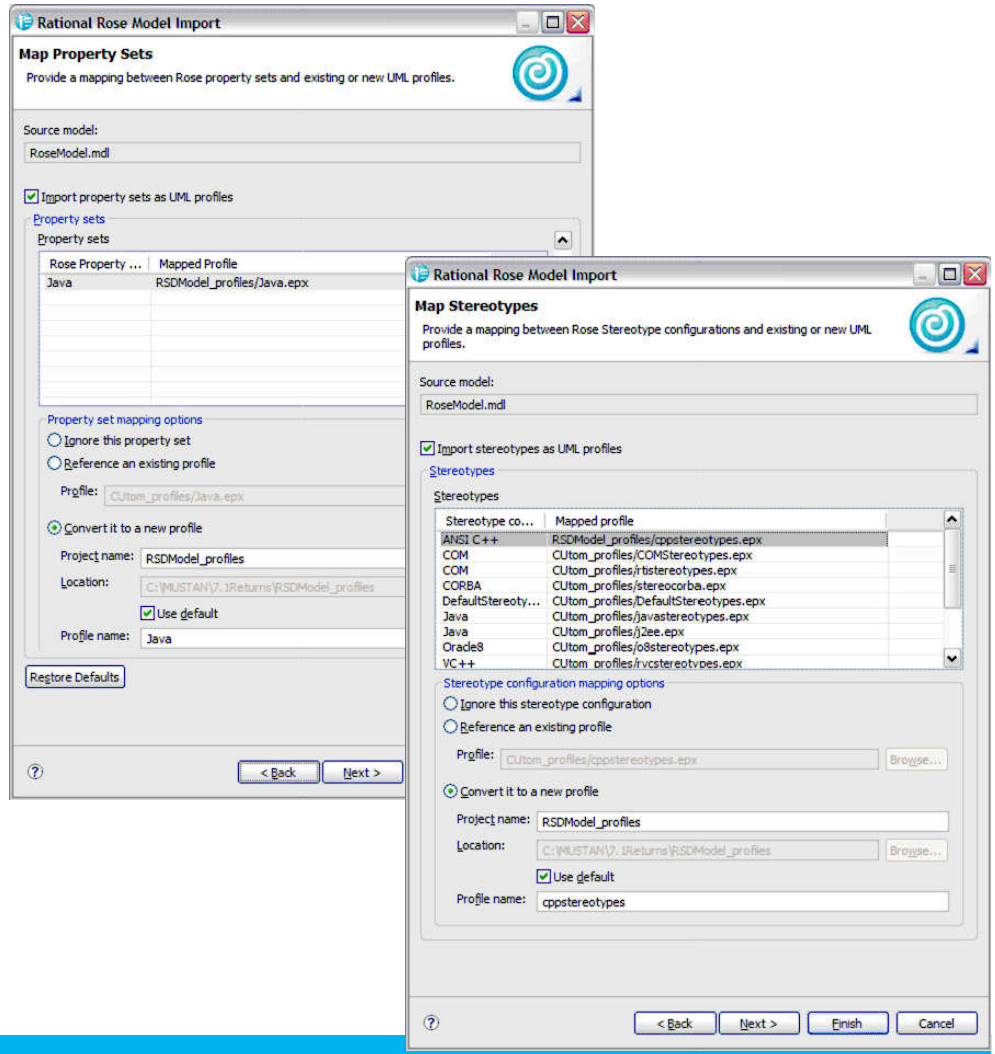
Rose Import – Working in Team

- Resolve controlled units not found using path map symbols
- Decide whether to convert controlled units to fragments or to models
- Tip: Before migration, setup RSA with ClearCase or other CMVC system.
- Tip: Following the migration, a post-processing may be needed to refactor the model:
  - Mapping of Rose/XDE views in different models
  - Appropriate relocation in Eclipse Projects
  - Definition of Navigation Model
  - Restructuring to avoid cyclic model dependencies
  - Restructuring to minimize load time



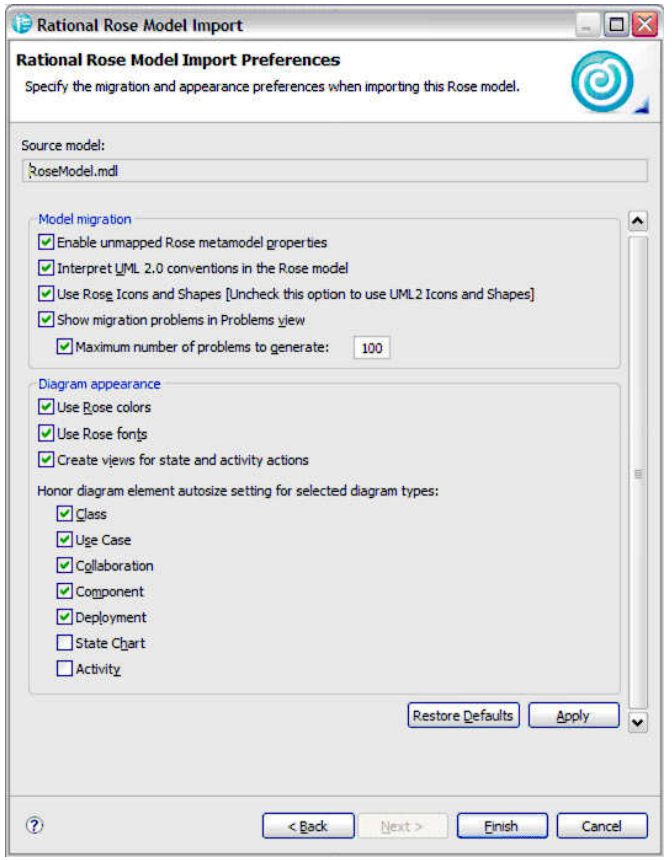
Rose Import – Profiles and Stereotypes

- Rose property sets and stereotype are imported as UML profiles.
- For a property set/stereotype decide whether to
  - Ignore it
  - Reference existing UML profile
  - Create new profile
- Profile can be maintained/enhanced as Eclipse Plug-In to accommodate for constraints and additional property fields.
- Tip: Do not migrate the Rose and XDE models that contain a large numbers of profiles needed in Rose/XDE for roundtrip engineering (Ada, ANSI C++). This will save space and time.



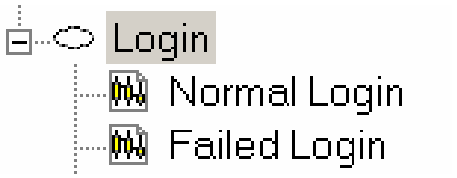
Rose Import - Options

- There are a few options that can be specified
  - Use Rose icons and shape
  - Use Rose colors
  - Max number of migration problems allowed
  - Show migration problems in Problem view

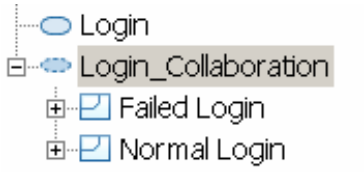


Migration Problems

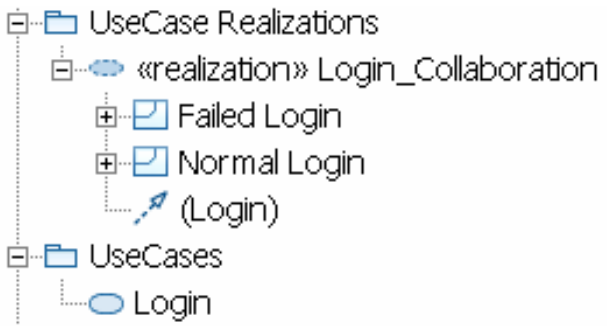
- Changes/Increased rigorousity in UML standard may lead to:
  - Creation of new elements
    - Data types are represented as classes
  - Morph of elements or relationships
    - Association morphed in dependencies with new stereotype
  - Removal of Illegal constructs (rarely)
- Model may need to be postprocessed by RSA pluglet to remove errors
  - Anonymous roles
  - Redundant data types („String“, „string“)
  - Collaboration model structure
- Tip: document solution to these details on the run in a migration guidelines document



Rose Modell



Collaboration after Import to RSA



Requested model structure using RSA Pluglets

- **Creation of a Realization Relationship**
- **Setting the <<realization>> Stereotype for the Collaboration**
- **Move of the Collaboration into another Package or Model**

Migration of Scripts

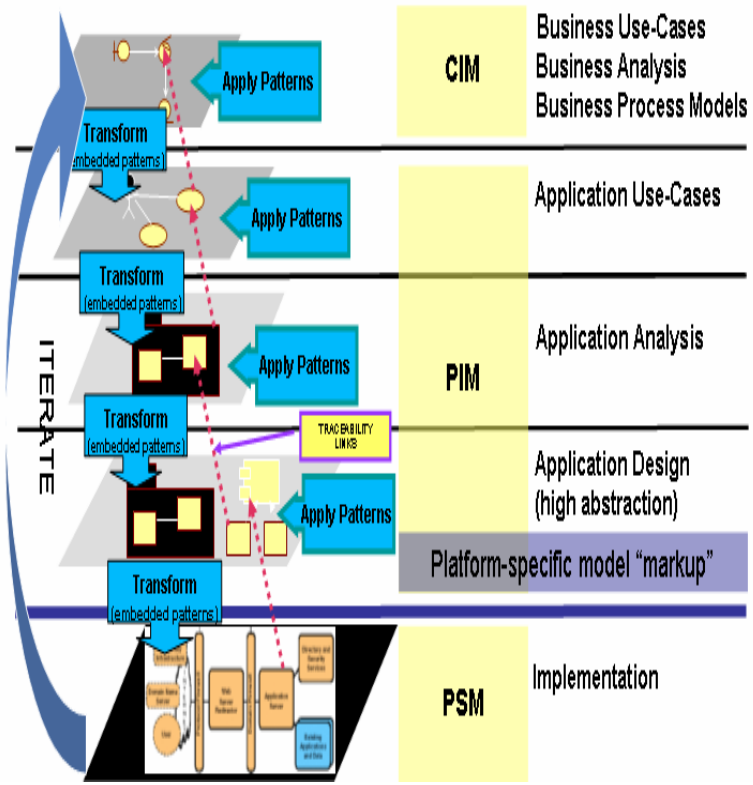
- Reasons for script
  - Supporting rules (name conventions, model guidelines)
  - Own metrics
  - Propriety functionality/enhancements
  - Custom integrations
- Reasons for discarding a script
  - The problem solved by the script is not present in RSA
  - Functionality comes out of the box in RSA (non modal dialog for editing properties)
  - Script has become obsolete or has low priority
- For scripts to migrate, look into mapping:
  - Eclipse Plug-In?
  - RSA Pluglet?
  - Profile?
  - …

Mapping of Rose and XDE Extensibility Mechanisms

Source	Source Tool	RSA Mechanism
Complex scripts/Script with GUI	Rose, XDE	RXE script (Eclipse Plugin)
Simple script with little GUI	Rose, XDE	Pluglet
Dialog	Rose, XDE	RSA dialogs or wizards (Eclipse Plugin)
Menus	Rose, XDE	RSA Menu Extensions (Eclipse Plugin)
Custom Code Generation	Rose, XDE	Transformation
Custom Reverse Engineering	Rose, XDE	Code Visualization, Harvesting, Transformations
Rose Model Events	Rose	UML Model Event Listeners
Patterns	XDE	Patterns, Transformations, JET2
MDA Toolkit Transformations	XDE	Transformations
Code Templates	XDE	JET2

Code Generation

- The concept of *Round-Trip-Engineering* (RTE) in Rose and XDE are fundamentally different to the concepts of RSA.
- Application design models can be enriched with *harvested* elements from code.
- Code can be generated from application design models using *transformations*.
- For specific programming languages (Java, C++) reverse transformations (reconciliations) can be used to generate model from code.
- Be Aware: getting code and model in sync is likely to require a complete new design model.



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Reischmann Informatik GmbH – Company Profile

Reischmann Informatik (RI) specializes in supplying interfaces for the model migration between UML modeling, data modeling, database design and business process modeling tools

- Located at Munich, Germany
- Founded in 1983 (Interface development since 1986)
- **TOOLBUS™** technology
  - Component based architecture for standardized model conversion
  - Extensible and customizable for special customer requirements
    - offered as a service (alternative solution to home-grown migration scripts)
- More than 30 modeling tools supported
- More than 300 companies worldwide have been using TOOLBUS interfaces
- Licensed software and migration services
- Successful 3rd party UML model migrations to IBM Rational Software Architect for major companies in the finance industry

Migration Scenarios from 3rd Party UML Tools

- Replacing another UML tool by Rational Software Architect
- Importing and exporting reference models, e.g.
  - Model Driven Architecture UML models from OMG
  - Common Information Models (CIM)
- UML model exchange between organizations or projects
- Rational Software Architect as development back-end for UML analysis tool

TOOLBUS Interfaces for Migration from 3rd Party Tools

- ARIS UML Designer / ARIS Business Architect
- Borland Together
- Innovator
- MagicDraw
- Microsoft Office Visio
- Select Architect
- Sparx Enterprise Architect
- Sybase PowerDesigner
- Telelogic System Architect

TOOLBUS Interfaces for Model Migration to RSA

Complete Migration

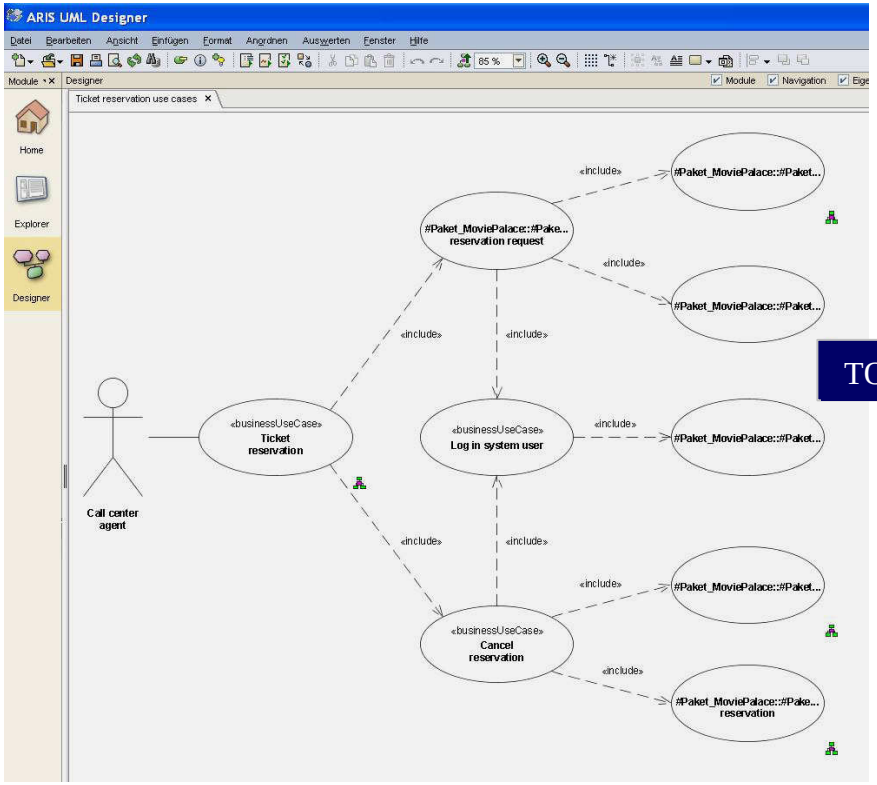
- Mainly restricted by the export limitations of the 3rd party tool (e.g. XMI)
- All UML objects, associations and attributes
- All documentation text
- UML diagrams (layout and colors)
- Customizable for tool proprietary and user extensions of UML standard (User Defined Properties, Profiles)
- Independent of UML Version (UML 1.3/1.4 to UML 2.0 conversion supported)
- Size of importable models only limited by Eclipse restrictions (Java heap size)

Available Import Technologies

- API (preferred technology)
  - mostly complete (including diagram layout and details)
  - mostly same methods as used by the UML tool itself
  - mostly compatible to new UML tool versions
  - traceable and controlled import of huge models
  - model update supported for import (required for round-trip engineering)
  - UML tool must be installed for the migration!
- XMI File (compromise)
  - mostly incomplete (diagram information missing in the XMI standard)
    - applicable with proprietary extensions,
      e.g. Unisys extensions (de facto standard for XMI 1.3)
  - XMI versions incompatible
  - no import traceability (issue when importing huge models)
  - mostly no model update support for import (issue for round-trip engineering)
  - migration independent of the installation of the UML tool!
- Proprietary XML or text export / import files (if API not available)

Model Migration from ARIS UML Designer to RSA

(Development back-end for UML analysis tool)



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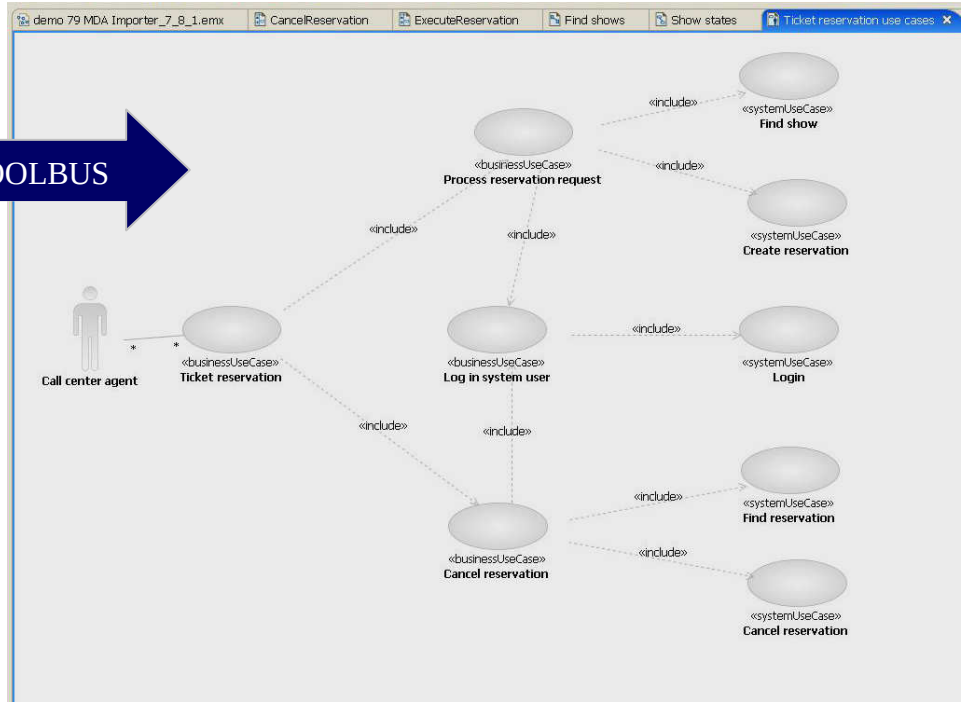
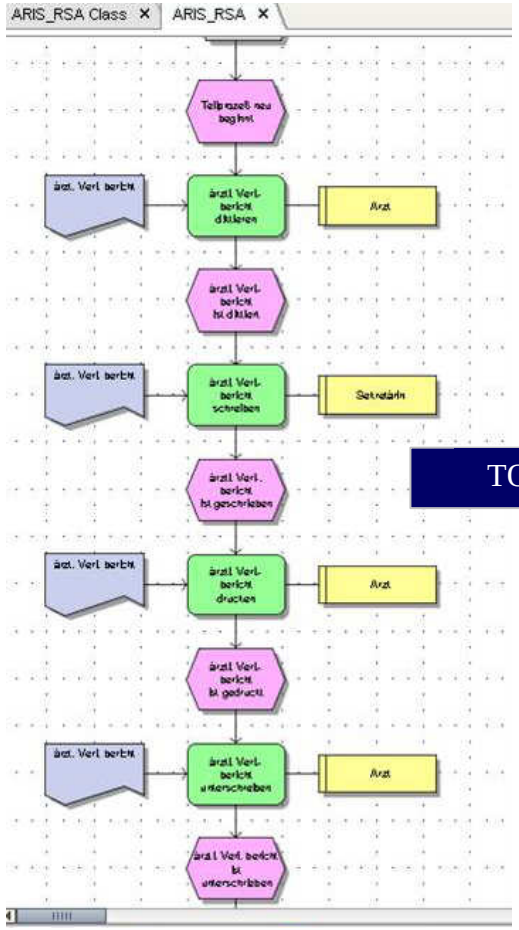
Sample: Use-Case Diagram



Export Technology:
AML Export File (proprietary XML file)

Model Migration from ARIS Business Architect to RSA



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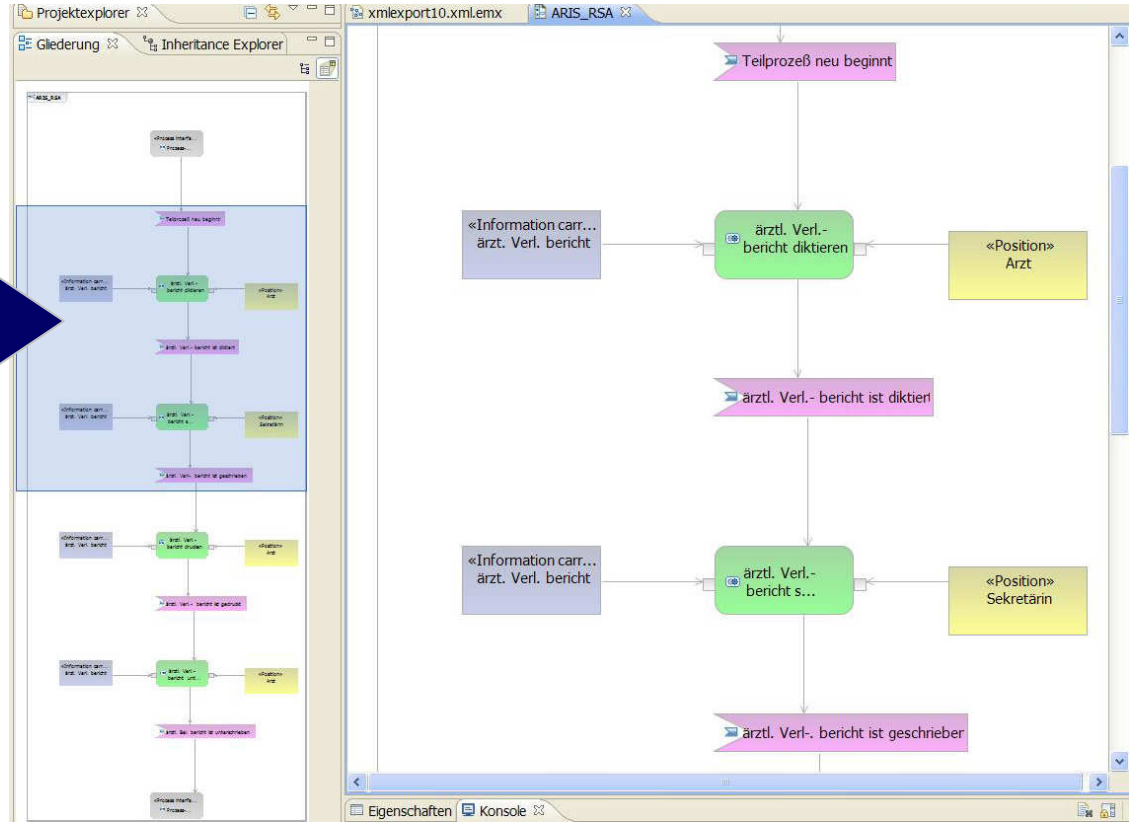
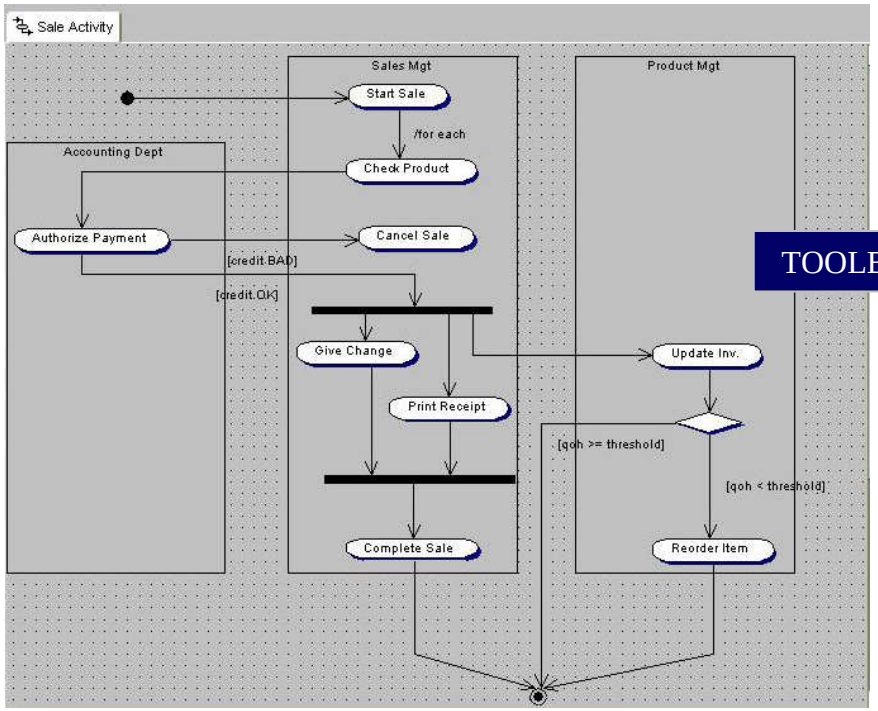


Sample: Conversion of ARIS EPC Diagram to UML Activity Diagram

Export Technology:
AML Export File (proprietary XML file)

Model Migration from Borland Together 6 to RSA

Sample: Activity Diagram



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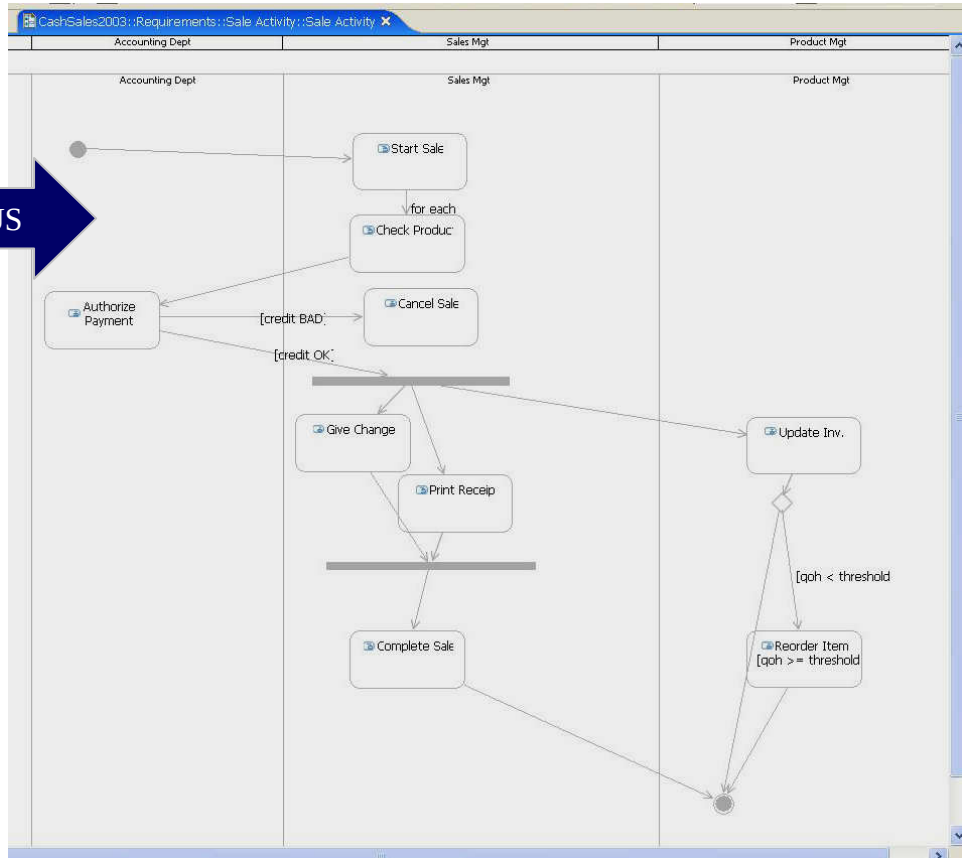
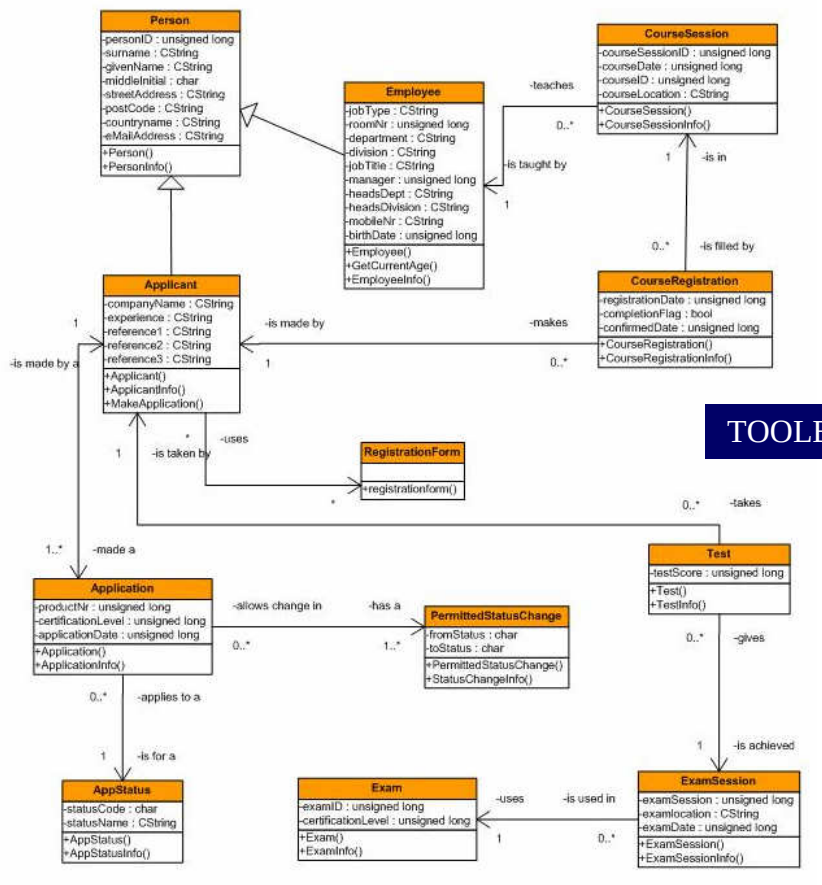


Export Technology:
XMI File (with Unisys Extensions)

Model Migration from Microsoft Office Visio to RSA



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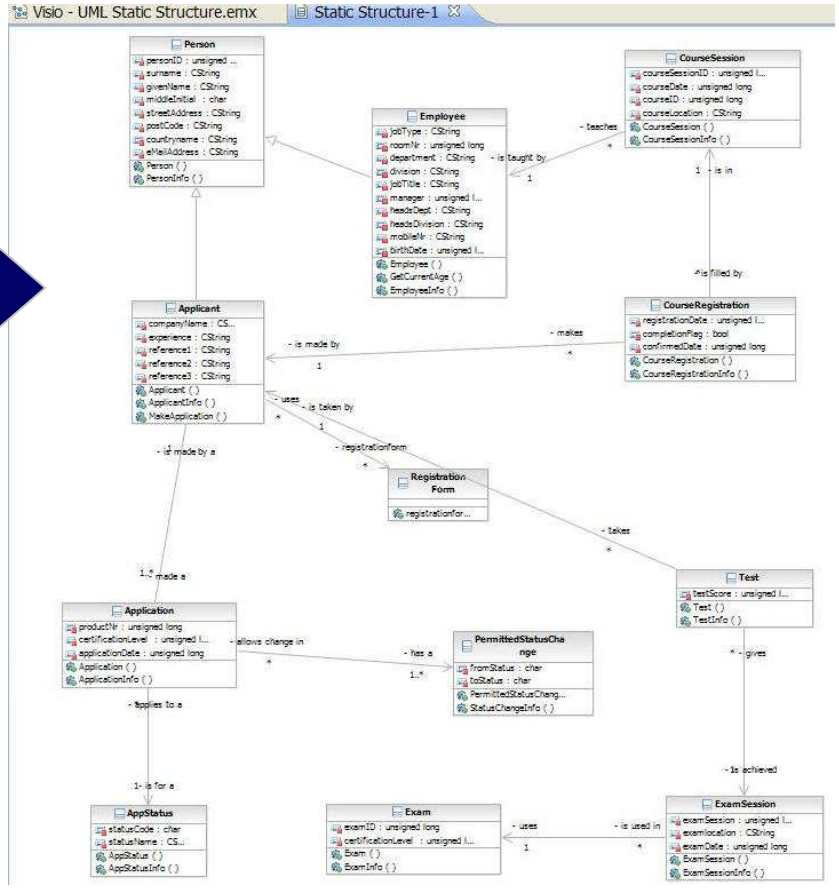
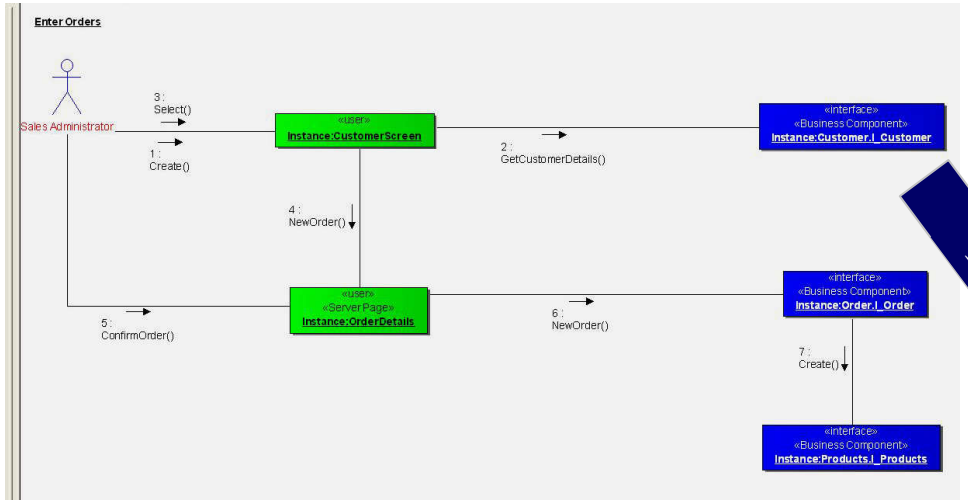
Sample: Class Diagram



Export technology:

- VDX file (proprietary XML file)

Model Migration from Select Architect to RSA



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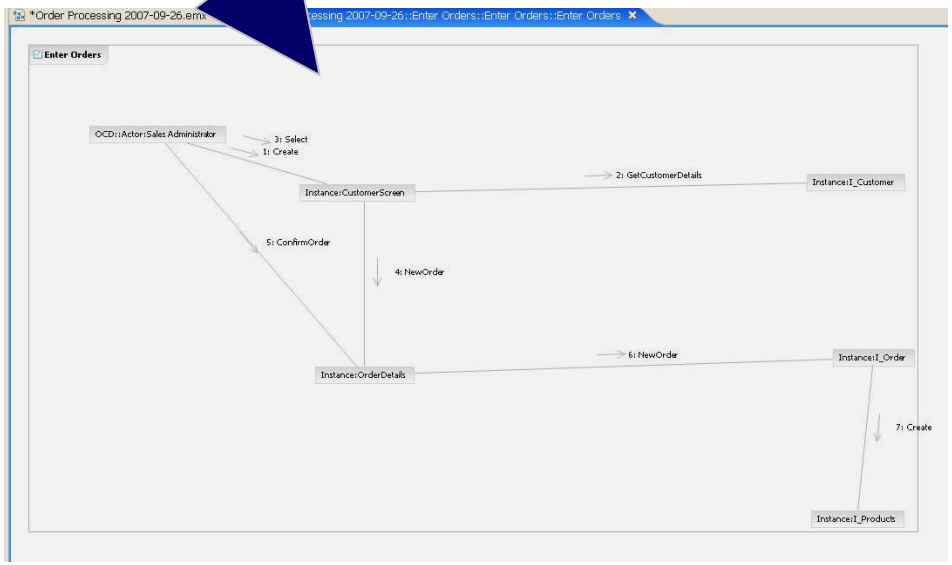
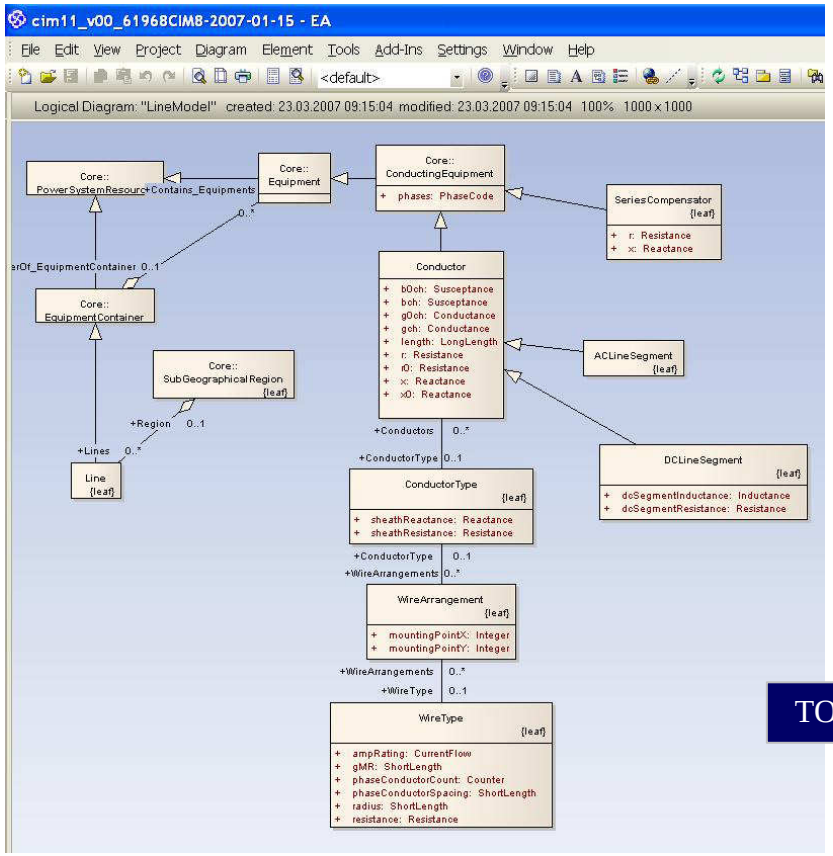


Sample:
Collaboration / Interaction Diagram

Export Technology:
VisualBasic API

Model Migration from Sparx Enterprise Architect to RSA



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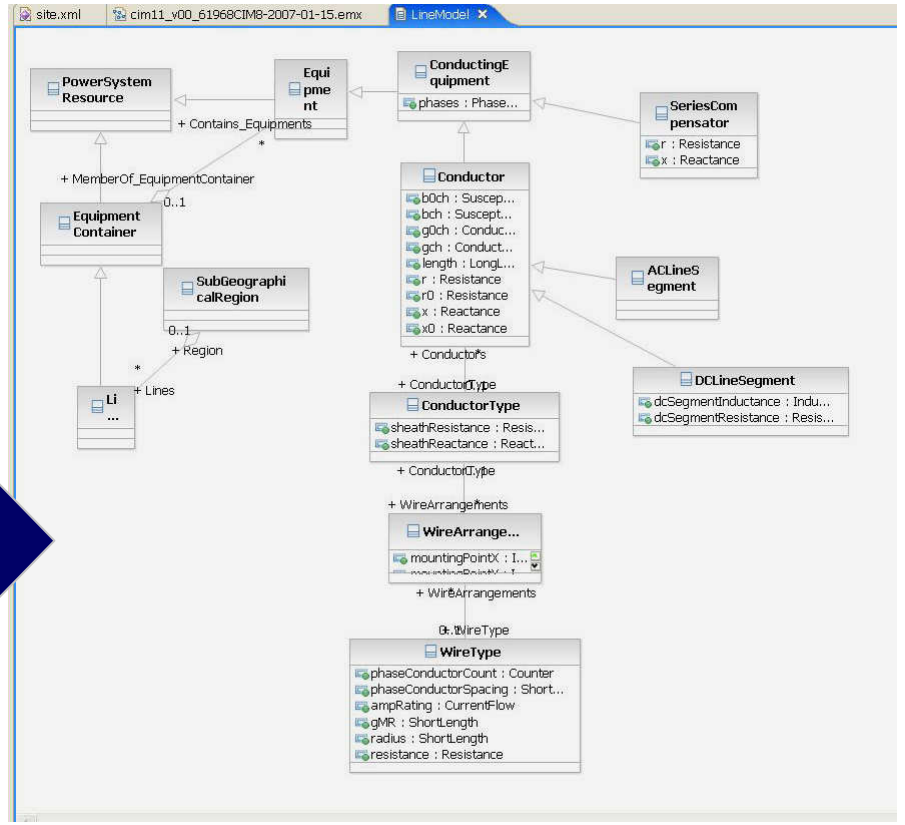
Sample: Class Diagram

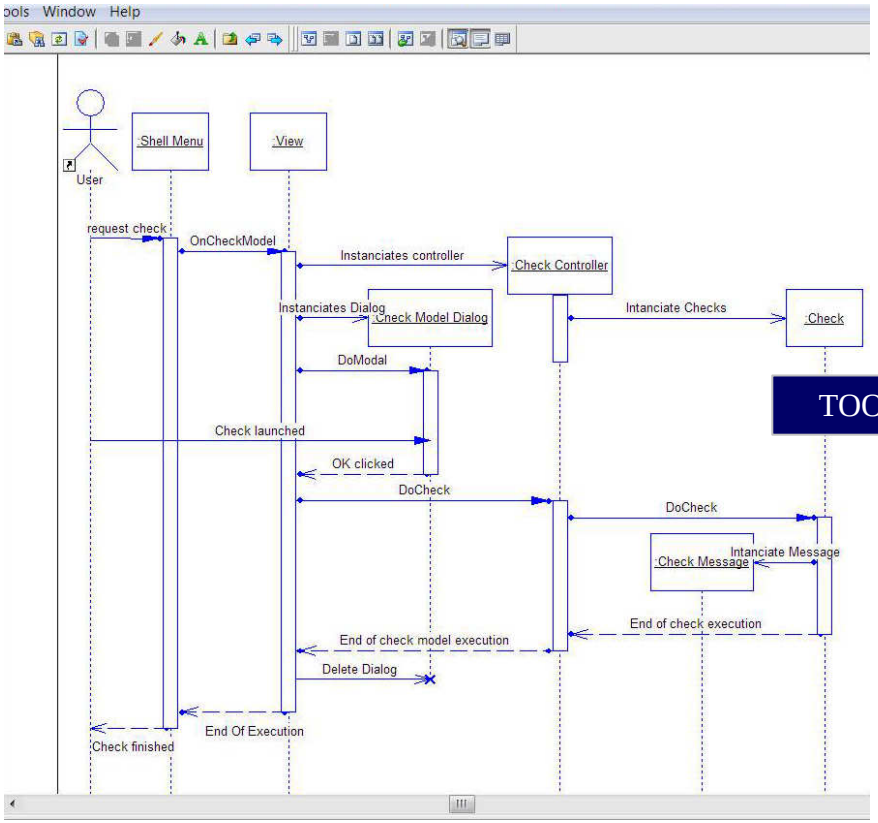


Export technologies:

- VisualBasic API
- XMI file (with proprietary extensions)

Model Migration from Sybase PowerDesigner to RSA

Sample: Sequence Diagram



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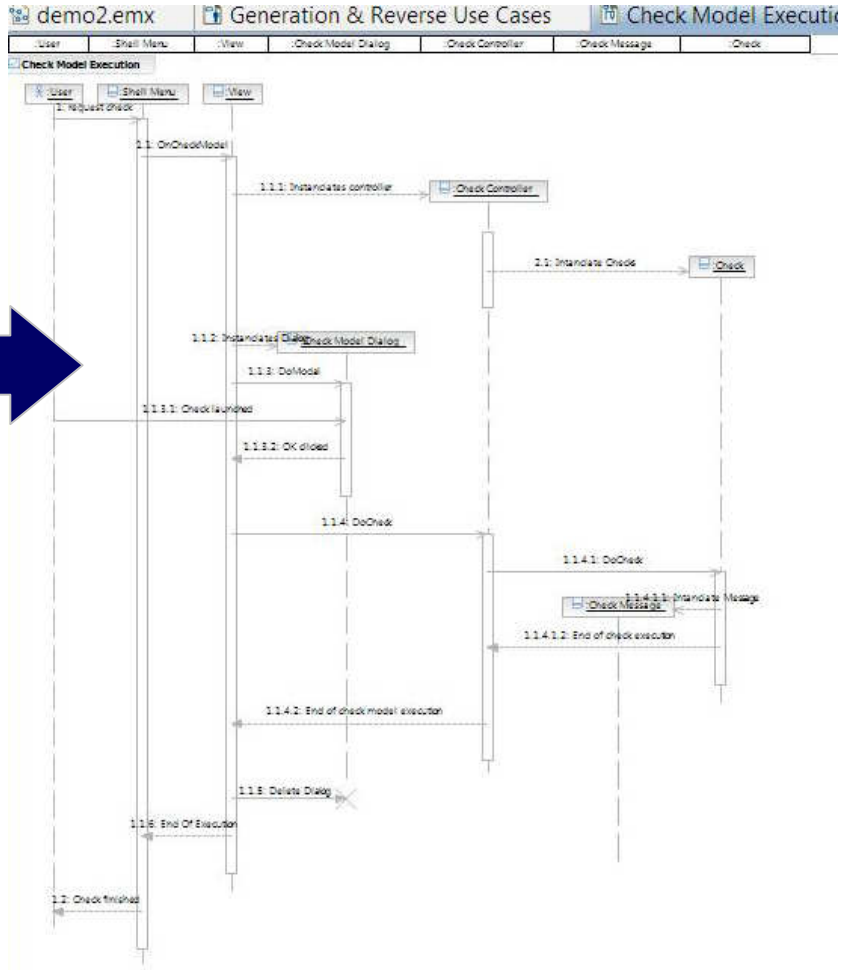
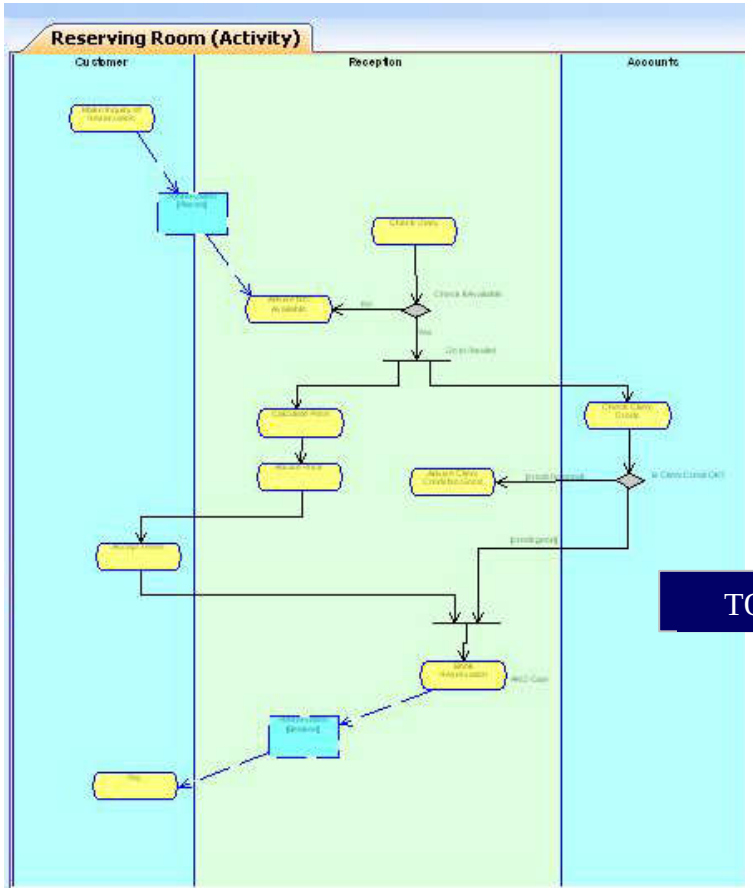


Export technology:

- XML file (proprietary)

Model Migration from Telelogic System Architect to RSA



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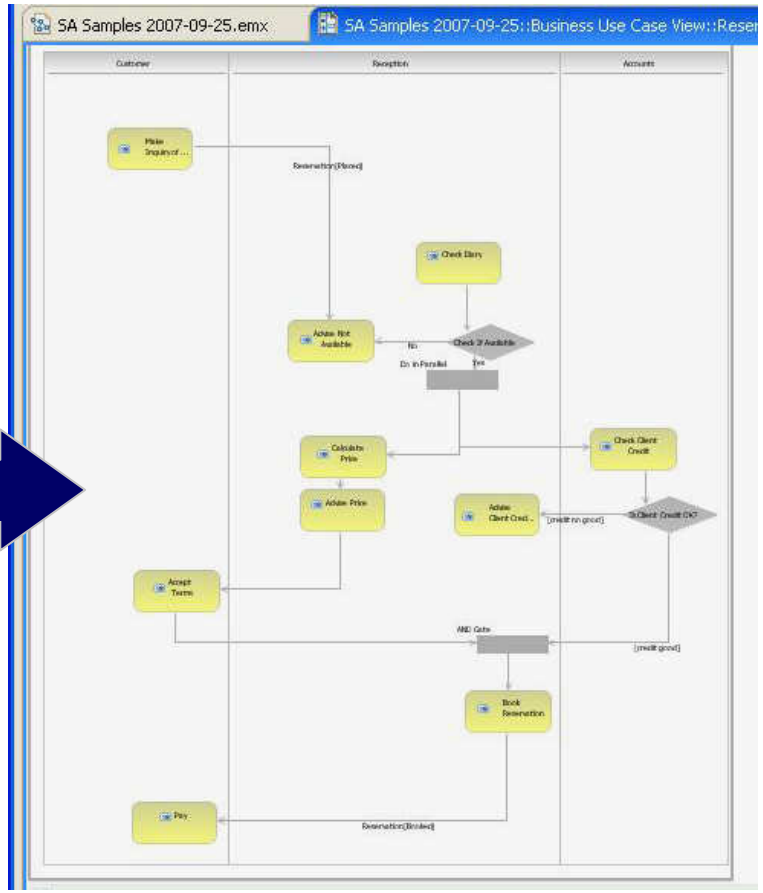
Sample: Activity Diagram



Export technology:
VisualBasic API

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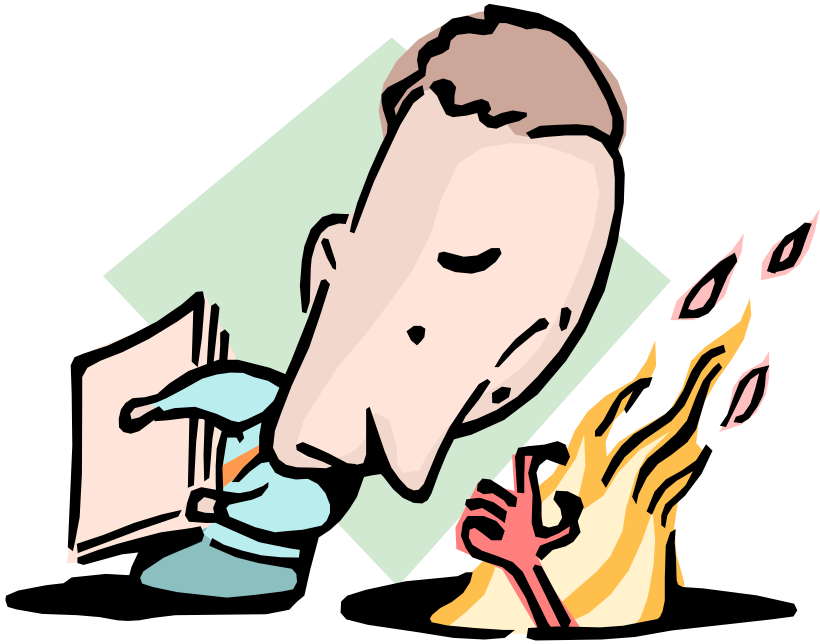
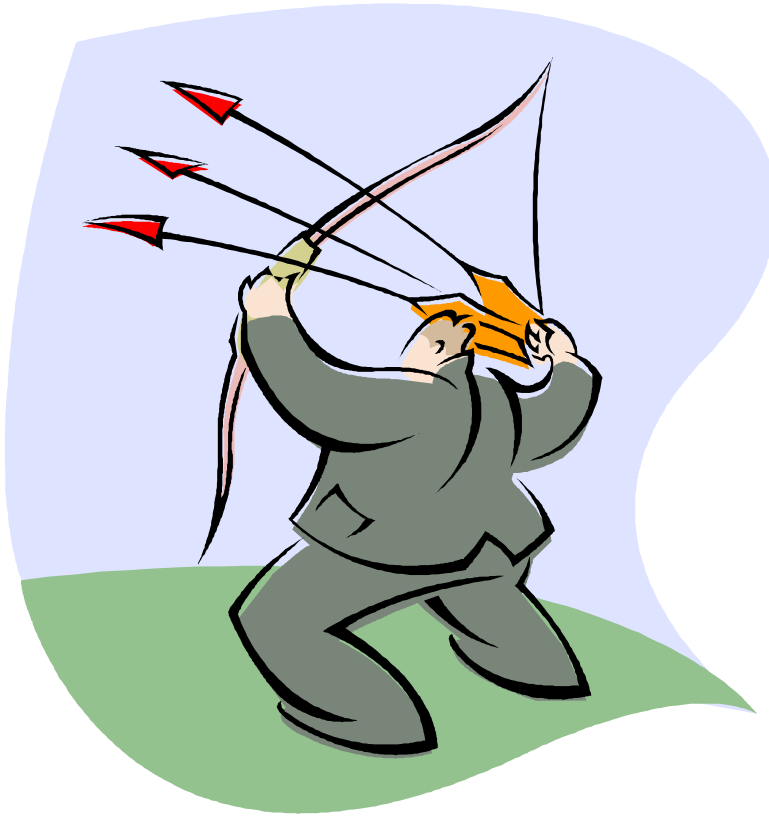
Basic Rules

- **Every migration project is different**.
  - Projects use tools in different ways, with different subsets of the tool/UML, with different setups according to project specific requirements.
- **The devil is in the details**.
  - Even in the context of migration projects for which there exist an out of-the-box migration mechanism, there may be surprises, such as special characters in the input data causing failure/issues.
- **Migration is an iterative process**.
  - As a side effect of rules 1 and 2 above, a migration is typically a trial and error process to be done iteratively until a satisfactory result has been achieved.
  - This may involve a PoC and a Pilot before the final transition is made.



Basic Rules - continued

- **Balance the scope of the migration**.
  - Often "good enough" really is good enough.
  - If there are issues look for alternative solutions or question the relevance of migrating the data.
  - Small amount of data does not need a tool but can be migrated by hand.
- **The result counts, not the method**.
  - "the perfect is the enemy of the good."
  - How elegantly the migration appears to happen is irrelevant as long as the costs are acceptable.
- **Reuse and adapt what is available**.
  - The cost of migrating a project in presence of existing assets can be reduced by a magnitude.
  - The proactive variant of this rule is to develop reusable, adaptable and documented migration assets.



Basic Rules - continued

- **Outsource whenever there is need**.
  - If there is no in-house experience in conducting a migration, or if the relevant tools and techniques are not at hand, call Rational consultants or partners having migration experience and reusable assets.
- **Document your experiences**.
  - Migration occurs infrequently, and having all tips and tricks, questionnaires, guidelines, checklists, findings, recommendations, etc. documented will usually pay off next time a similar migration is attempted.
- **Publish your assets**.
  - Migration is not rocket science, though it is potentially complicated. Even small reusable assets may save time in context of a migration project.

Agenda

- Motivations and Mechanisms
- Migration Process
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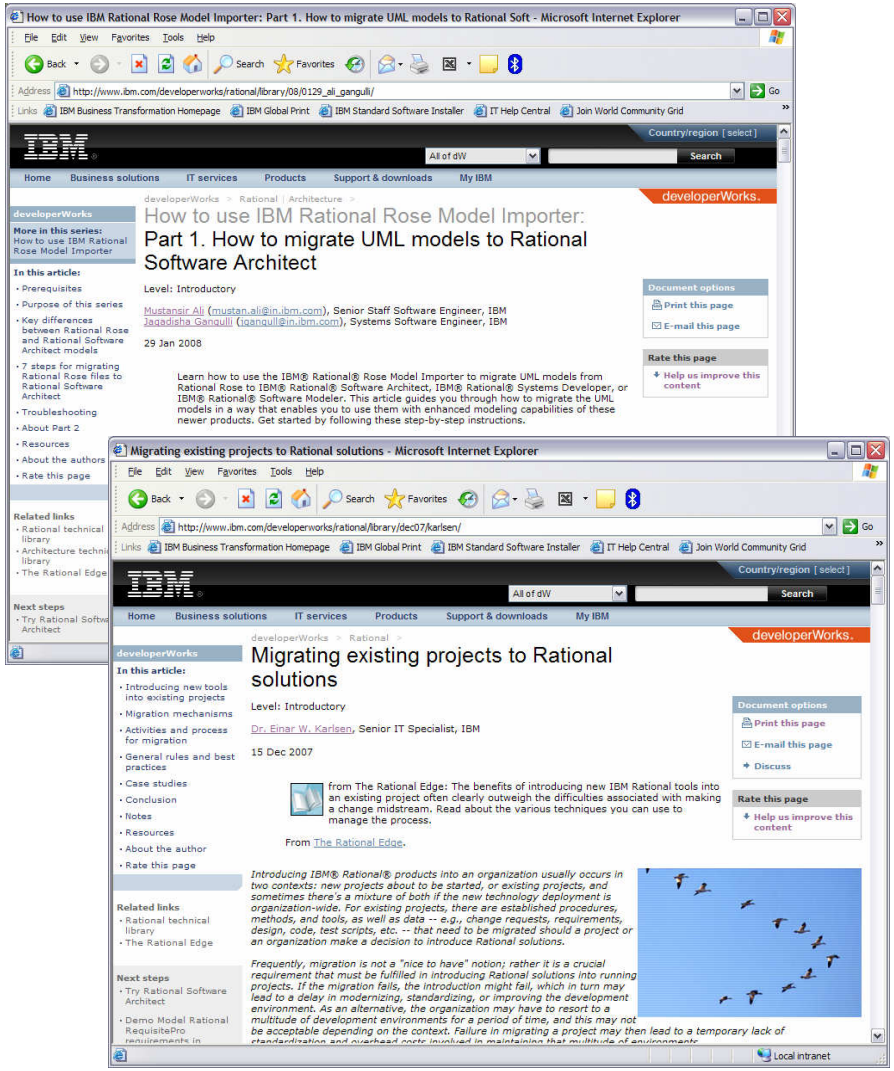
- Migration from 3rd Party UML Tools
- Basic Rules
- Conclusions

Conclusion

- The decision to introduce Rational Software Architect should not depend on the migration of the existing UML models, thus the investment in the existing UML models can be preserved.
- The techniques, mechanisms, processes and tips and tricks are to a large extend known.
- Migration can be effectively speeded up using experts and/or reusable assets.
- But do not forget the basic rules

For more information

- DeveloperWorks
  - Mustansir, Jagadischa: Part 1: How to Migrate UML Models to Rational Software Architect
  - IBM Rational: Migrating Rational Rose scripts for use with Rational Software Modeler, Rational Software Architect, or Rational Systems Developer
  - Tutorials: Migrating to Rational Systems Developer, Part 1 and Part 2
- Rational Edge
  - Einar Karlsen: Migrating Existing projects to Rational solutions
- RSA Online Help
- Rational Sales Office/Consultants
- Reischmann Informatik
  - www.reischmann.com




QUESTIONS

THANK YOU

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- IBM Rational software
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AM10

Practical Experiences Migrating Unified Modeling Language Models to IBM® Rational® Software Architect

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IBM Rational Software Development Conference 2008

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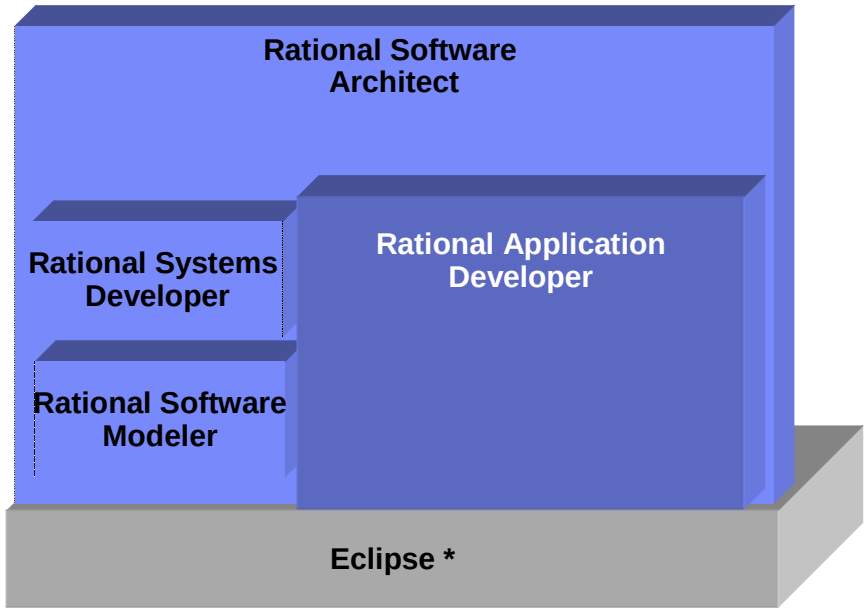
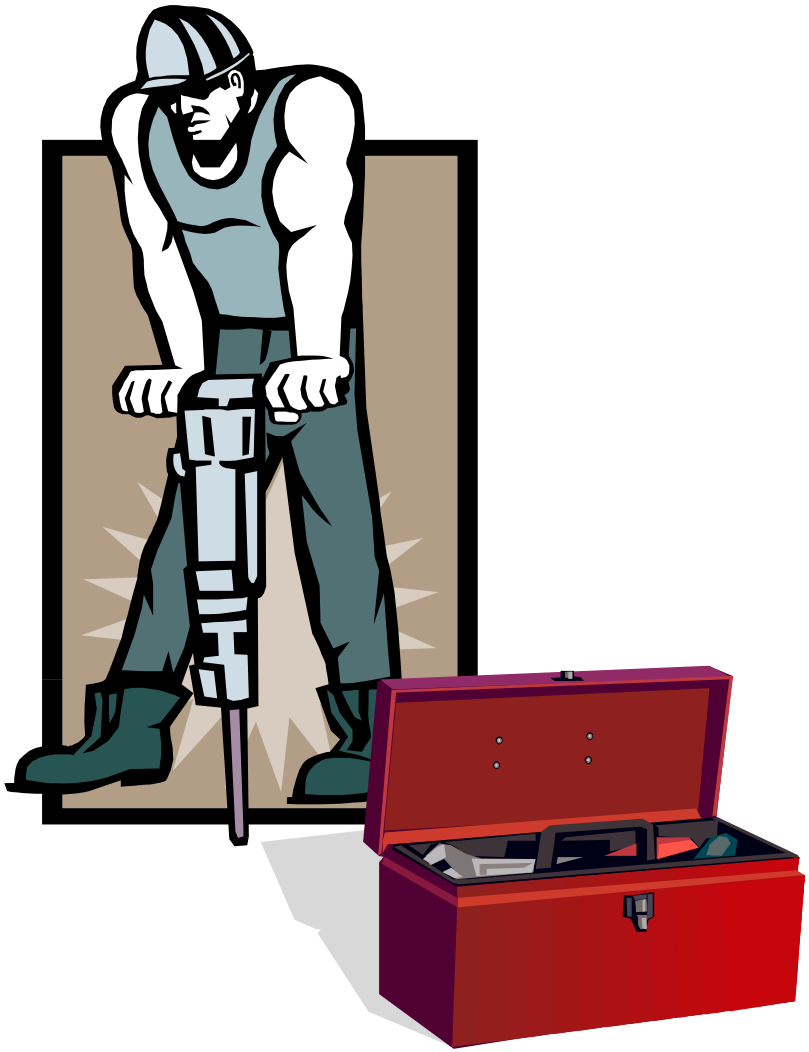
Motivations – Why Migration Matters

- **Modernization**.
  - Existing platforms, tools, or methods have reached end-of-life
- **Standardization/corporate governance**.
  - A project is not aligned with corporate standards and is consequently forced to migrate.
- **Improved functionality/automation**.
  - Existing solutions do not offer the degree of automation or functionality required to support the project, e.g. Model Driven Architecture (MDA) or UML2.
- **Improved interoperability/lifecycle support**.
  - A change in the tool environment is made in one discipline in order to improve interoperability and lifecycle support with the other disciplines.



Migration Mechanisms

- Model Migration Mechanisms
  - Manual migration
  - XMI export/import
  - Built-in Model export/import tool
  - Third party tool
  - Home-grown migration scripts
- The various mechanisms are not exclusive.
  - Migration of the bulk set of data can be done using a built-in export/import mechanism or a third party solution.
  - Manual migration, can then be used for bits and pieces of information that are not covered by the migration tool.
  - Home-grown scripts can be used in context of an existing migration tool either to pre-process the data (e.g. to clean up a UML model) or to post-process it.



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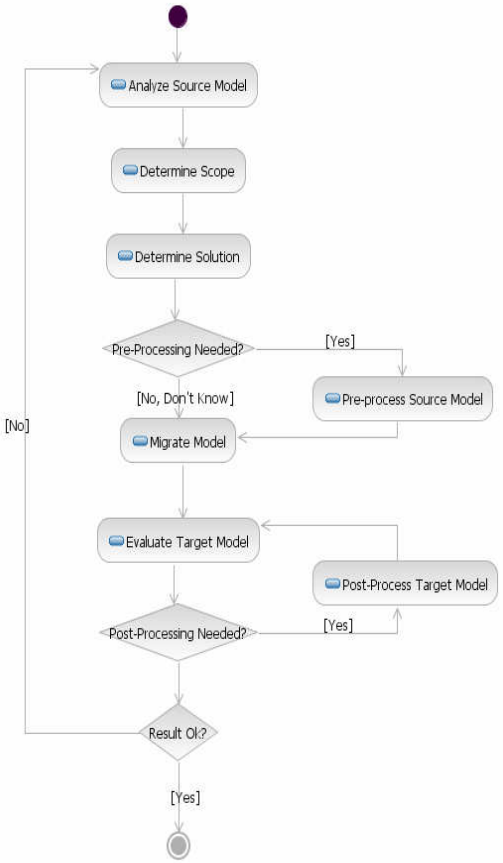
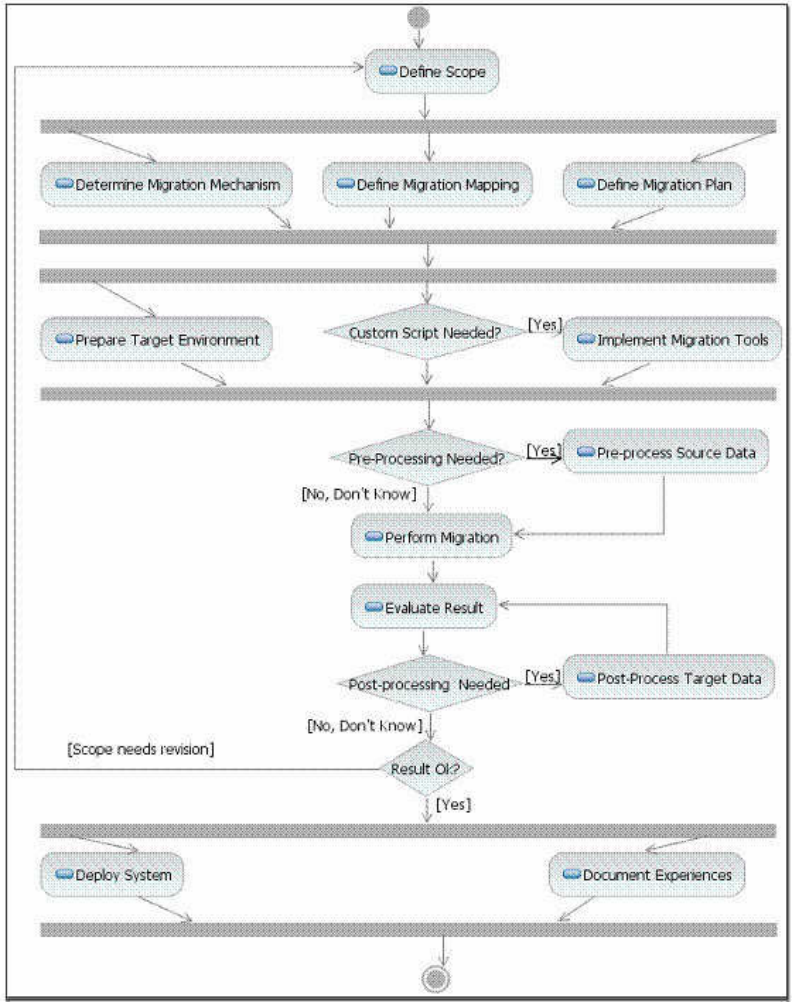
Migration Process

- Fast-path (Ideal process)
  - Analyze source model
  - Determine Scope
  - Define migration solution
  - Apply Migration Tool
  - Check target model
  - Finished
- Real-path
  - A bit more complicated
  - Requires more steps
    - Pre-processing
    - Post processing
  - Highly Iterative
  - Requires special skills
  - .. and willingness to compromise.



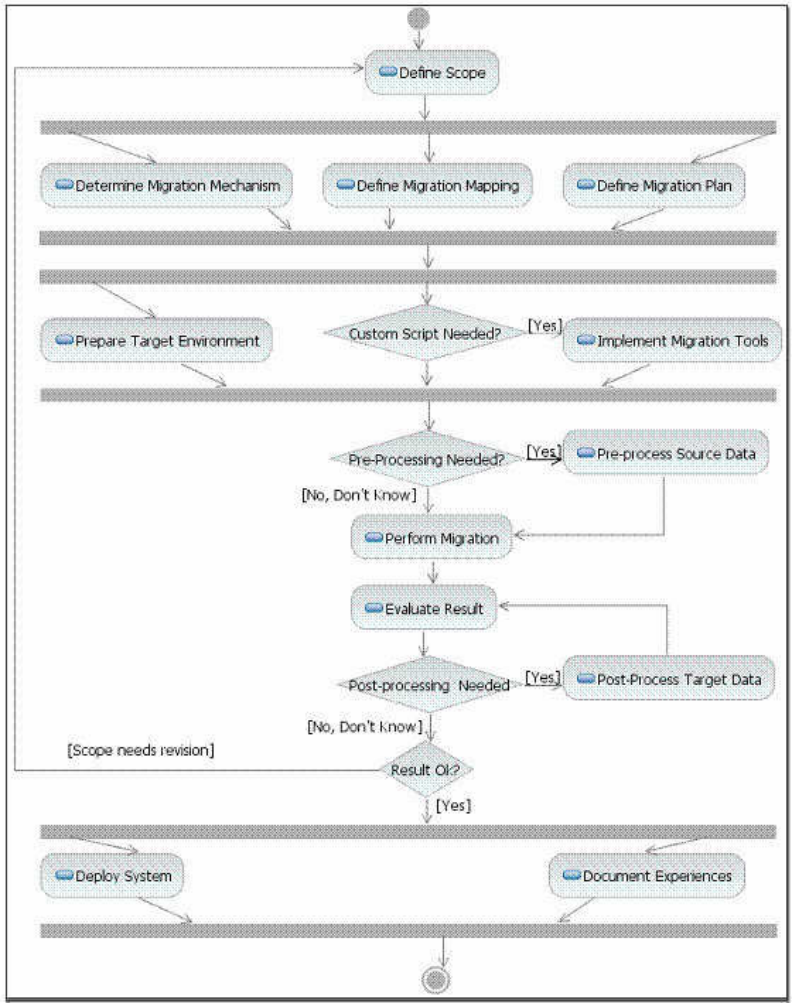
Realpath Migration Process

- **Define scope**.
  - Interview the various stakeholders and collect the requirements.
  - Analyze the existing and new tool environment and define the scope.
- **Define migration mapping**.
  - Analyze source data and identify the data that need to be migrated.
  - Define the *mapping* between the source data and the target data.
- **Determine migration mechanisms**.
  - Analyze and evaluate possible migration mechanisms and determine the migration solution.
- **Define migration plan**.
  - For large or complex migrations it may be relevant to define a migration plan identifying the various steps involved



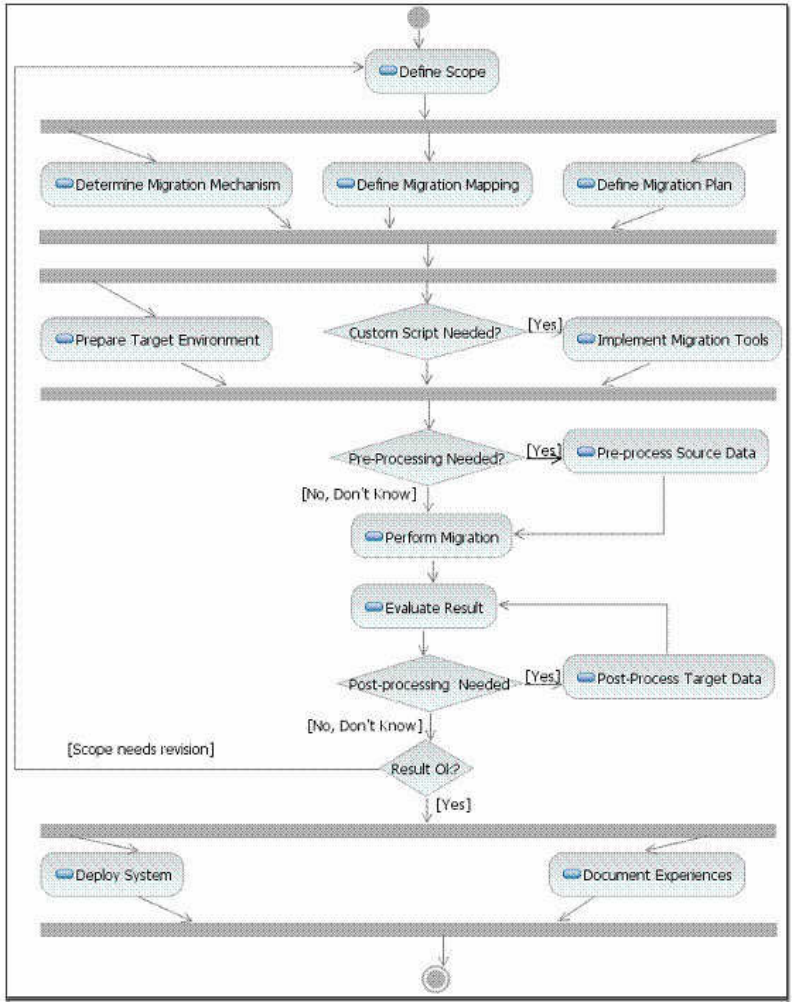
Realpath Migration Process - continued

- **Prepare target environment**.
  - Install, setup and configure target environment (e.g. RSA with ClearCase and RequisitePro).
- **Implement conversion scripts**.
  - Any missing tools needed in order to migrate or pre-/post-process the data are implemented or adapted from existing scripts and tested.
- **Pre-process source data**.
  - Get source data in a form where it can be migrated (e.g. partition of large models).
  - Validate source data and remove errors.
- **Perform migration**.
  - Call the migration tools with the relevant parameters and produce initial target model as result.
  - Check migration log.



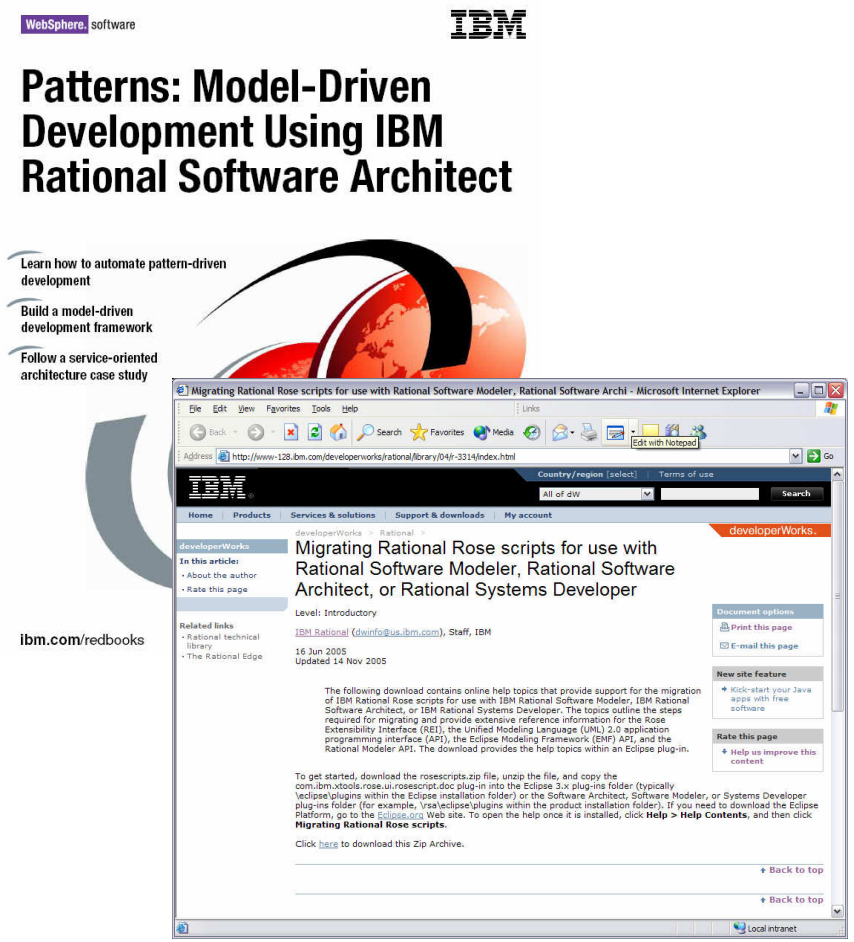
Realpath Migration Process - continued

- **Evaluate result**.
  - Evaluate target model e.g. with respect to the scope looking into target model.
  - Check migration log (errors, warnings).
  - Invoke the validation function of RSA
  - Split the evaluation work among several team member or actual users of the tool.
- **Post-process target data**.
  - Check and remove validation errors - either manually or automatically by running a script.
  - Partition of large models into fragments.
- **Document experiences**.
  - Write documentation in form of migration guides and tips and tricks required to finally succeed.
- **Deploy Solution**



Beyond Model/Data Conversion

- Training of Users
- Definition of Process
- Definition of Model Guidelines
- Setup for Working in Teams
- Resolution of UML 1.x/2.1 differences
- Migration of UML Profiles
- Migration of Scripts
- Development of new Scripts
- Migration of Reports
- Migration and Synchronization with Code
- Peer-Review of the Migrated Models



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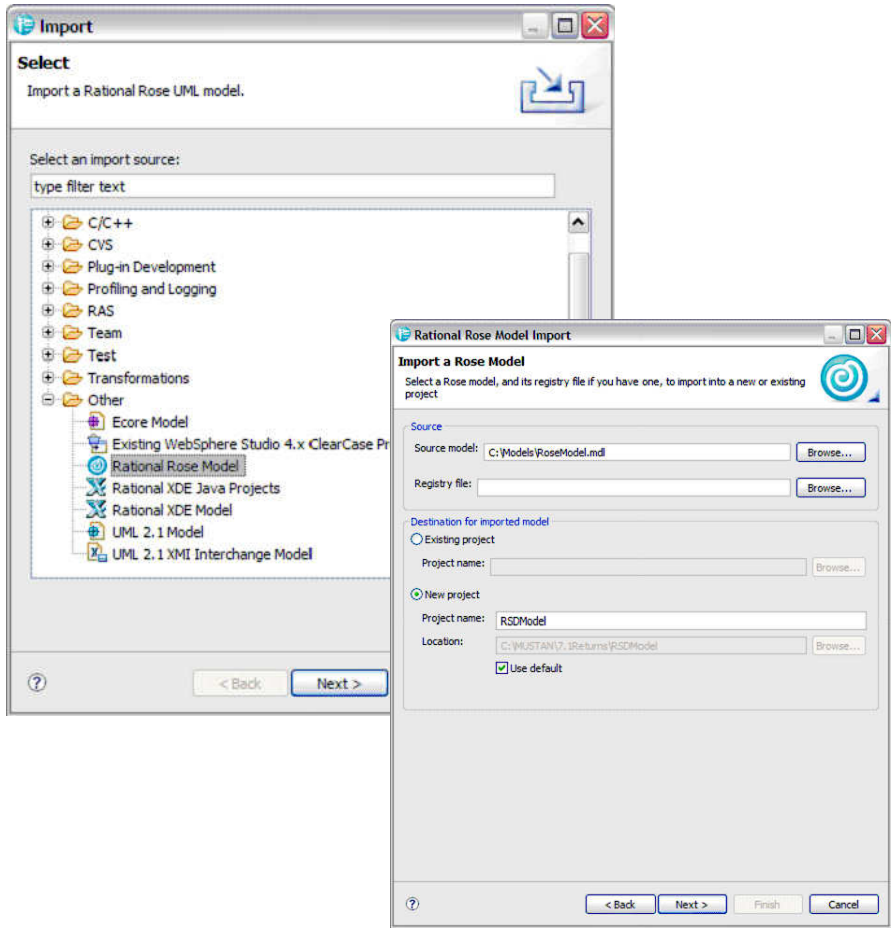
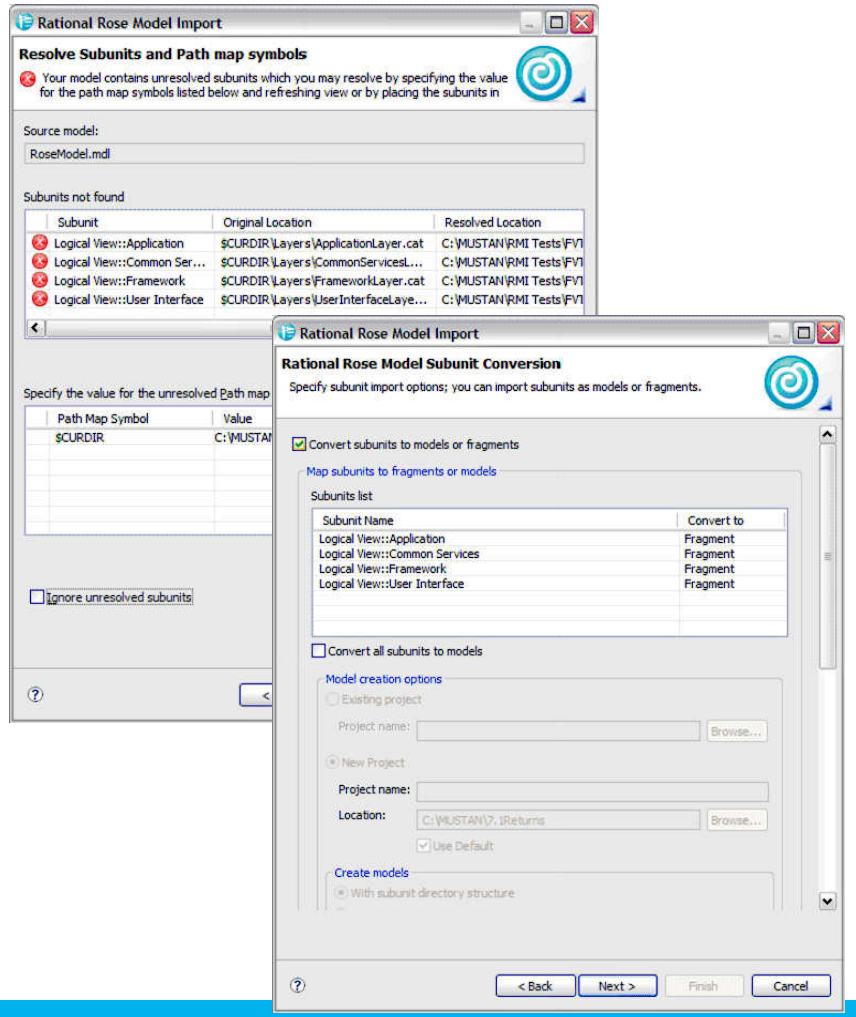
Rose Import – Getting Started

- Invoke File>Import and select source Rose model to import
- Specify target Project and target Model
- Tip: Before doing this step,
  - identify the models that are subject to migration
  - validate source models and remove
    - Validation errors
    - Broken references
- Tip: Increase heap size of RSA in context of large models



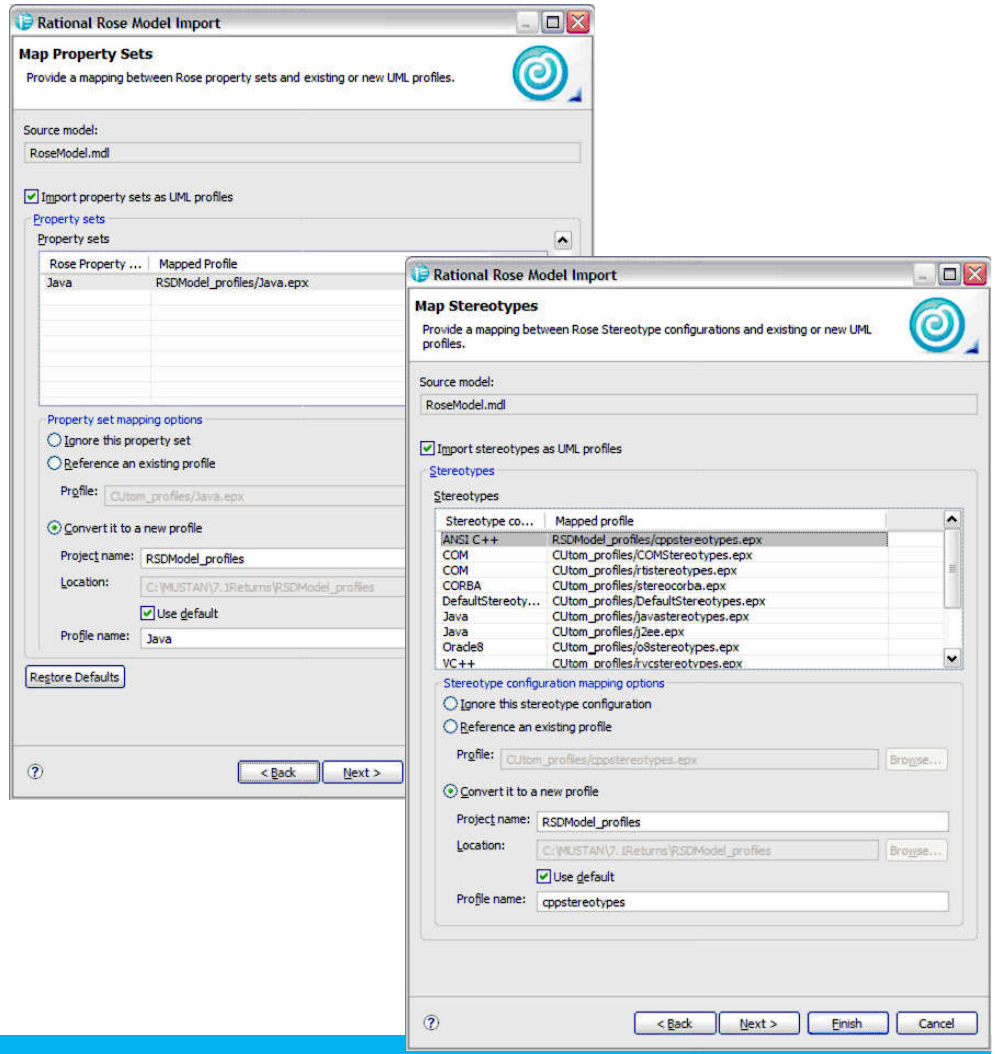
Rose Import – Working in Team

- Resolve controlled units not found using path map symbols
- Decide whether to convert controlled units to fragments or to models
- Tip: Before migration, setup RSA with ClearCase or other CMVC system.
- Tip: Following the migration, a post-processing may be needed to refactor the model:
  - Mapping of Rose/XDE views in different models
  - Appropriate relocation in Eclipse Projects
  - Definition of Navigation Model
  - Restructuring to avoid cyclic model dependencies
  - Restructuring to minimize load time



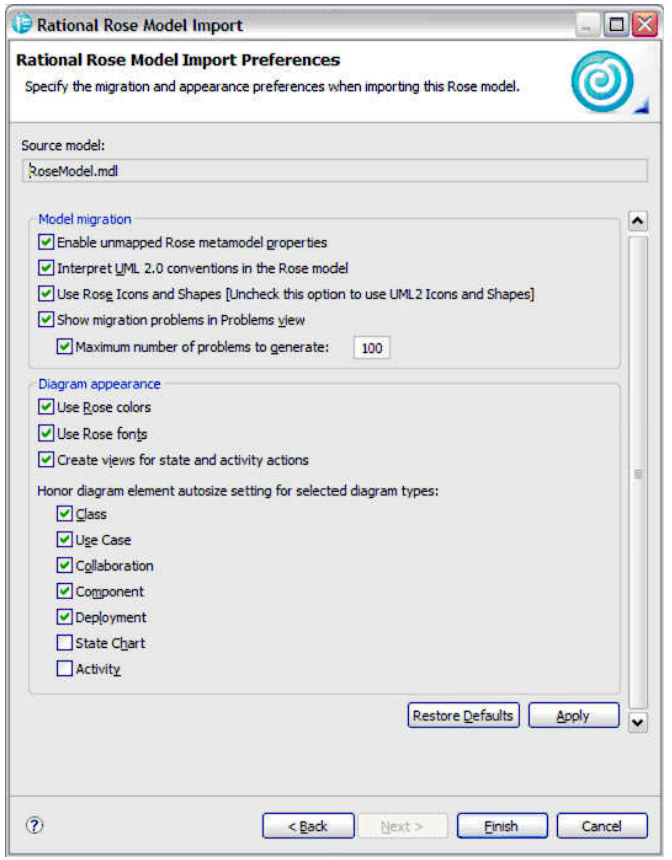
Rose Import – Profiles and Stereotypes

- Rose property sets and stereotype are imported as UML profiles.
- For a property set/stereotype decide whether to
  - Ignore it
  - Reference existing UML profile
  - Create new profile
- Profile can be maintained/enhanced as Eclipse Plug-In to accommodate for constraints and additional property fields.
- Tip: Do not migrate the Rose and XDE models that contain a large numbers of profiles needed in Rose/XDE for roundtrip engineering (Ada, ANSI C++). This will save space and time.



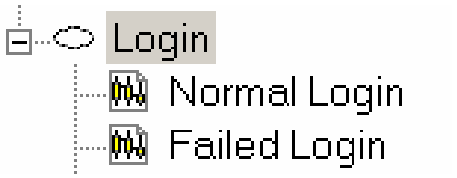
Rose Import - Options

- There are a few options that can be specified
  - Use Rose icons and shape
  - Use Rose colors
  - Max number of migration problems allowed
  - Show migration problems in Problem view

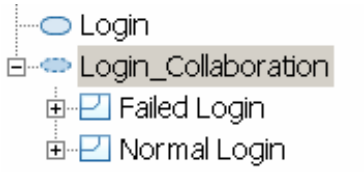


Migration Problems

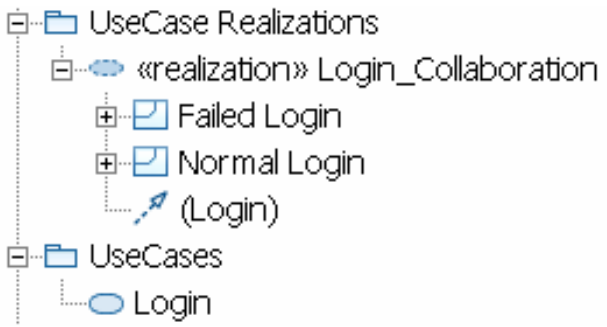
- Changes/Increased rigorousity in UML standard may lead to:
  - Creation of new elements
    - Data types are represented as classes
  - Morph of elements or relationships
    - Association morphed in dependencies with new stereotype
  - Removal of Illegal constructs (rarely)
- Model may need to be postprocessed by RSA pluglet to remove errors
  - Anonymous roles
  - Redundant data types („String“, „string“)
  - Collaboration model structure
- Tip: document solution to these details on the run in a migration guidelines document



Rose Modell



Collaboration after Import to RSA



Requested model structure using RSA Pluglets

- **Creation of a Realization Relationship**
- **Setting the <<realization>> Stereotype for the Collaboration**
- **Move of the Collaboration into another Package or Model**

Migration of Scripts

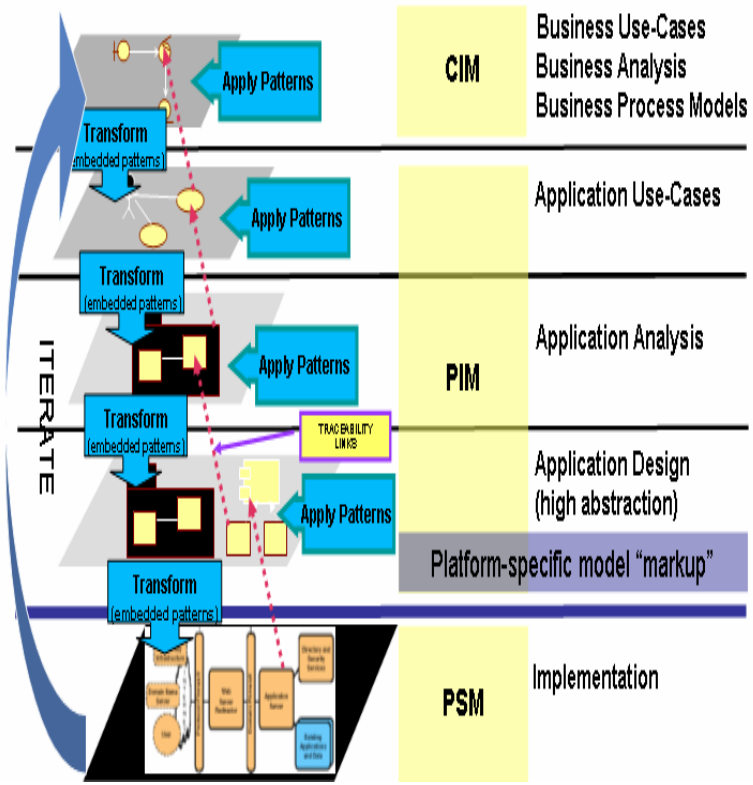
- Reasons for script
  - Supporting rules (name conventions, model guidelines)
  - Own metrics
  - Propriety functionality/enhancements
  - Custom integrations
- Reasons for discarding a script
  - The problem solved by the script is not present in RSA
  - Functionality comes out of the box in RSA (non modal dialog for editing properties)
  - Script has become obsolete or has low priority
- For scripts to migrate, look into mapping:
  - Eclipse Plug-In?
  - RSA Pluglet?
  - Profile?
  - …

Mapping of Rose and XDE Extensibility Mechanisms

Source	Source Tool	RSA Mechanism
Complex scripts/Script with GUI	Rose, XDE	RXE script (Eclipse Plugin)
Simple script with little GUI	Rose, XDE	Pluglet
Dialog	Rose, XDE	RSA dialogs or wizards (Eclipse Plugin)
Menus	Rose, XDE	RSA Menu Extensions (Eclipse Plugin)
Custom Code Generation	Rose, XDE	Transformation
Custom Reverse Engineering	Rose, XDE	Code Visualization, Harvesting, Transformations
Rose Model Events	Rose	UML Model Event Listeners
Patterns	XDE	Patterns, Transformations, JET2
MDA Toolkit Transformations	XDE	Transformations
Code Templates	XDE	JET2

Code Generation

- The concept of *Round-Trip-Engineering* (RTE) in Rose and XDE are fundamentally different to the concepts of RSA.
- Application design models can be enriched with *harvested* elements from code.
- Code can be generated from application design models using *transformations*.
- For specific programming languages (Java, C++) reverse transformations (reconciliations) can be used to generate model from code.
- Be Aware: getting code and model in sync is likely to require a complete new design model.



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Reischmann Informatik GmbH – Company Profile

Reischmann Informatik (RI) specializes in supplying interfaces for the model migration between UML modeling, data modeling, database design and business process modeling tools

- Located at Munich, Germany
- Founded in 1983 (Interface development since 1986)
- **TOOLBUS™** technology
  - Component based architecture for standardized model conversion
  - Extensible and customizable for special customer requirements
    - offered as a service (alternative solution to home-grown migration scripts)
- More than 30 modeling tools supported
- More than 300 companies worldwide have been using TOOLBUS interfaces
- Licensed software and migration services
- Successful 3rd party UML model migrations to IBM Rational Software Architect for major companies in the finance industry

Migration Scenarios from 3rd Party UML Tools

- Replacing another UML tool by Rational Software Architect
- Importing and exporting reference models, e.g.
  - Model Driven Architecture UML models from OMG
  - Common Information Models (CIM)
- UML model exchange between organizations or projects
- Rational Software Architect as development back-end for UML analysis tool

TOOLBUS Interfaces for Migration from 3rd Party Tools

- ARIS UML Designer / ARIS Business Architect
- Borland Together
- Innovator
- MagicDraw
- Microsoft Office Visio
- Select Architect
- Sparx Enterprise Architect
- Sybase PowerDesigner
- Telelogic System Architect

TOOLBUS Interfaces for Model Migration to RSA

Complete Migration

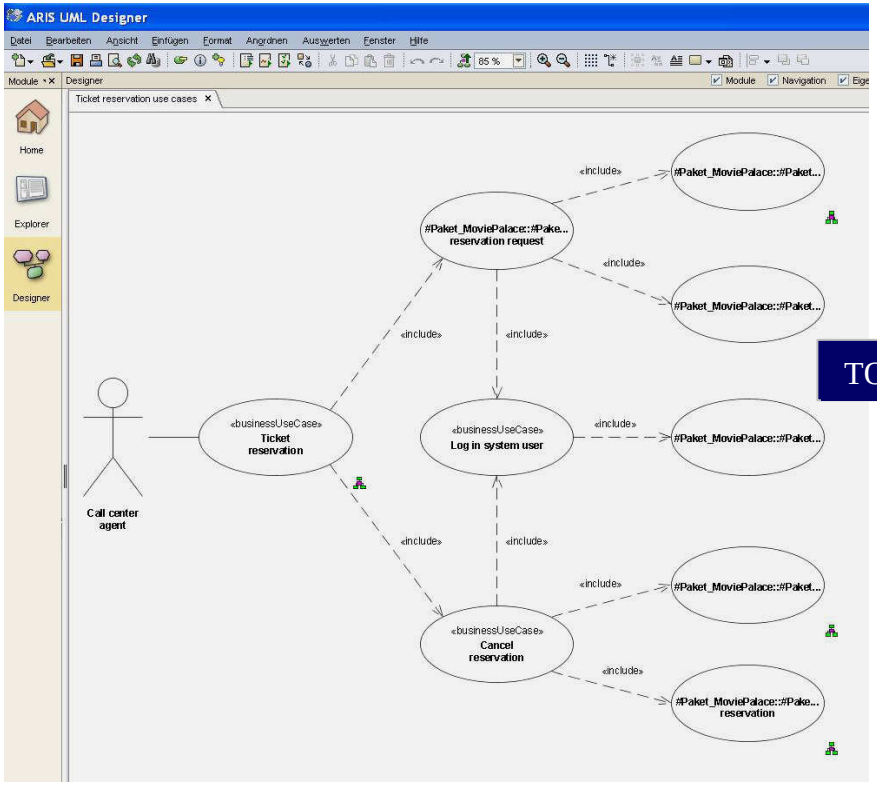
- Mainly restricted by the export limitations of the 3rd party tool (e.g. XMI)
- All UML objects, associations and attributes
- All documentation text
- UML diagrams (layout and colors)
- Customizable for tool proprietary and user extensions of UML standard (User Defined Properties, Profiles)
- Independent of UML Version (UML 1.3/1.4 to UML 2.0 conversion supported)
- Size of importable models only limited by Eclipse restrictions (Java heap size)

Available Import Technologies

- API (preferred technology)
  - mostly complete (including diagram layout and details)
  - mostly same methods as used by the UML tool itself
  - mostly compatible to new UML tool versions
  - traceable and controlled import of huge models
  - model update supported for import (required for round-trip engineering)
  - UML tool must be installed for the migration!
- XMI File (compromise)
  - mostly incomplete (diagram information missing in the XMI standard)
    - applicable with proprietary extensions,
      e.g. Unisys extensions (de facto standard for XMI 1.3)
  - XMI versions incompatible
  - no import traceability (issue when importing huge models)
  - mostly no model update support for import (issue for round-trip engineering)
  - migration independent of the installation of the UML tool!
- Proprietary XML or text export / import files (if API not available)

Model Migration from ARIS UML Designer to RSA

(Development back-end for UML analysis tool)



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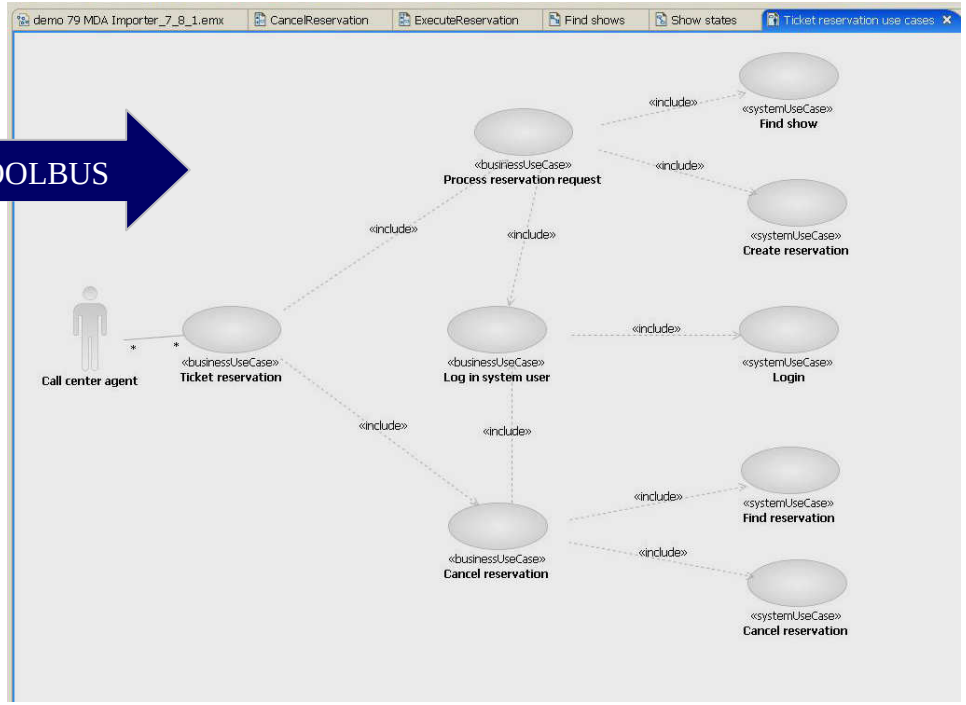
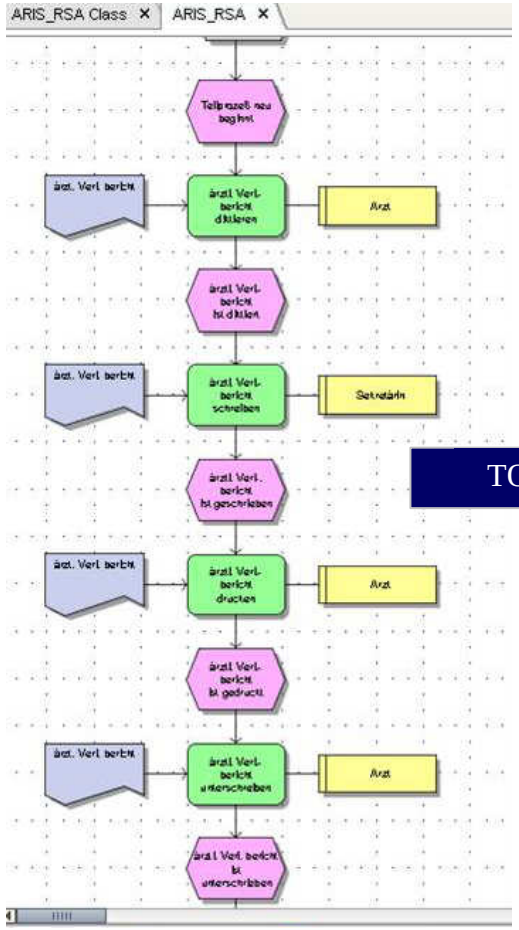
Sample: Use-Case Diagram



Export Technology:
AML Export File (proprietary XML file)

Model Migration from ARIS Business Architect to RSA



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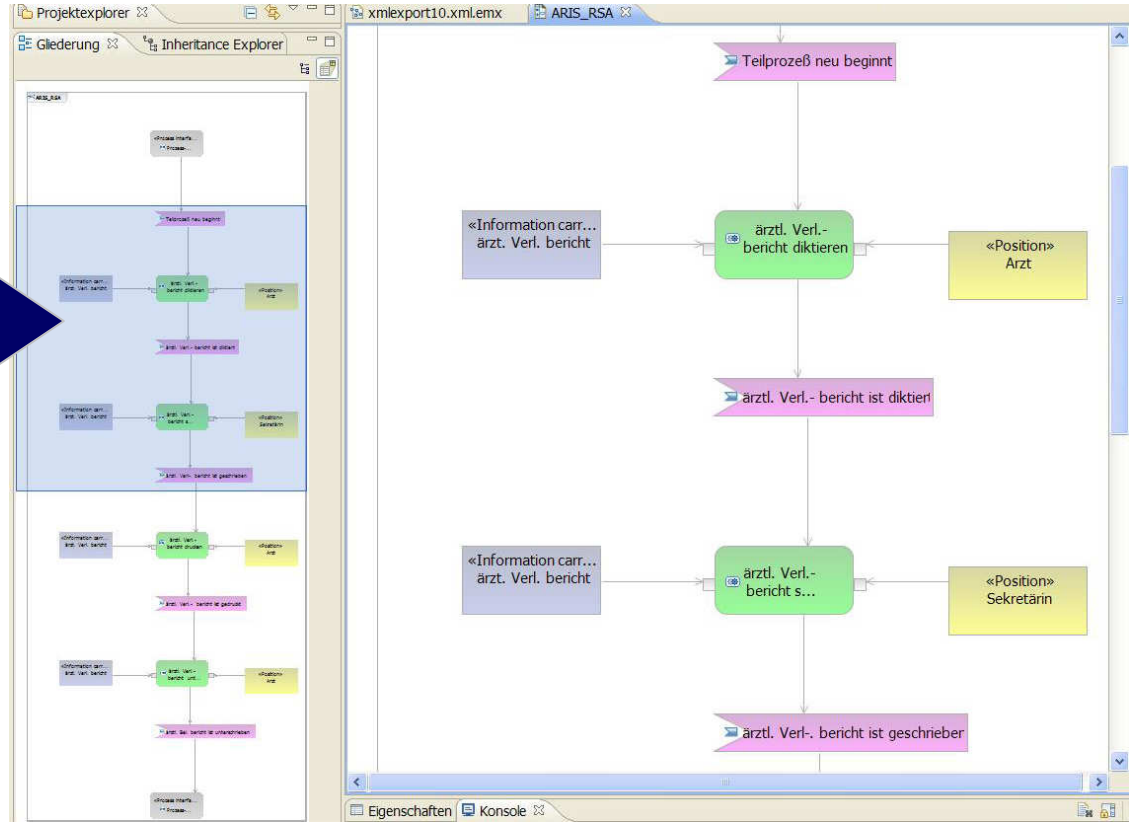
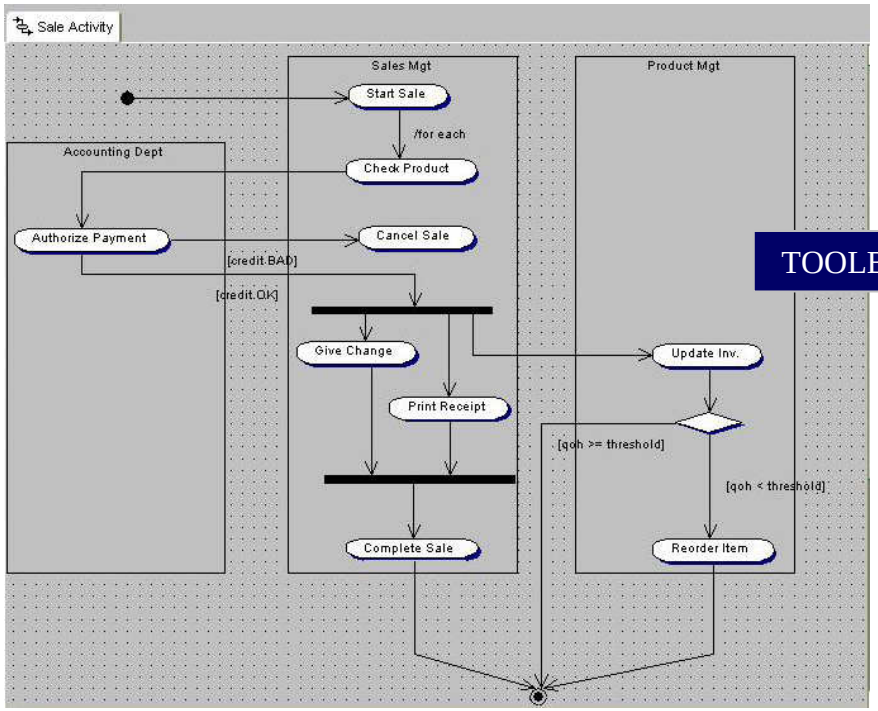


Sample: Conversion of ARIS EPC Diagram to UML Activity Diagram

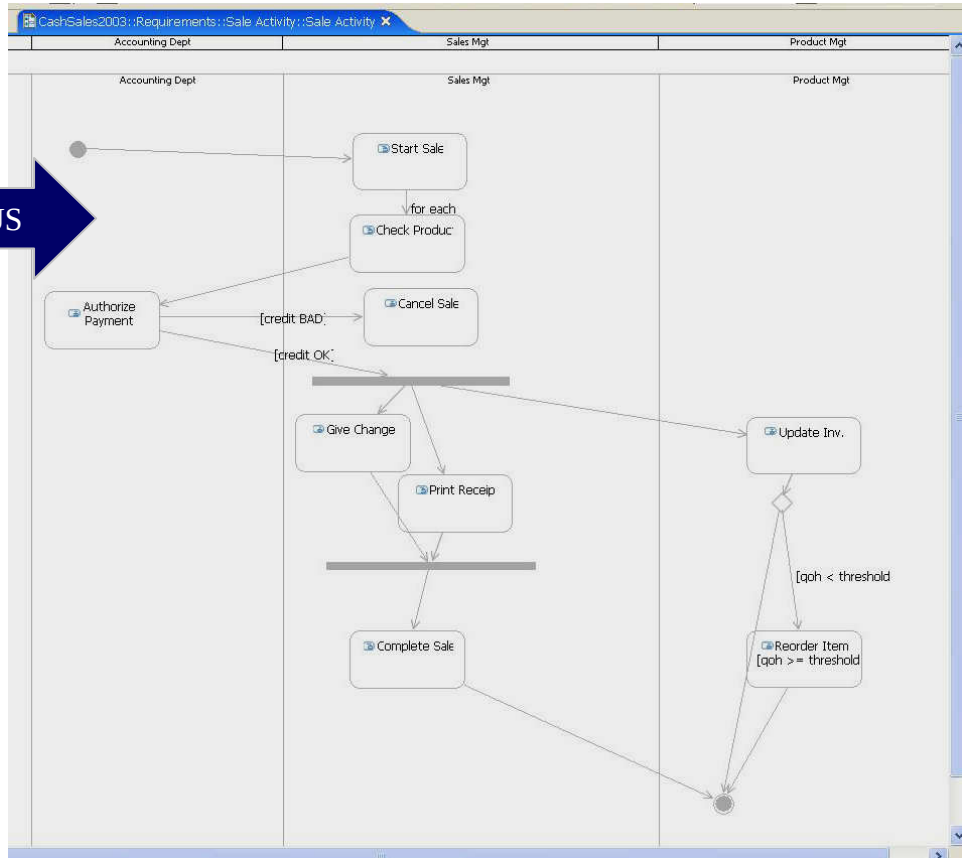
Export Technology:
AML Export File (proprietary XML file)

Model Migration from Borland Together 6 to RSA

Sample: Activity Diagram

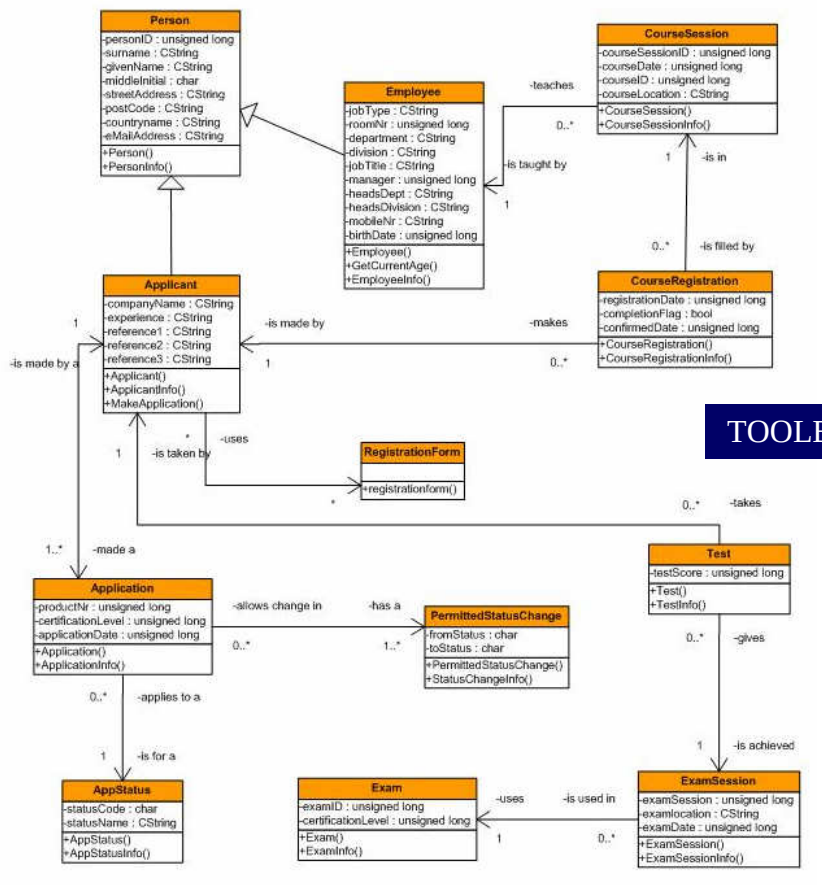


TOOLBUS



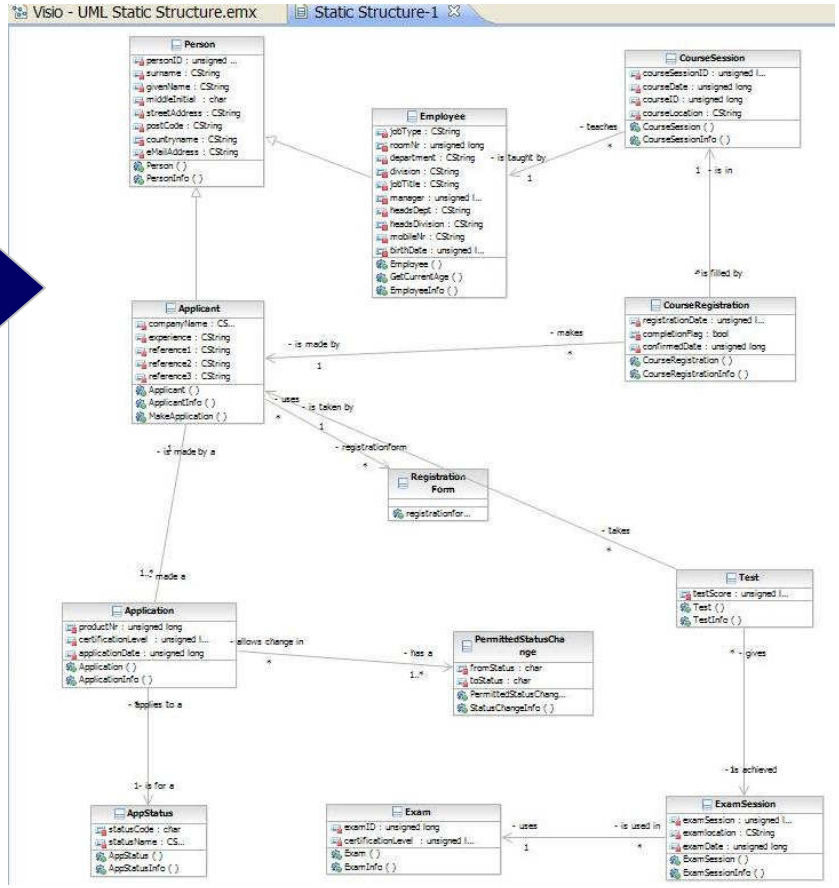
Export Technology:
XMI File (with Unisys Extensions)

Model Migration from Microsoft Office Visio to RSA



TOOLBUS

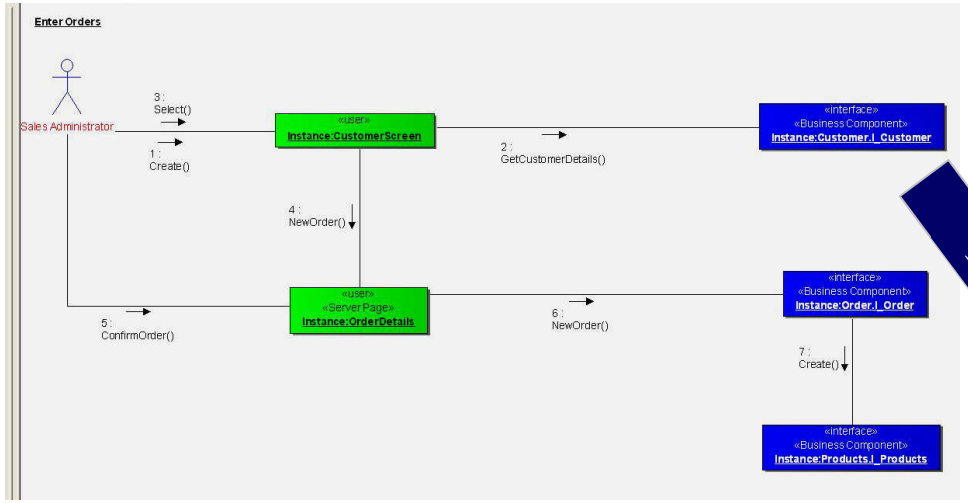
Sample: Class Diagram



Export technology:

- VDX file (proprietary XML file)

Model Migration from Select Architect to RSA



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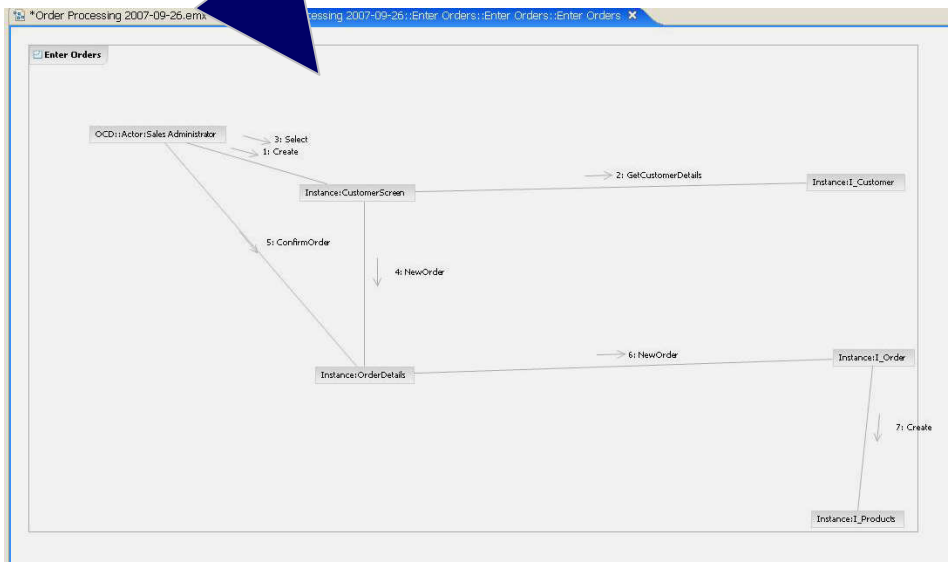
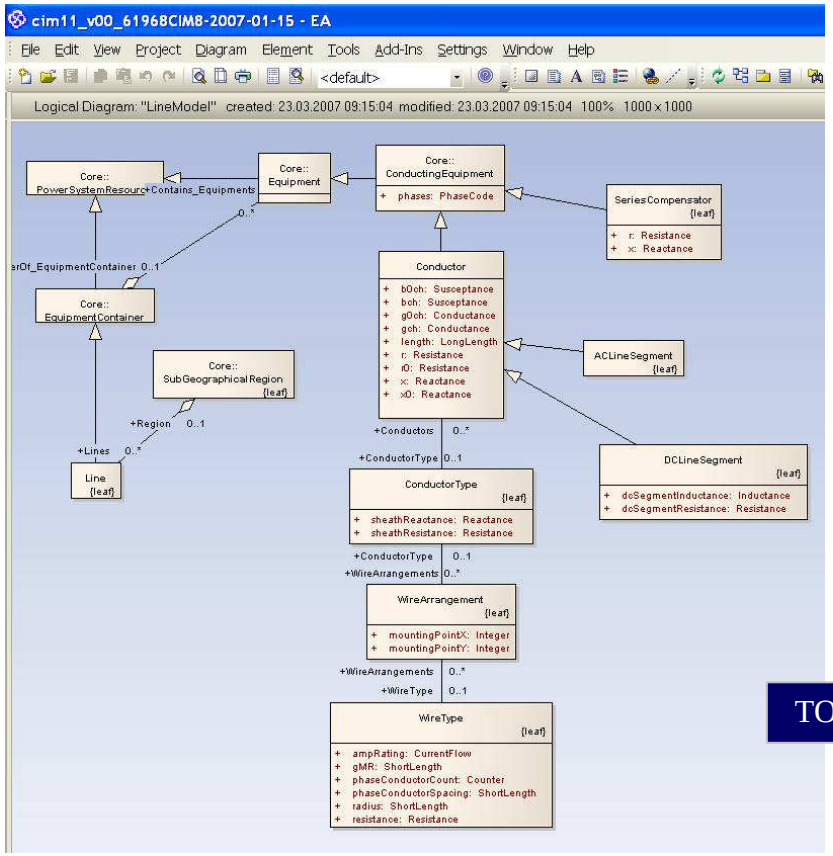


Sample:
Collaboration / Interaction Diagram

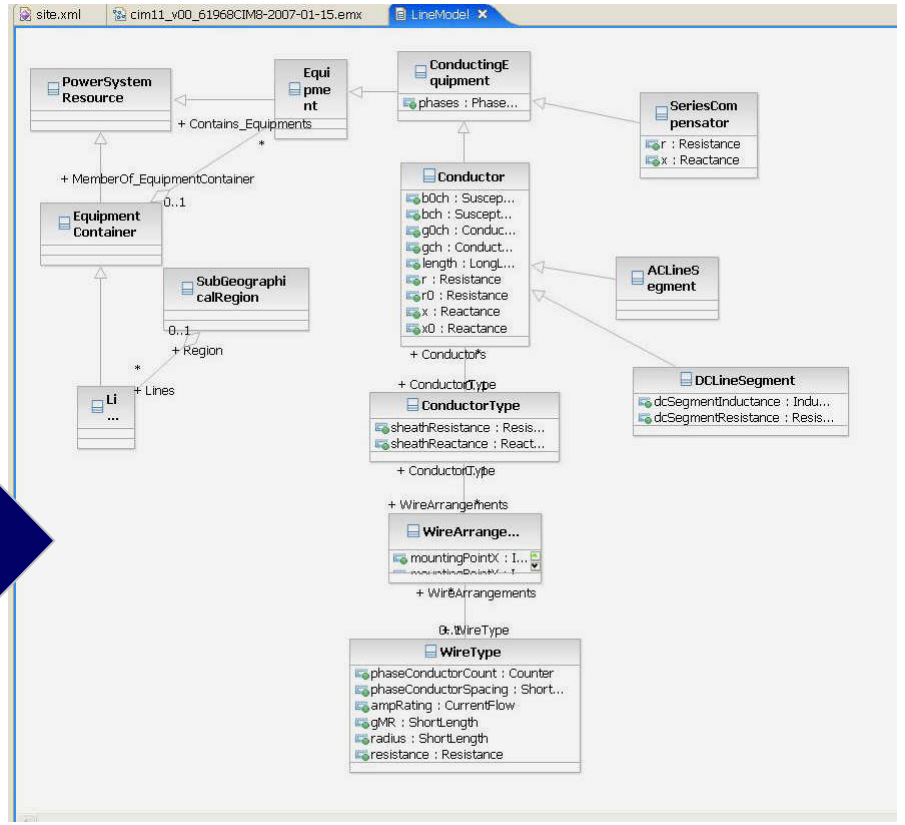
Export Technology:
VisualBasic API

Model Migration from Sparx Enterprise Architect to RSA



TOOLBUS

Sample: Class Diagram

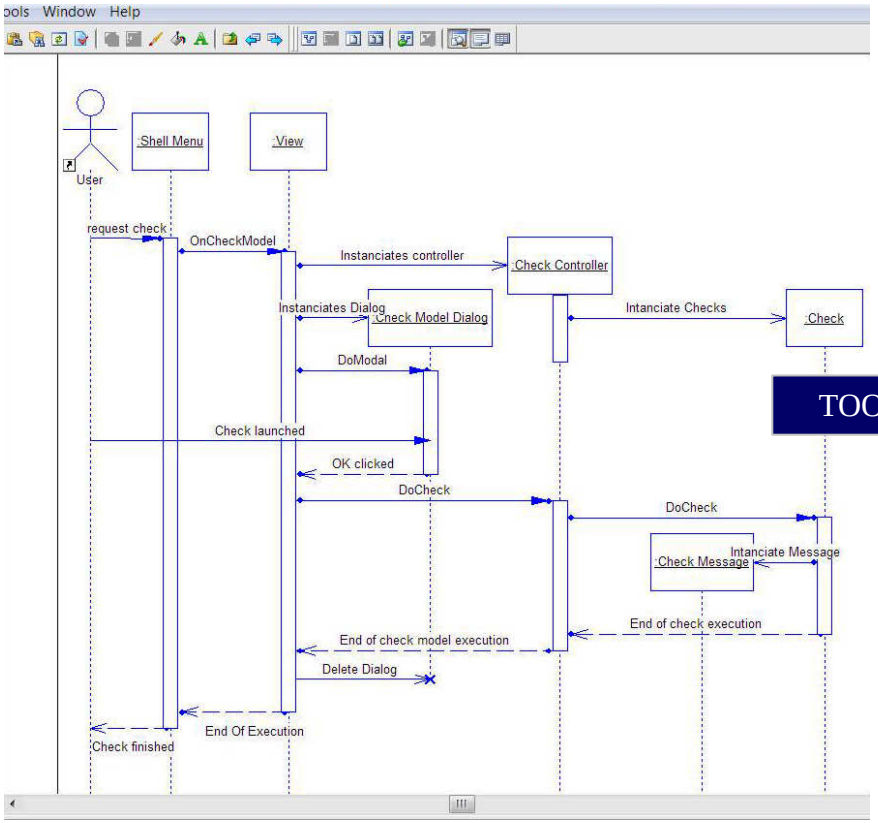


Export technologies:

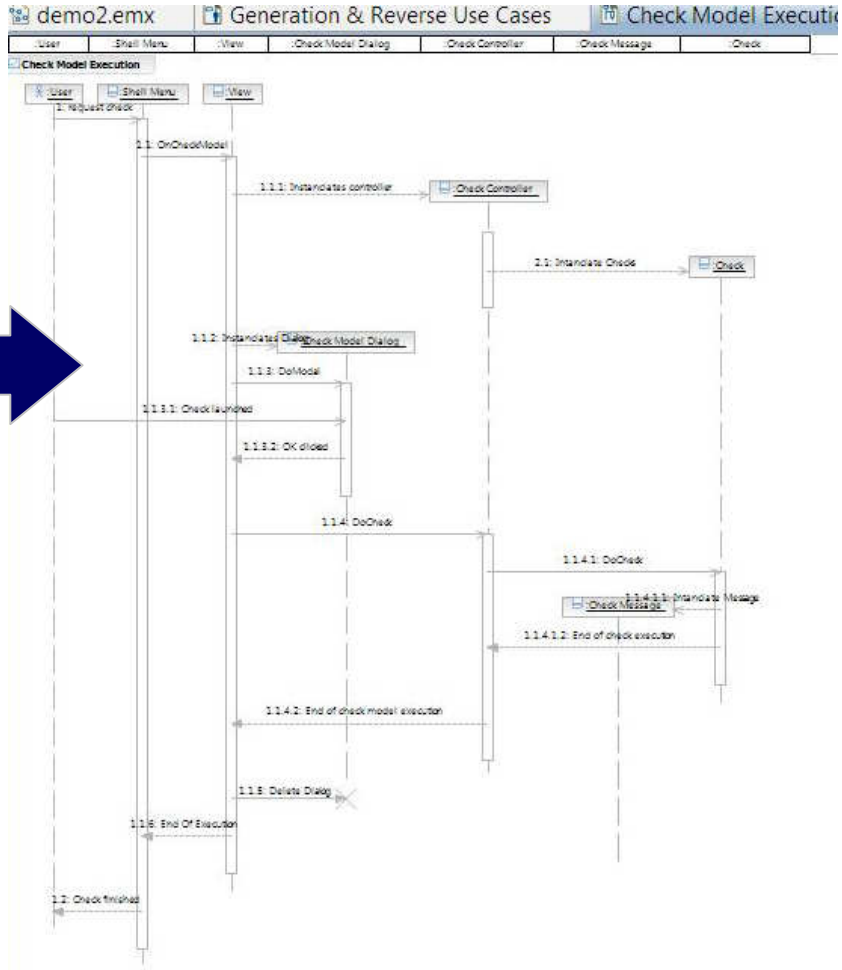
- VisualBasic API
- XMI file (with proprietary extensions)

Model Migration from Sybase PowerDesigner to RSA

Sample: Sequence Diagram



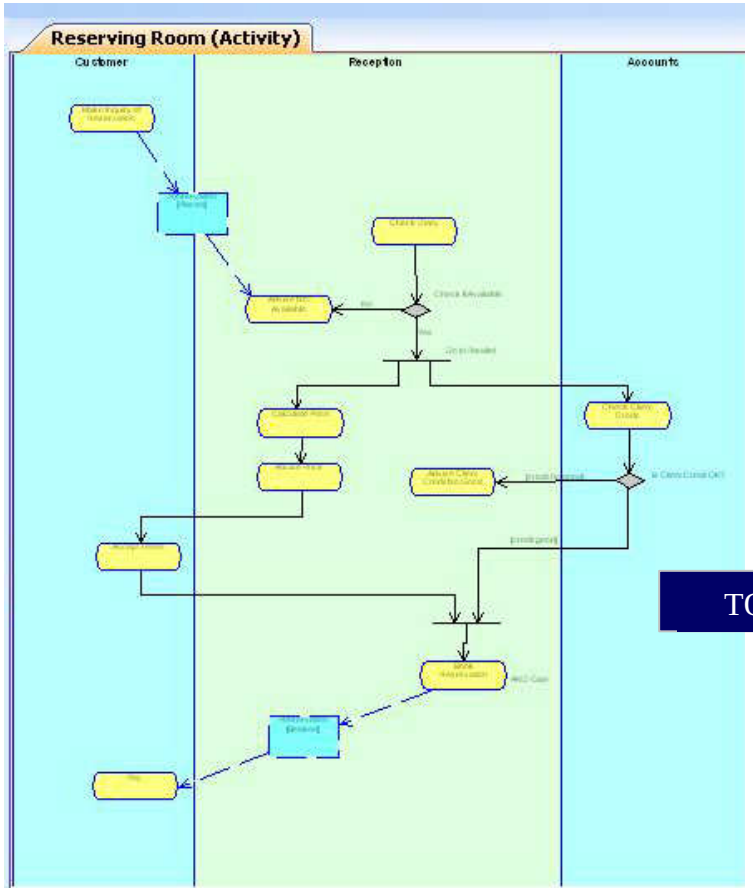
TOOLBUS



Export technology:

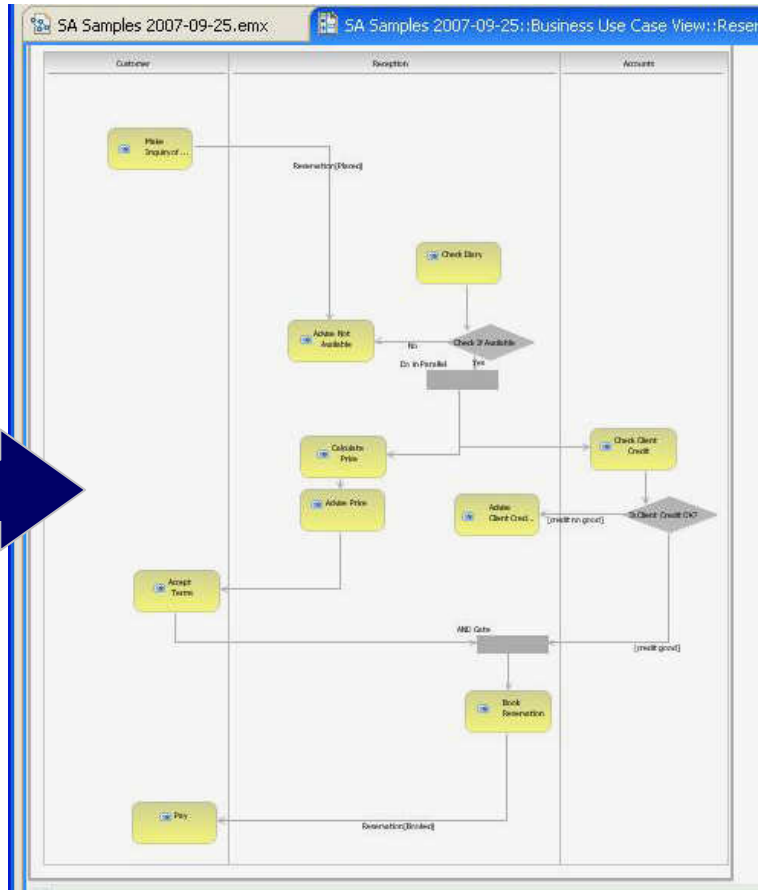
- XML file (proprietary)

Model Migration from Telelogic System Architect to RSA



TOOLBUS

Sample: Activity Diagram



Export technology:
VisualBasic API

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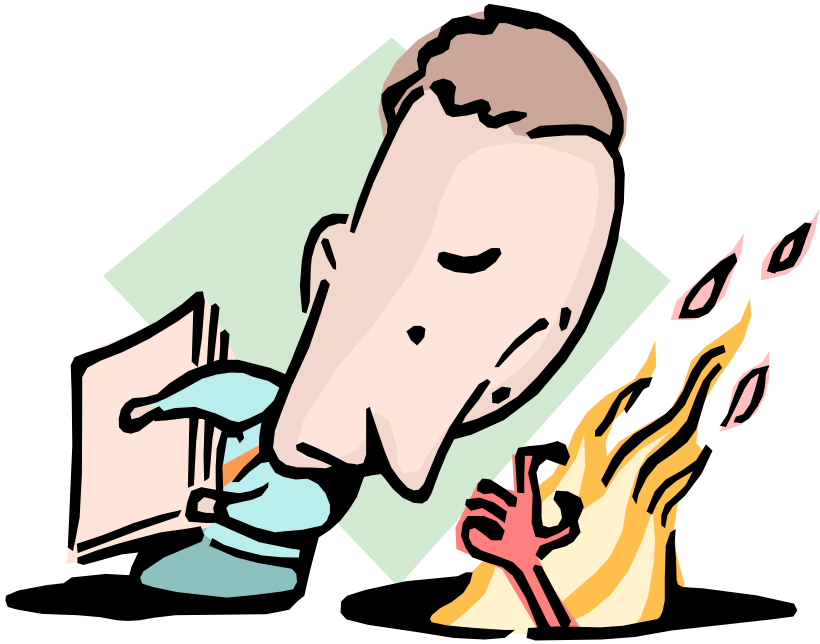
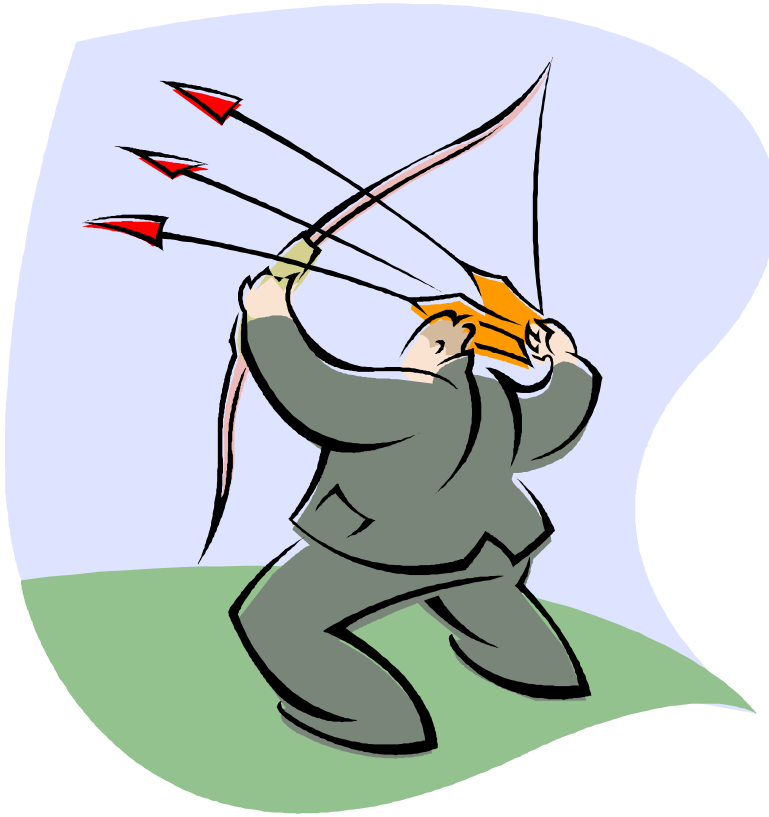
Basic Rules

- **Every migration project is different**.
  - Projects use tools in different ways, with different subsets of the tool/UML, with different setups according to project specific requirements.
- **The devil is in the details**.
  - Even in the context of migration projects for which there exist an out of-the-box migration mechanism, there may be surprises, such as special characters in the input data causing failure/issues.
- **Migration is an iterative process**.
  - As a side effect of rules 1 and 2 above, a migration is typically a trial and error process to be done iteratively until a satisfactory result has been achieved.
  - This may involve a PoC and a Pilot before the final transition is made.



Basic Rules - continued

- **Balance the scope of the migration**.
  - Often "good enough" really is good enough.
  - If there are issues look for alternative solutions or question the relevance of migrating the data.
  - Small amount of data does not need a tool but can be migrated by hand.
- **The result counts, not the method**.
  - "the perfect is the enemy of the good."
  - How elegantly the migration appears to happen is irrelevant as long as the costs are acceptable.
- **Reuse and adapt what is available**.
  - The cost of migrating a project in presence of existing assets can be reduced by a magnitude.
  - The proactive variant of this rule is to develop reusable, adaptable and documented migration assets.



Basic Rules - continued

- **Outsource whenever there is need**.
  - If there is no in-house experience in conducting a migration, or if the relevant tools and techniques are not at hand, call Rational consultants or partners having migration experience and reusable assets.
- **Document your experiences**.
  - Migration occurs infrequently, and having all tips and tricks, questionnaires, guidelines, checklists, findings, recommendations, etc. documented will usually pay off next time a similar migration is attempted.
- **Publish your assets**.
  - Migration is not rocket science, though it is potentially complicated. Even small reusable assets may save time in context of a migration project.

Agenda

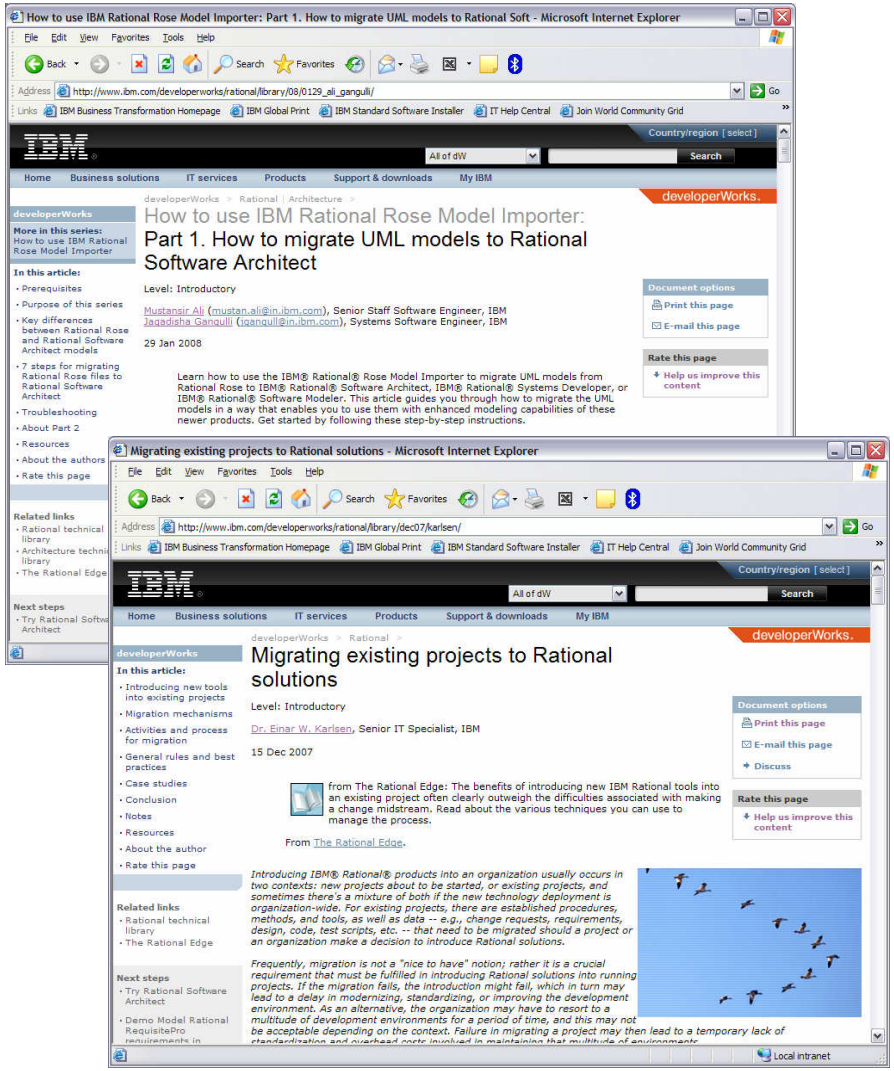
- Motivations and Mechanisms
- Migration Process
- Migration from Rational Rose and Rational XDE to RSA
- Migration from 3rd Party UML Tools
- Basic Rules
- Conclusions

Conclusion

- The decision to introduce Rational Software Architect should not depend on the migration of the existing UML models, thus the investment in the existing UML models can be preserved.
- The techniques, mechanisms, processes and tips and tricks are to a large extend known.
- Migration can be effectively speeded up using experts and/or reusable assets.
- But do not forget the basic rules

For more information

- DeveloperWorks
  - Mustansir, Jagadischa: Part 1: How to Migrate UML Models to Rational Software Architect
  - IBM Rational: Migrating Rational Rose scripts for use with Rational Software Modeler, Rational Software Architect, or Rational Systems Developer
  - Tutorials: Migrating to Rational Systems Developer, Part 1 and Part 2
- Rational Edge
  - Einar Karlsen: Migrating Existing projects to Rational solutions
- RSA Online Help
- Rational Sales Office/Consultants
- Reischmann Informatik
  - www.reischmann.com




QUESTIONS

THANK YOU

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