Reuse Strategy for MBSE Data

Sodius Corp. at GPDIS 2022

Presenter's Bio

Jeff Pilato is the Chief Strategy Officer for Sodius Corp. and has broad responsibilities in supporting the Sodius and Willert executive leadership teams in defining and executing on the company's long-term growth strategies and key business development initiatives. In addition, he's responsible for Sodius Corp.'s U.S. sales revenues, human resources, and contracts. Jeff has been in sales for over 30-years and worked for companies such as; Harris Corp., Mentor Graphics, Wind River, Telelogic, IBM, Oracle, ANSYS, and BigLever. His focus has primarily been in the aerospace, defense and automotive industries. linkedin.com/in/jeffpilato

Who we are

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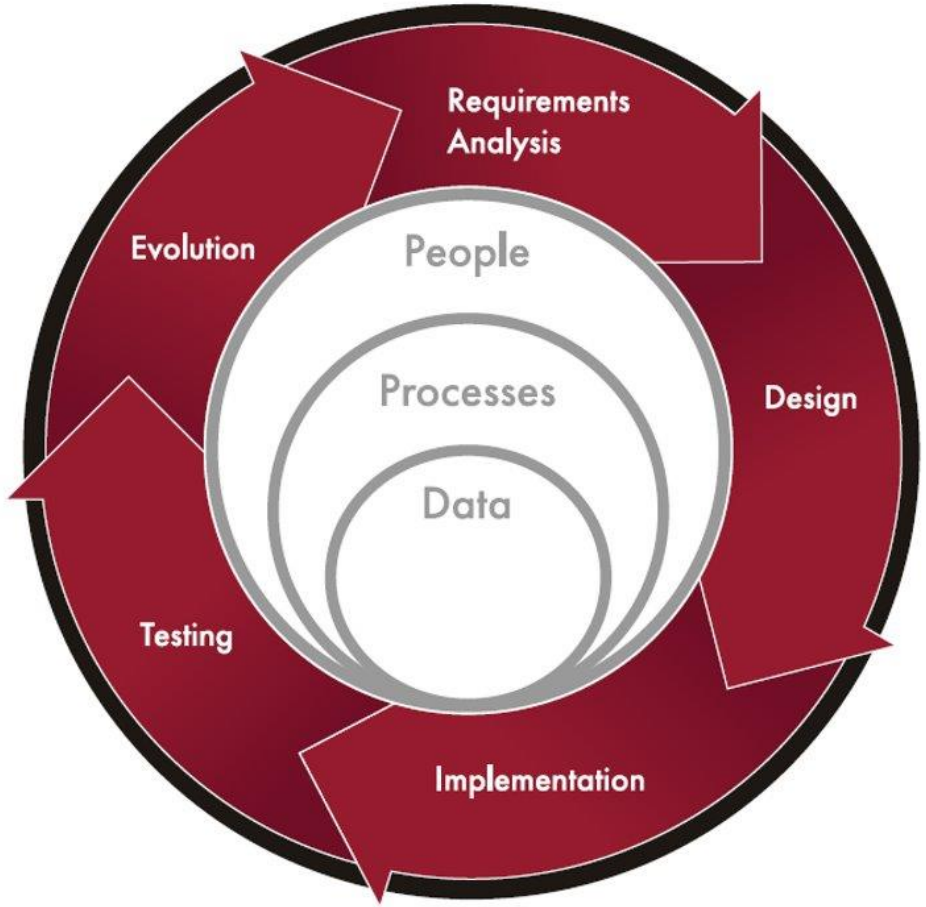
Sodius Corp. is a U.S. company and is the global leader in **software solutions for Data Transformation in classified and non-classified environments, Enterprise Interoperability, and Model-Based Code Generation** to improve data exchange, transformation, traceability, and the linking of engineering data in highly regulated industries thereby enabling digital engineering workflows.

We primarily deploy these solutions in:

- **U.S. Aerospace & Defense Companies**
- **DoD Agencies**
- **Automotive**

Our Mission: To aid in enabling the thread of digital engineering

- **Interoperability experts**
  - 20-years of expertise working with engineering teams in highly-regulated industries
- **We help break down tool silos across engineering disciplines:**
  - MBSE
  - Requirements Engineering
  - Software Engineering
  - Test and Validation



Enabling the reuse of MBSE data in systems design engineering

How do you reuse models?

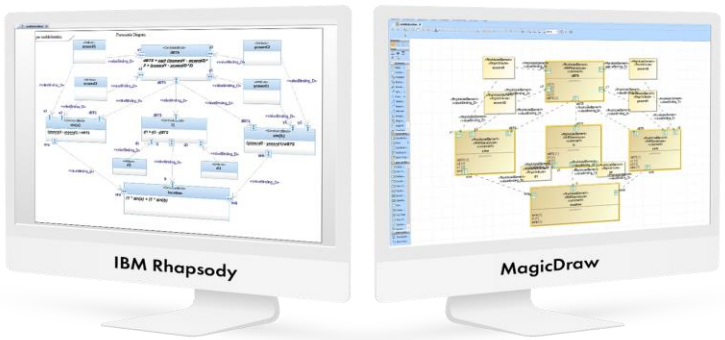
If you want to design in one modeling tool and **deliver in MagicDraw** (or Cameo), you need to be able to **export and publish your data from Rhapsody, System Architect, or Rational Software Architect.** Until now, you would encounter two main challenges:

How do you get years of modeling IP exported quickly?

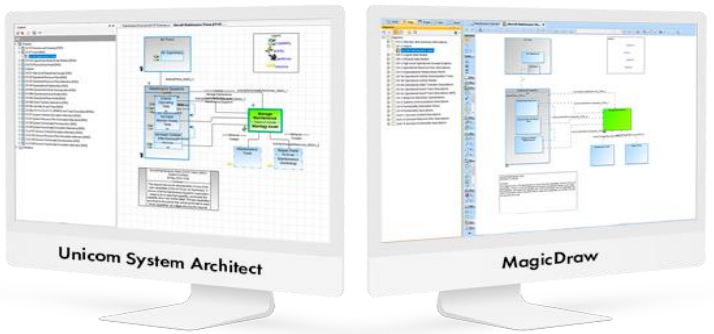
How do you transfer that data consistently and accurately, including the diagrams, for very large models?

The Publisher family of products are the only fast, automatic, cheap, and proven to be the best solution to overcome your challenges.

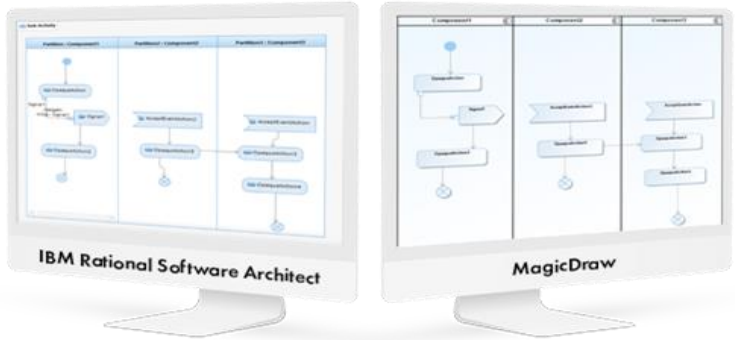
IBM® Rhapsody®



Unicom® System Architect®



IBM® Rational Software Architect®



Export & Publish

The following objectives will minimize your time and effort to Export & Publish your models.

Objectives:

- No manual work or cleanup and have user configurable settings and display styling.
- Same form and function, but in a different tool.
- Identify, log, and report inconsistencies with the potential to cause rework or cleanup.
- MagicDraw model can be manually changed after migration.

Publisher

for Rhapsody®

SODIUS

Publisher for Rhapsody

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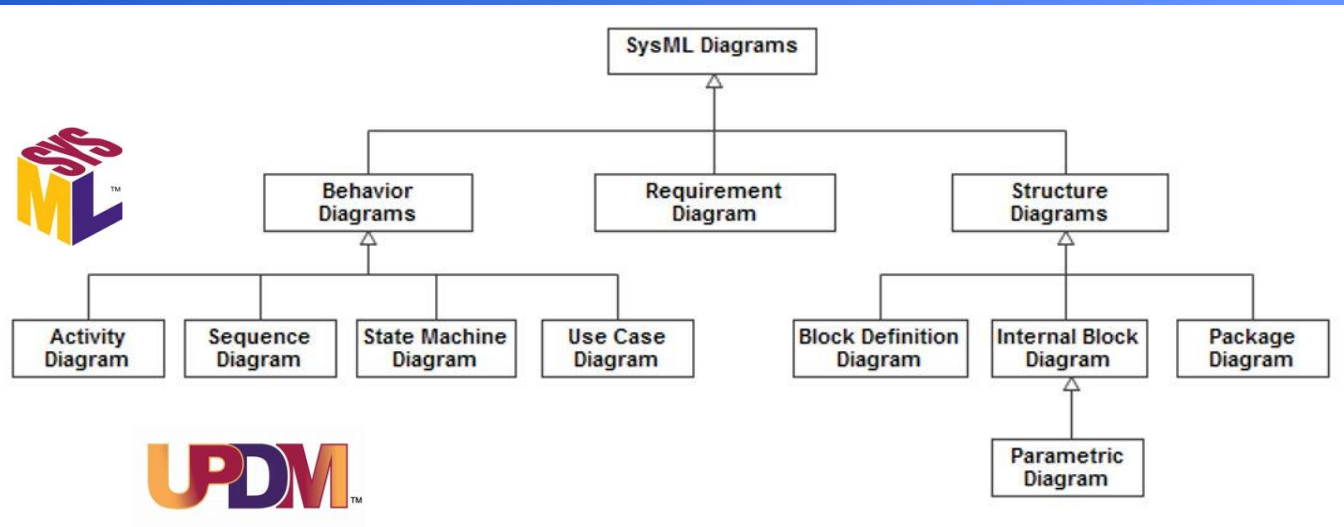
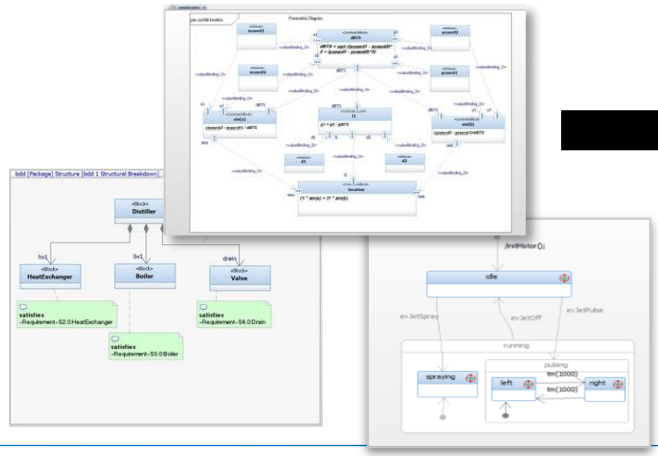
The Publisher for Rhapsody is a plug-in that automatically generates complete SysML/UML/UPDM2 MagicDraw models from Rhapsody, including:

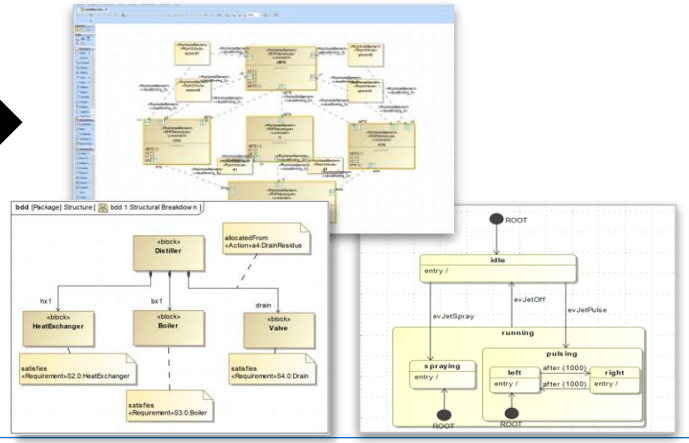
- **Model elements, structure, and hierarchy**
- **Diagrams maintaining layout and colors**
- **Logs of model transformation actions**
- **Metrics and Reporting**
- **User Configurable Options.**



Rhapsody SysML



MagicDraw SysML



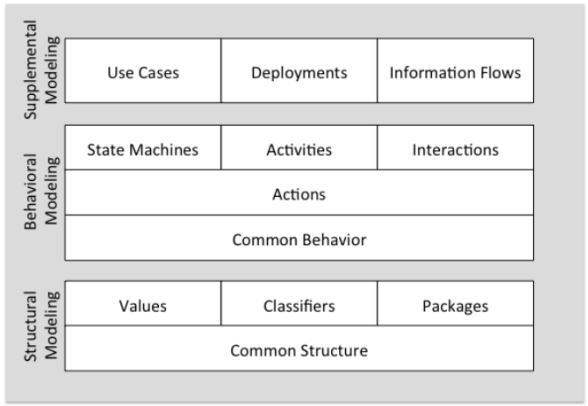
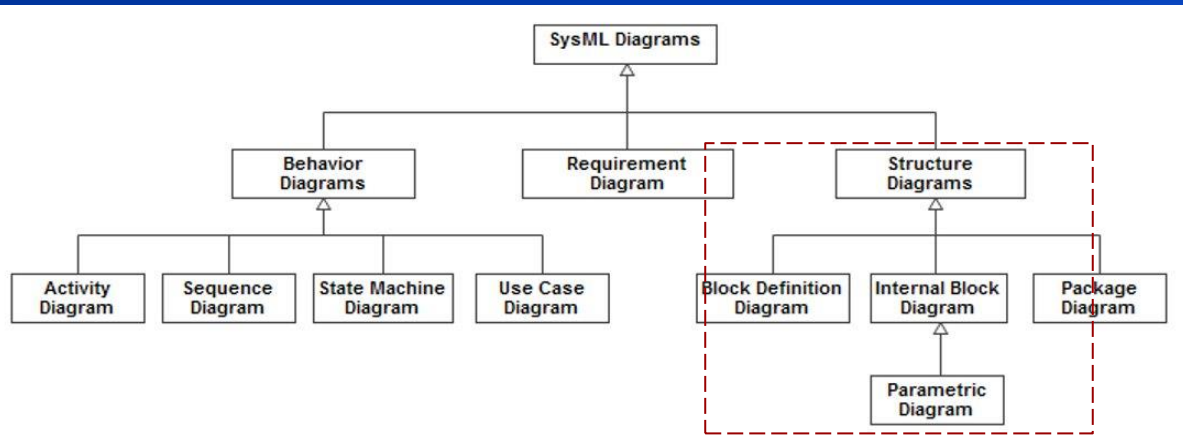


Figure 6.1 Semantic Areas of UML

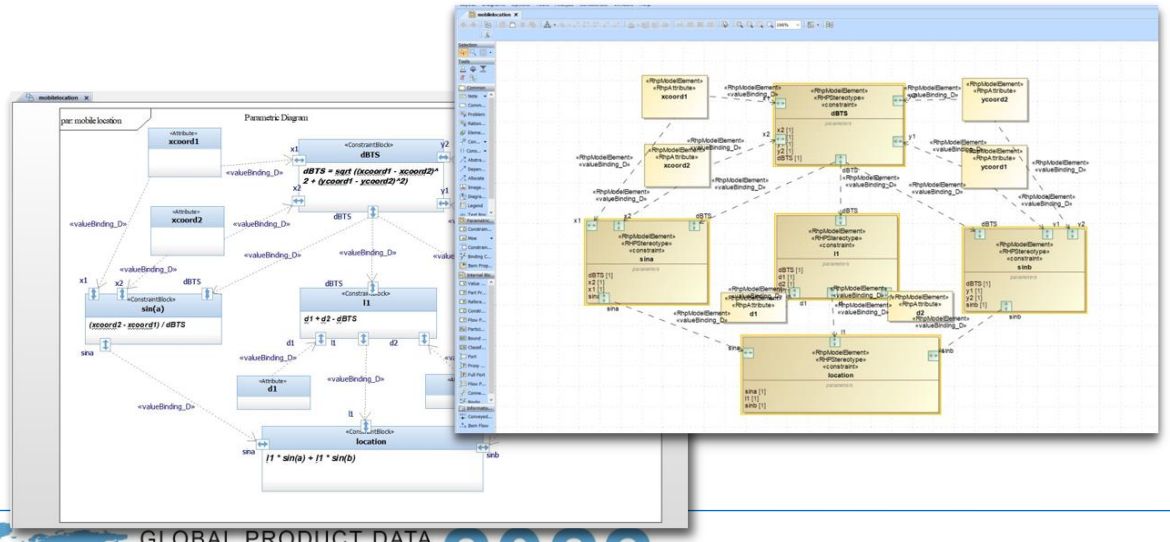
UNIFIED MODELING LANGUAGE™

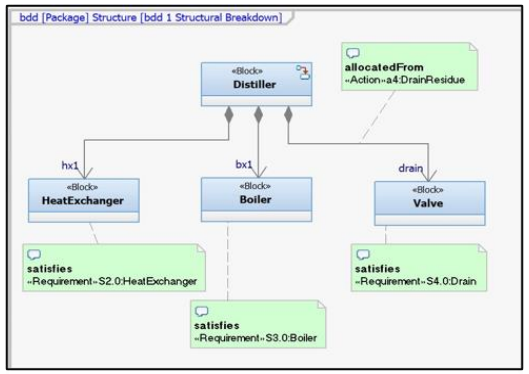
SysML Structure Diagrams



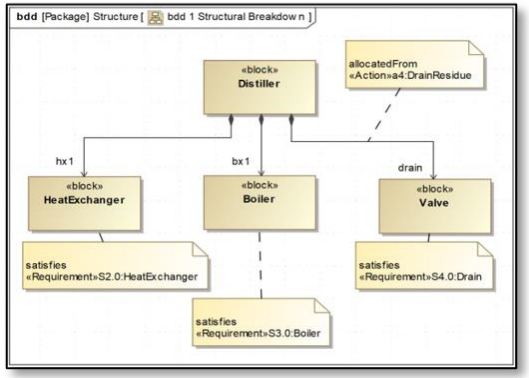
The Publisher converts SysML Structure Diagrams:

- Block Definition Diagrams
- Internal Block Diagrams
- Package Diagrams
- Parametric Diagrams

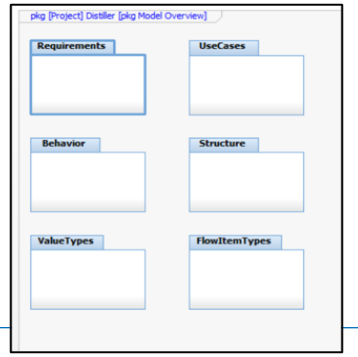


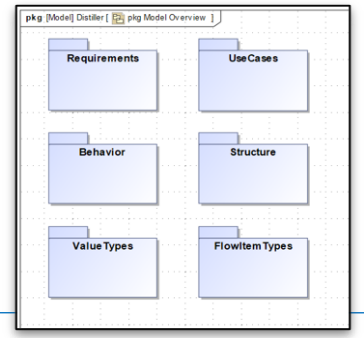


Rhapsody



MagicDraw





SysML Requirement Diagrams

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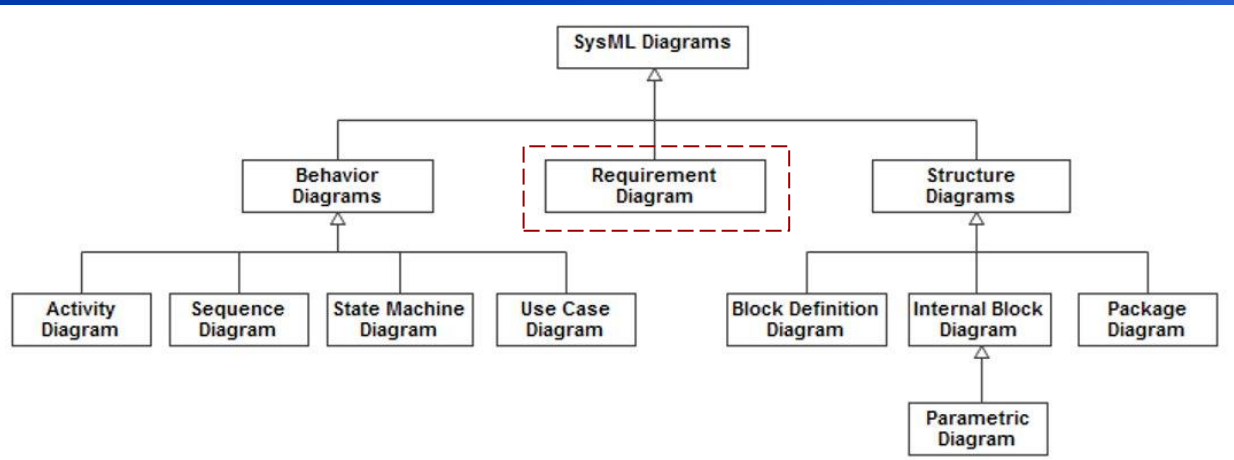
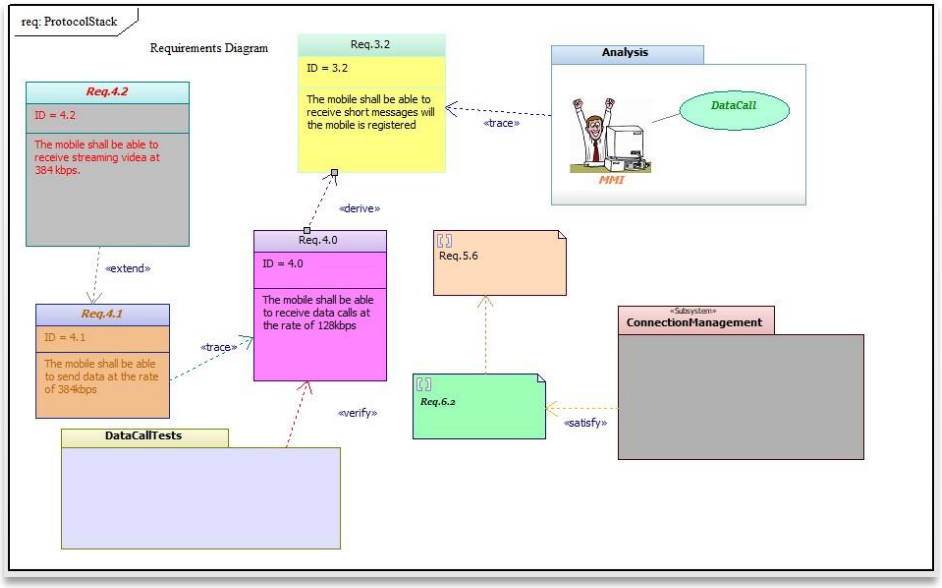
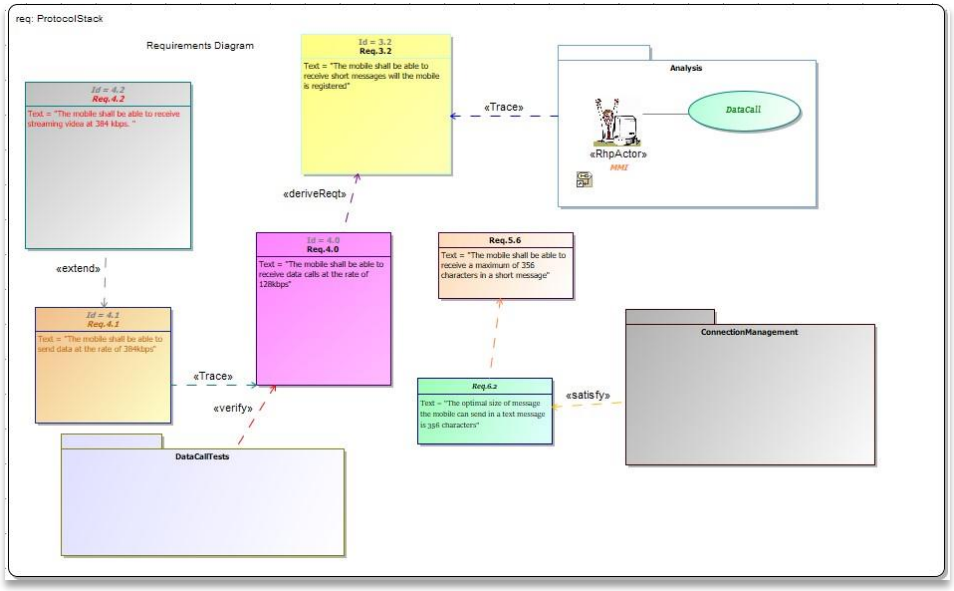


Publisher converts Requirement Diagrams.

Rhapsody



MagicDraw



SysML Behavior Diagrams

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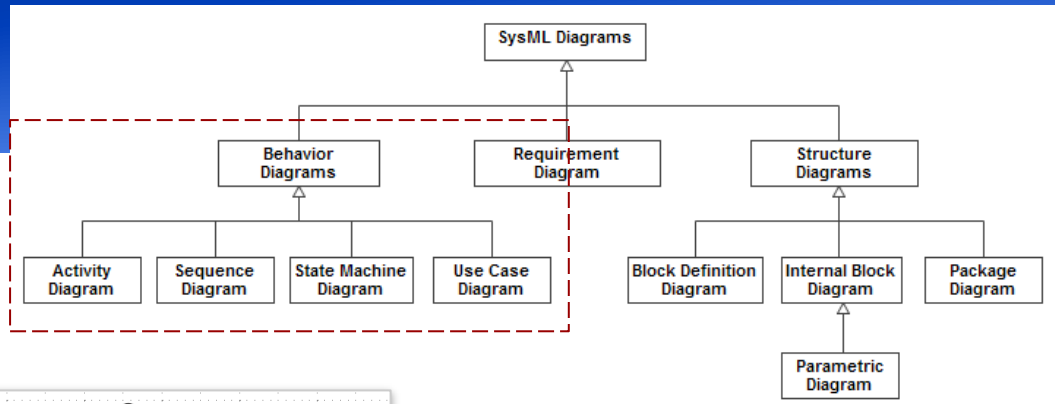
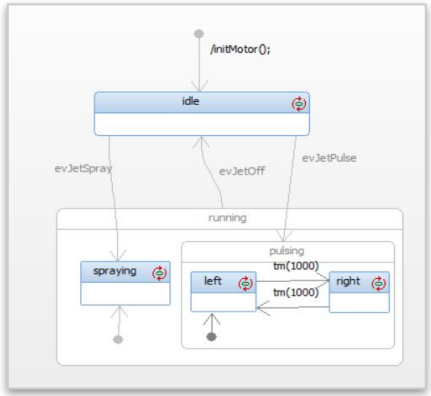
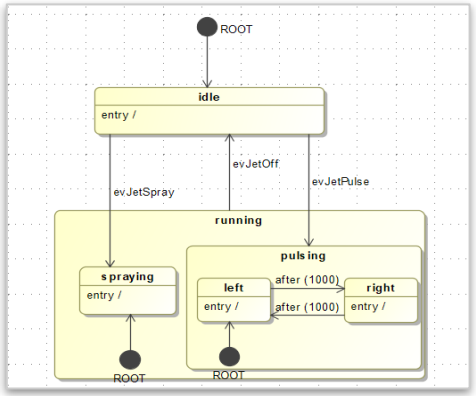
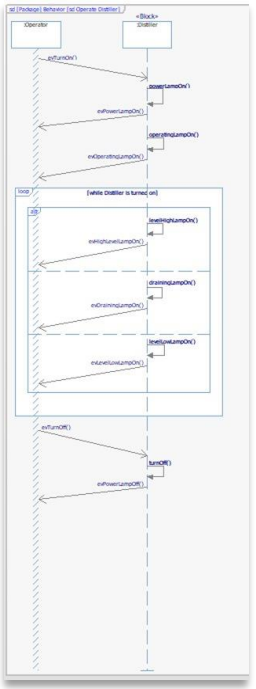


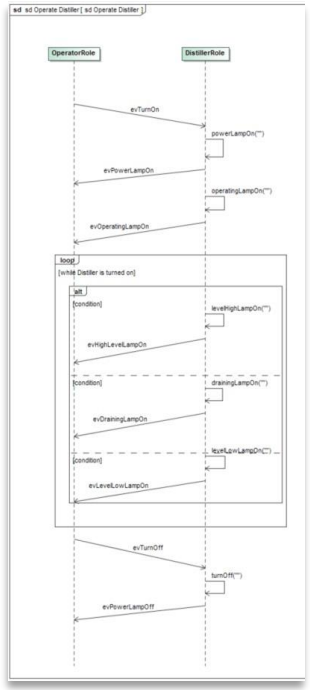
The Publisher converts SysML Behavior Diagrams:

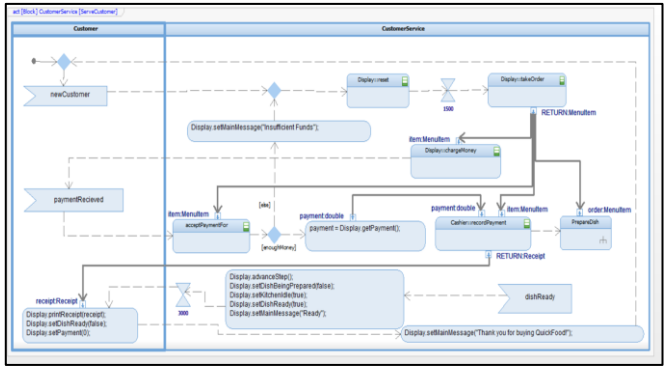
- **Activity Diagrams**
- **Sequence Diagrams**
- **State Machine Diagrams**
- **Use Case Diagrams**

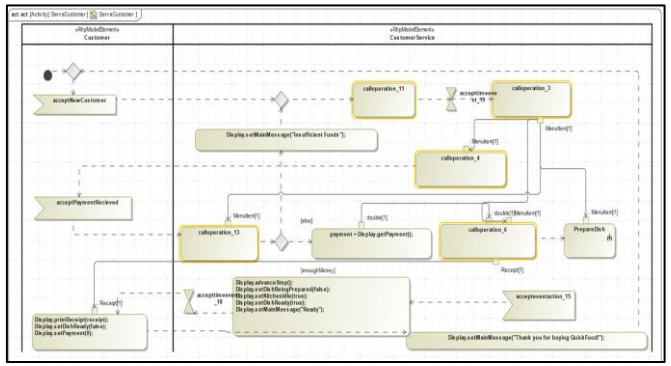








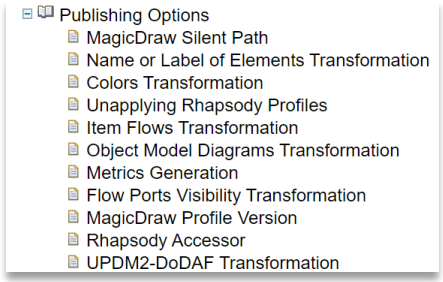


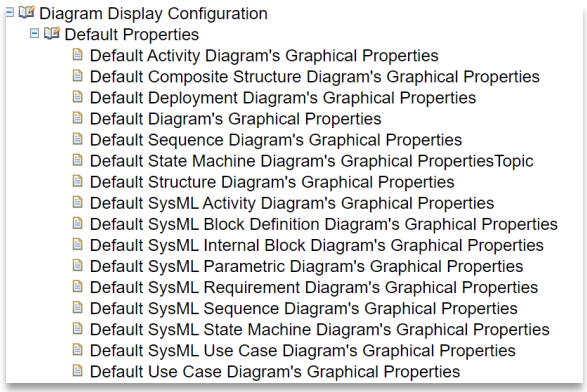


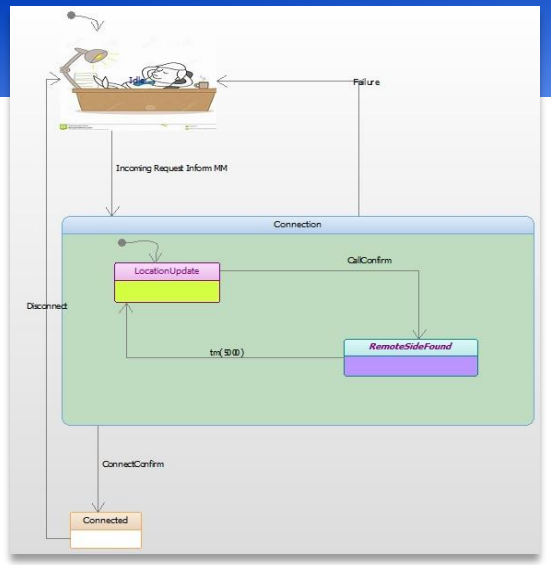
User Configurability

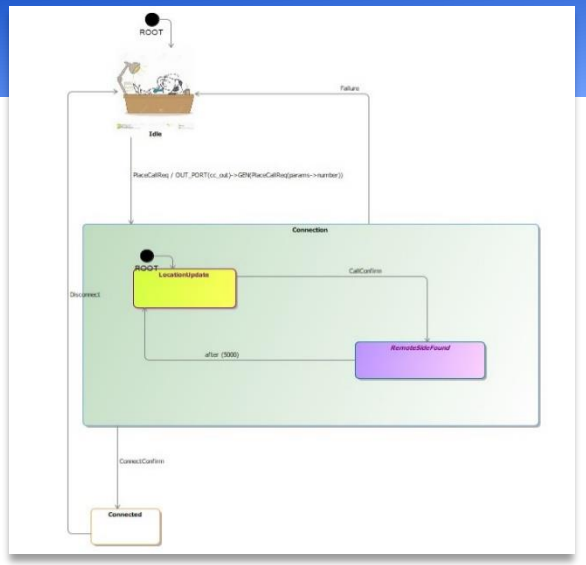
Customers have User Configuration

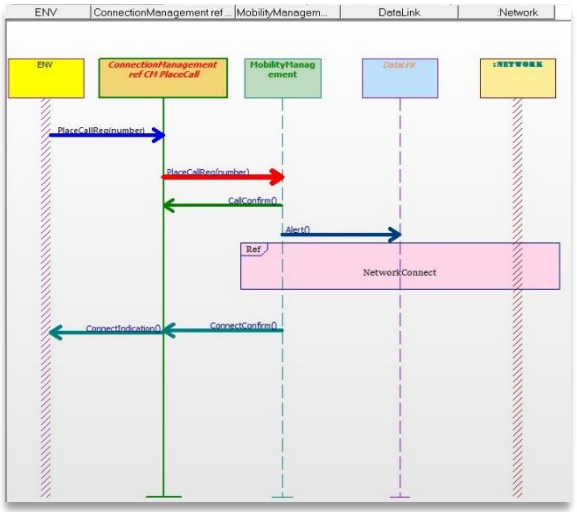
- **The publisher provides two configuration files allowing different teams to control and apply their defined methods and styling consistently.**

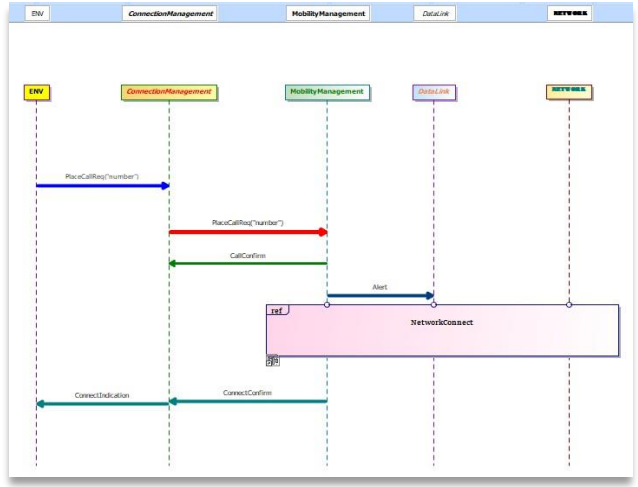










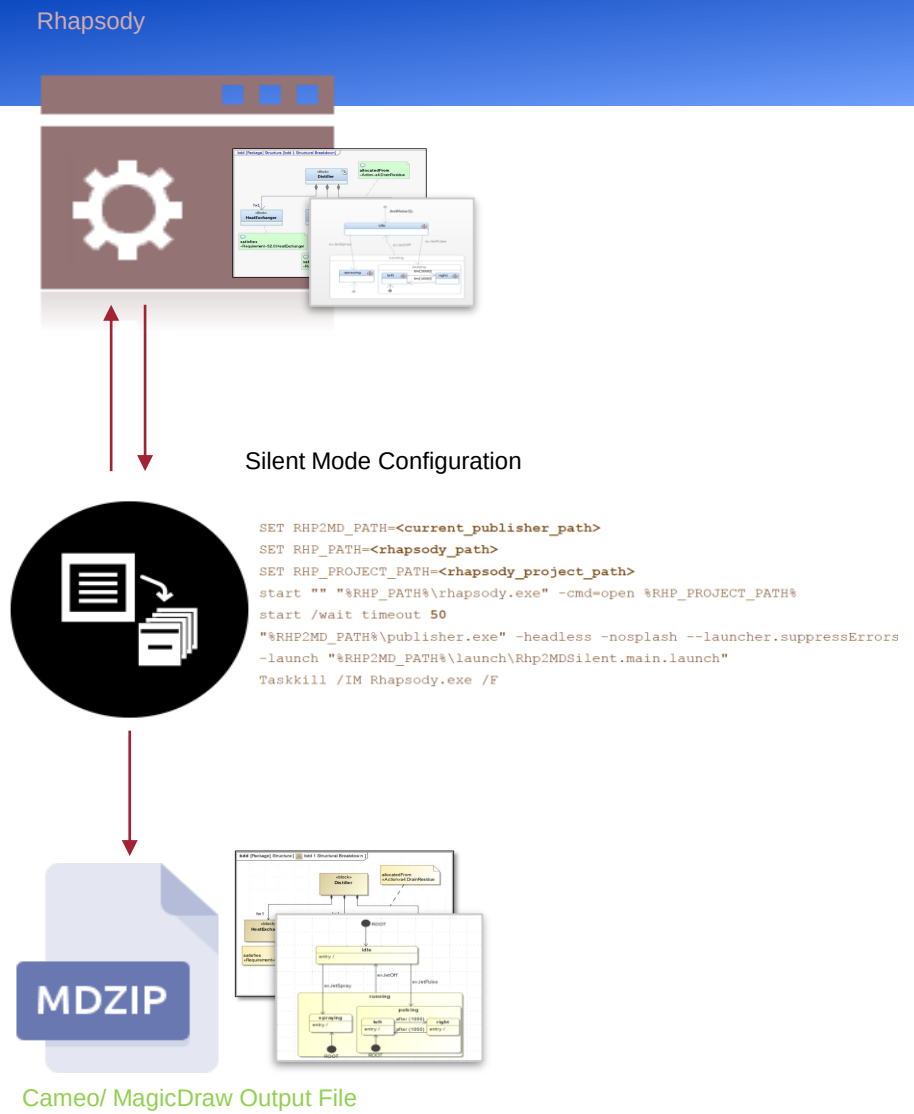


Silent Mode

The Publisher can fully automate your publication activities in Silent Mode by using the batch mode and a fully configurable options set.

- The Rhp2MDSilent.bat file will automate the following actions:
  - Launch Rhapsody
  - Open a project in Rhapsody
  - Run the Rhapsody to MagicDraw transformation
  - Close Rhapsody

- Silent Mode also handles typical options :
  - Rhapsody model file path
  - Semantic options
  - Diagram formatting configurations
  - Cameo .mdzip output file path



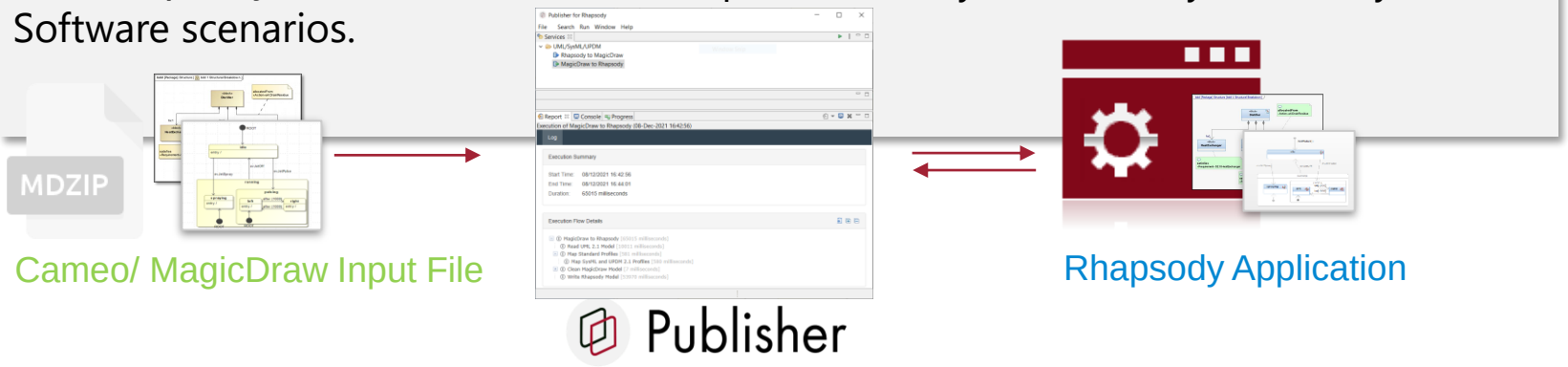
New Product in the Publisher Family – Cameo Model Importer for Rhapsody

Sodius announced in July 2022 the release of a new product in the Publisher family:

MagicDraw/Cameo to Rhapsody Model Import

This new capability will ease exchange process from MagicDraw to Rhapsody.

By enabling automated import of Cameo/MagicDraw UML, SysML or UPDM models into Rhapsody, it's the first technical step for future System/Sub-System or System to Software scenarios.

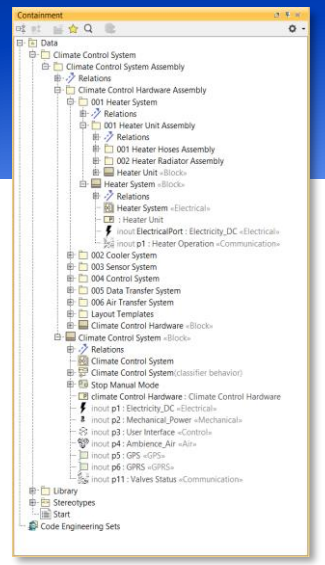


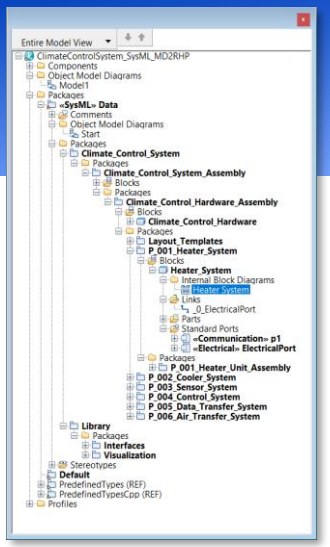
This is not a round-trip tool, it's a unique and consistent way to achieve Import/ Export/ Publish scenarios between Cameo and Rhapsody including:

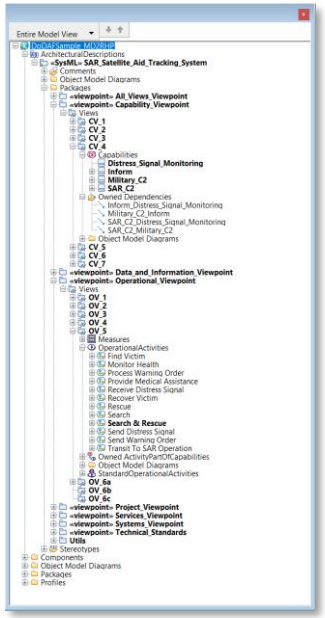
- **Unique IDs generation**
- **Alignment of profiles and libraries in both directions**

DoDAF and SysML
From Cameo to Rhapsody

- **This new service of the Publisher includes:**
  - **Mapping of UPDM/SysML elements**
    - **Hierarchy, elements and relationships**
    - **For UPDM, Architecture Description, Packages and Viewpoints**
  - **Import Cameo diagrams into Rhapsody**
    - **Generic Import of Structural and Behavior diagrams**
    - **Specialization of UPDM diagrams import**







Cameo Source Models

Rhapsody Target Models

Semantics and Diagrams From Cameo to Rhapsody

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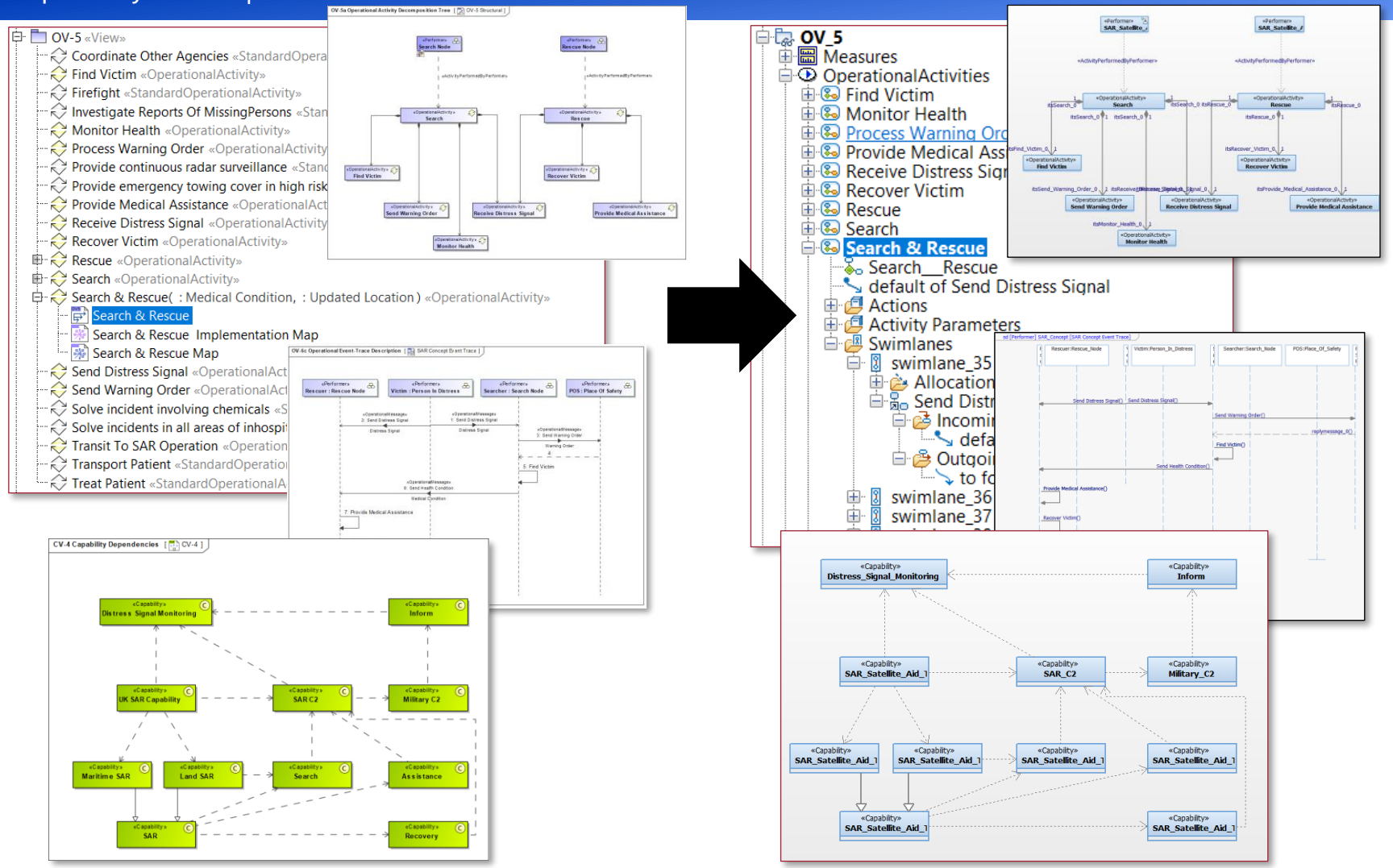

Publisher

for System Architect®

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Publisher for System Architect

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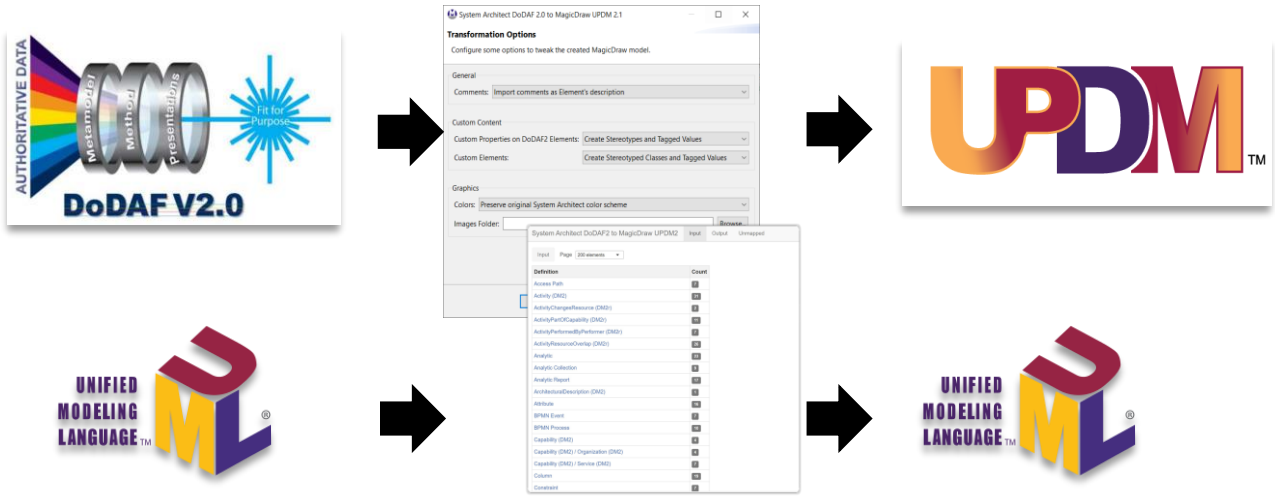
The Publisher for System Architect is a plug-in that automatically generates complete MagicDraw models from System Architect including:

- **DoDAF 2.0 to UPDM 2.1**
- **UML to UML**
- **DoDAF 1.5 to UPDM 2.1**

The ruleset includes the publisher of the following:

- **Model Elements, structure, and hierarchy**
- **Diagrams - maintaining layout and colors**
- **Full Logging of model transformation actions**

System Architect **MagicDraw/Cameo**



DoDAF 2.0 CVs, OVs Examples

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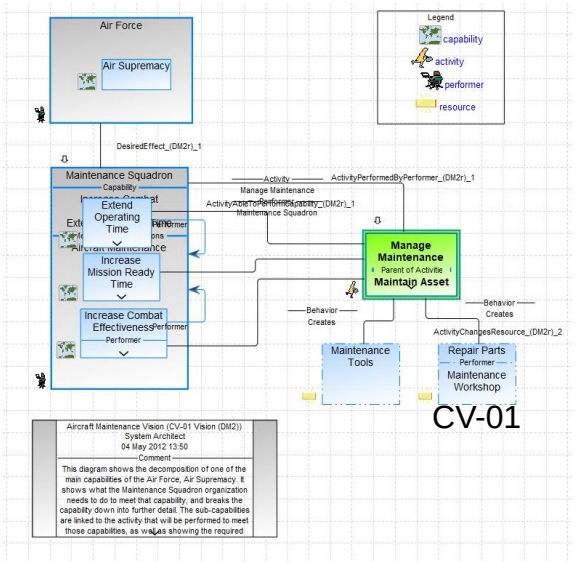
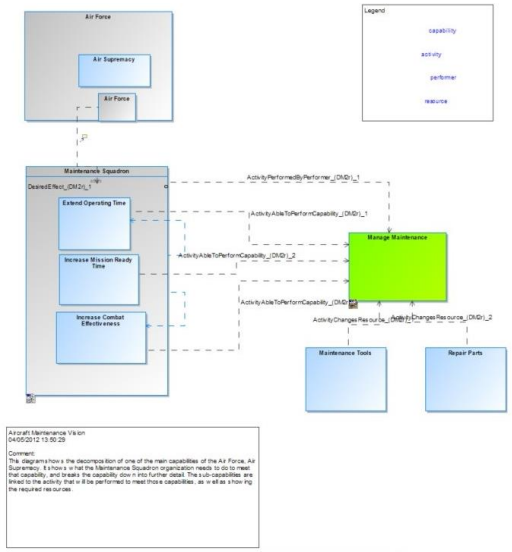
System Architect

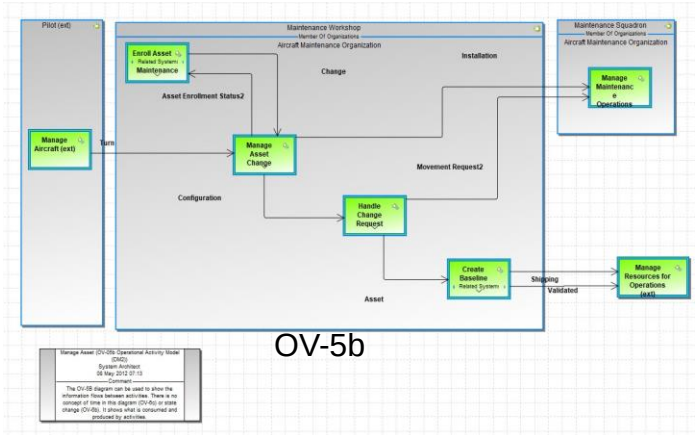


CV-01

MagicDraw

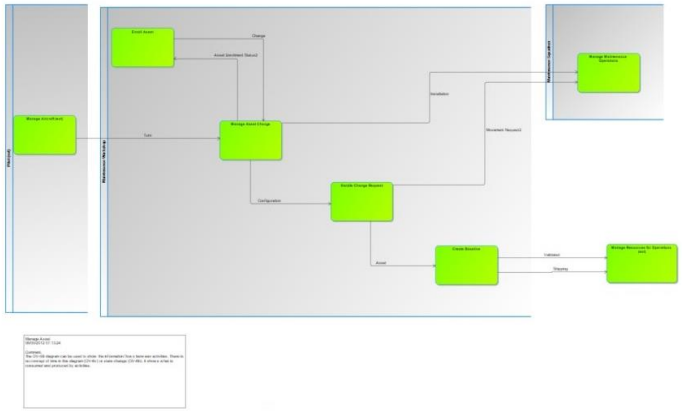


System Architect

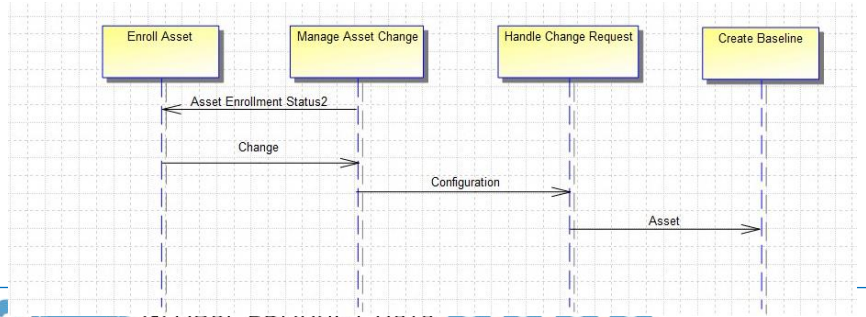


OV-5b

MagicDraw

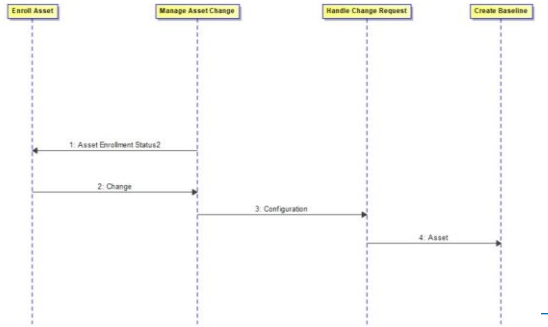


System Architect



OV-6c

MagicDraw



DoDAF 2.0 SVs, SVcVs DIVs Examples

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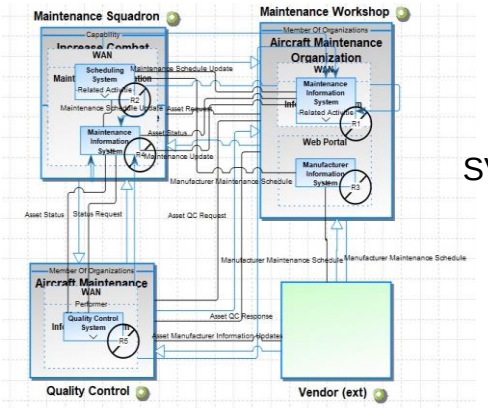
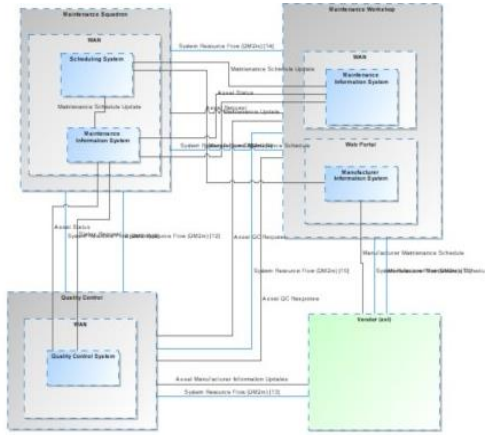
System Architect

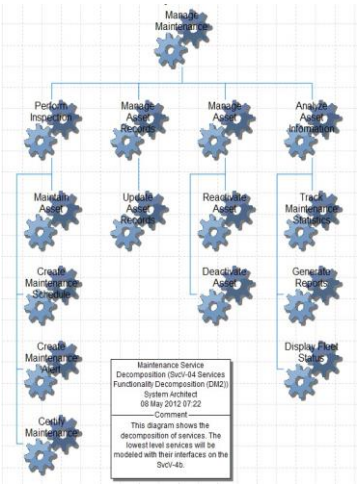


SV-02

MagicDraw

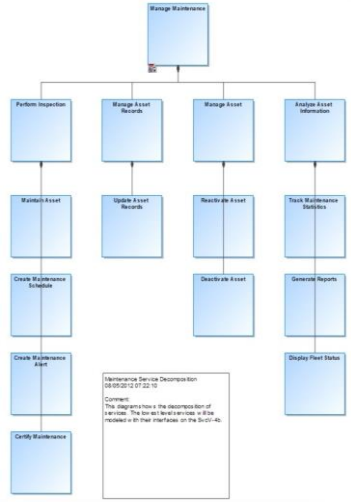


System Architect

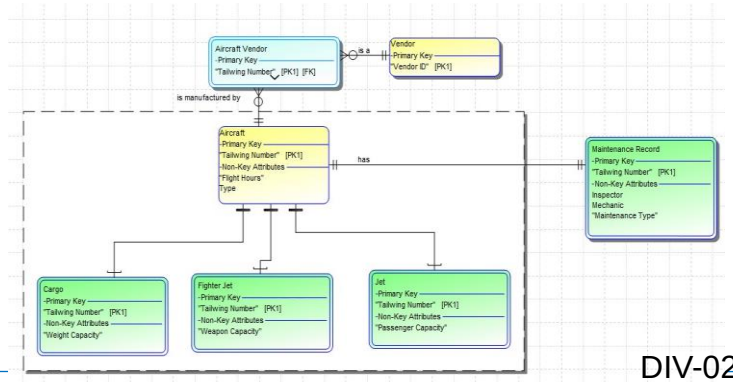


SVcV-04

MagicDraw

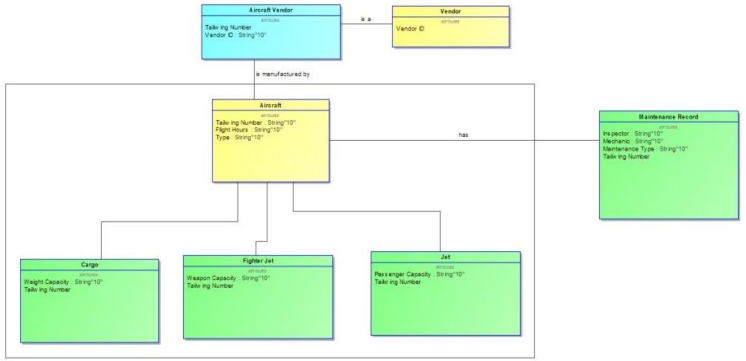


System Architect



DIV-02

MagicDraw



UML Examples

The Publisher for System Architect is a plug-in that automatically generates complete UML MagicDraw models from UML System Architect including:

- **Model Elements, structure, and hierarchy**
- **Diagrams - maintaining layout and colors**
- **Full Logging of model transformation actions**

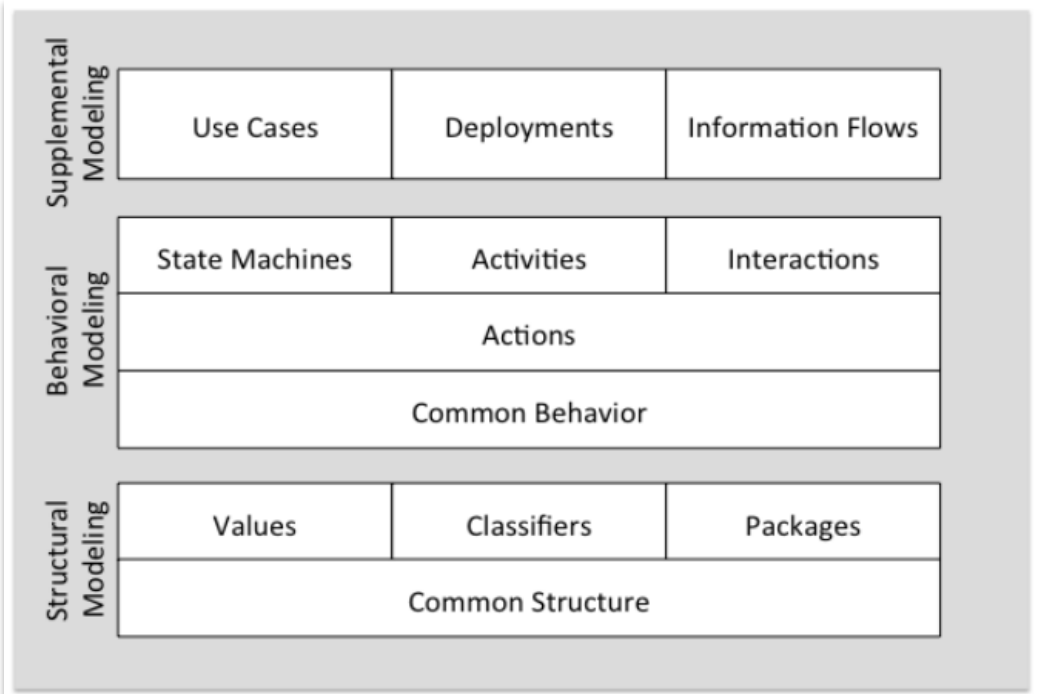


Figure 6.1 Semantic Areas of UML

Examples of published UML diagrams in Cameo/MagicDraw format

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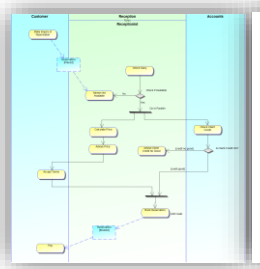
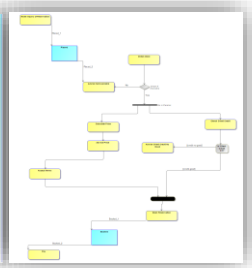
Activity Diagram

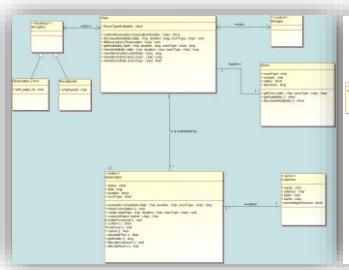


System Architect

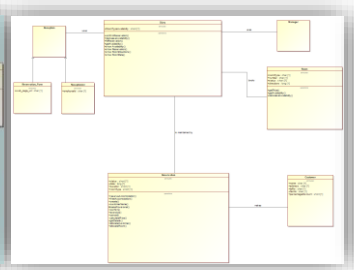


MagicDraw

Class Diagram

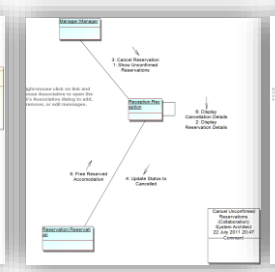


System Architect

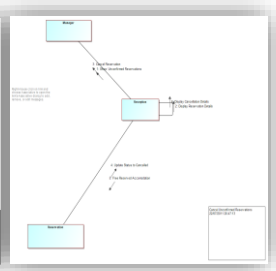


MagicDraw

Collaboration Diagram

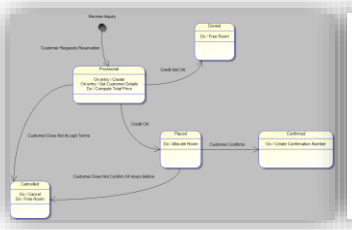


System Architect

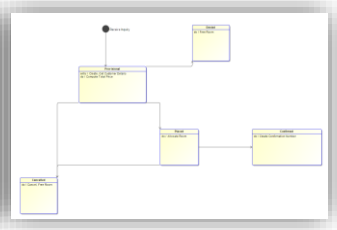


MagicDraw

UML State Diagram

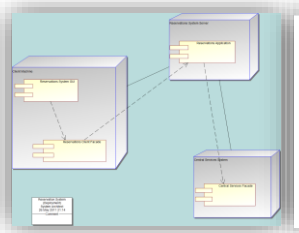


System Architect

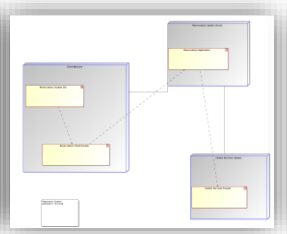


MagicDraw

Deployment Diagram

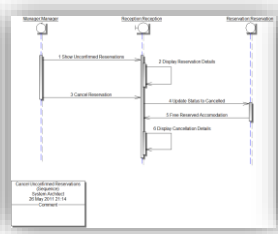


System Architect

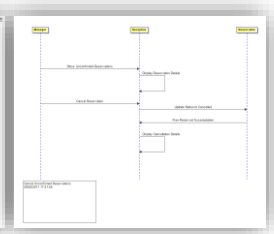


MagicDraw

Sequence Diagram

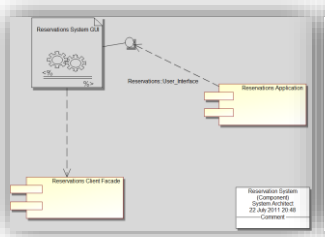


System Architect

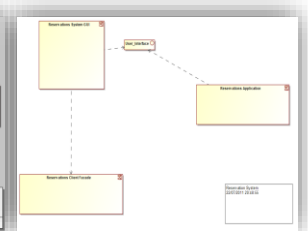


MagicDraw

Component Diagram



System Architect



MagicDraw

Publisher

for Rational® Software Architect

SODIUS

Publisher for Rational Software Architect

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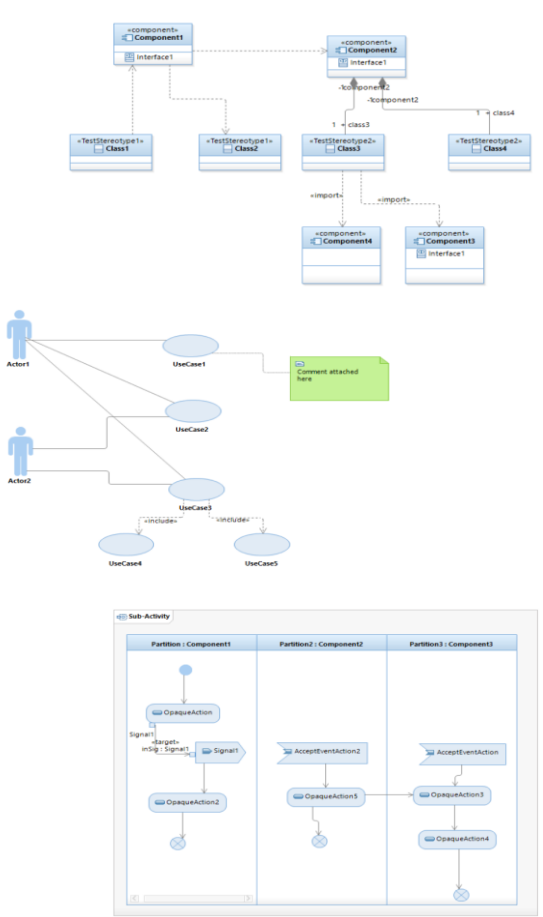
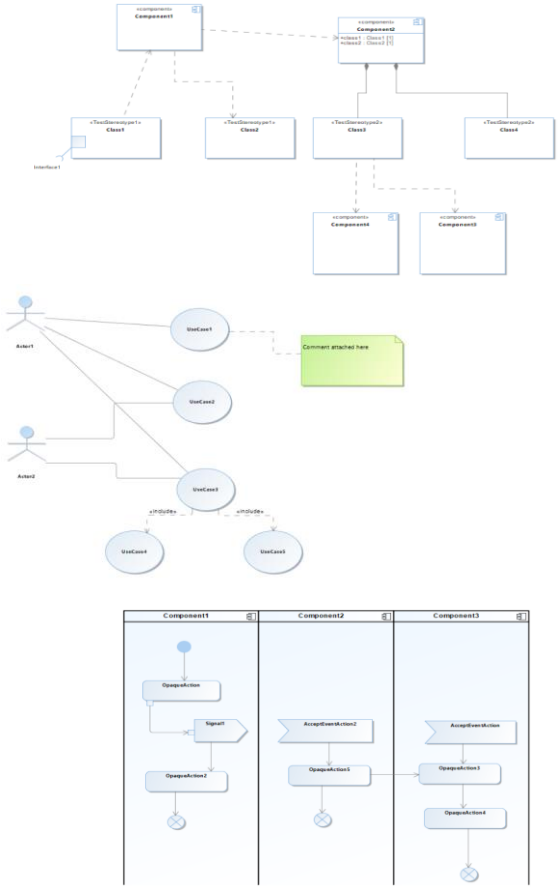
The Publisher for Rational Software Architect is a plug-in that generates complete UML MagicDraw models from RSA UML and UPIA, including:

- **All model elements, structure, and hierarchy**
- **Custom Profiles**
- **Diagrams - maintaining layout**
- **Full logging of model transformation actions**
- **Transforms large models**
  - **7,000-diagrams, 850,000 elements**

Rational Software Architect



MagicDraw



IBM Rational Software Architect Examples

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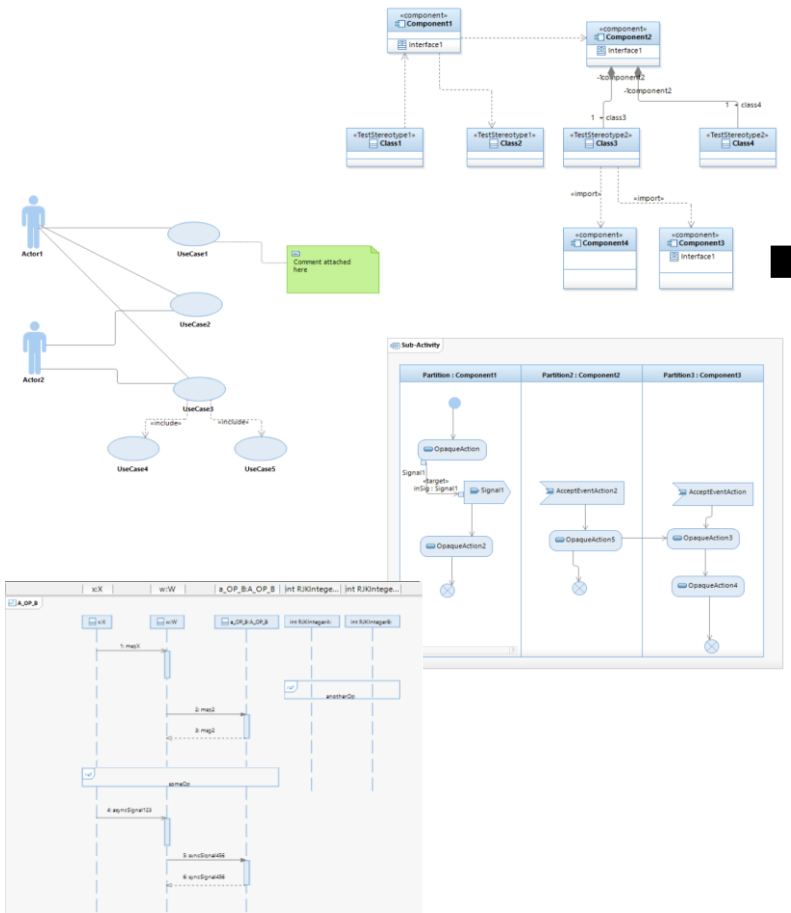
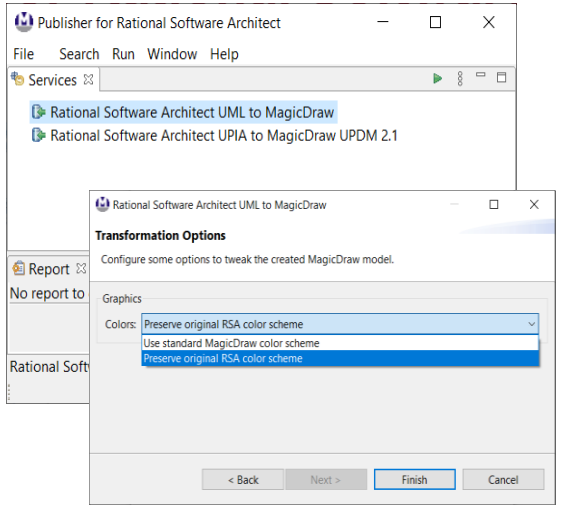
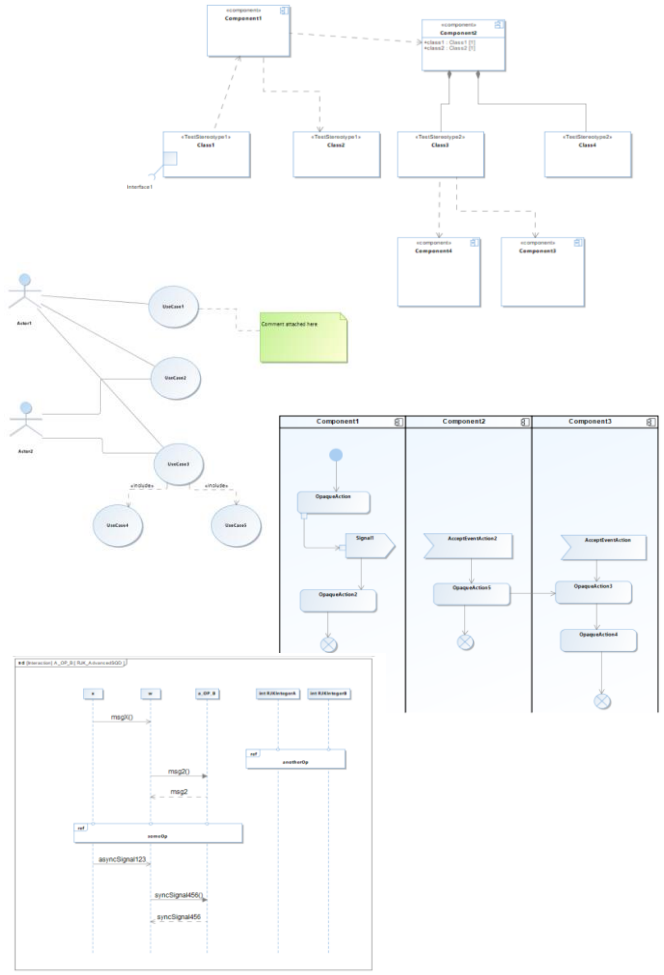
Rational Software Architect





MagicDraw

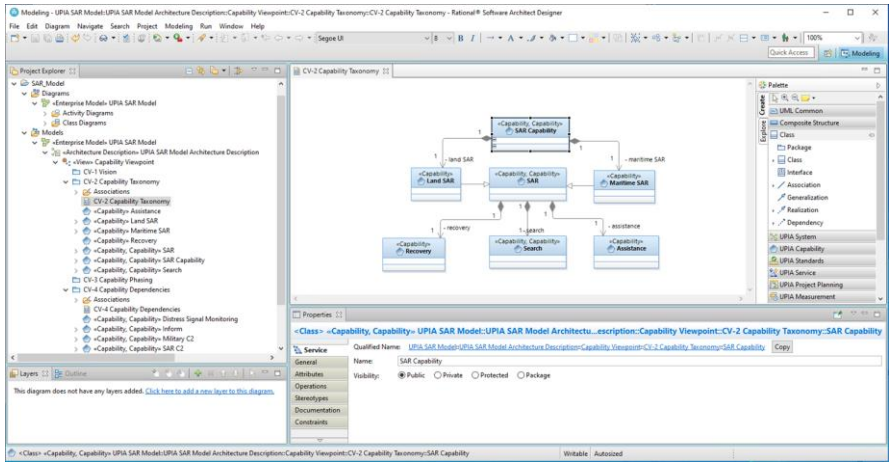


Add-on: Publisher for RSA UPIA

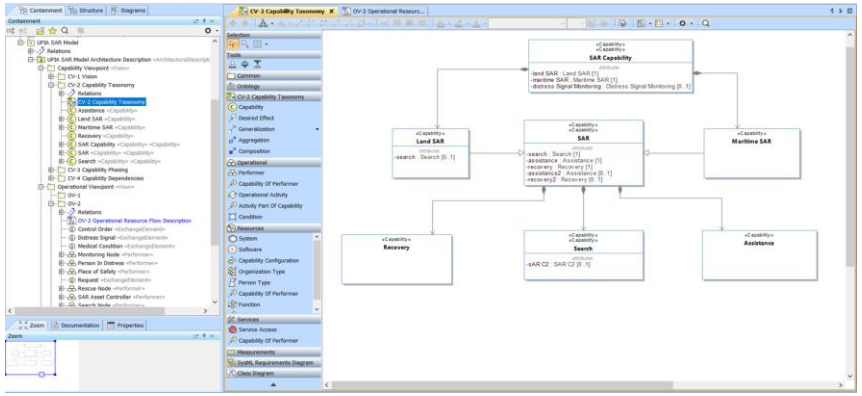
The Publisher for Rational Software Architect UPIA add-on enables support for RSA's UPIA profile.

- **Elements that have been stereotyped with the UPIA profile are converted into MagicDraw with the UPDM 2.1 profile.**

Rational Software Architect UPIA



MagicDraw UPDM 2.1



Industry leaders trust the Publisher to help them improve productivity.

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What our Customers say about our Publishers

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Raytheon
Integrated Defense Systems

Content to export: 200 diagrams, 18,000 elements.

Expected time w/o Publisher: “a quick computation leads to 18 weeks of remodeling and validation without the reproducibility and confidence brought by automated solution”.

Total time to export: 2 hours

--

"By leveraging the MagicDraw Publisher for Rhapsody, the total time to export the end-customer deliverable was less than two hours. »

Chris Finlay – Project Manager

U.S.ARMY

Content to export: 37,331 files in Rhapsody UML format with 812,405 elements and 703 diagrams

Expected time w/o Publisher: ”This kind of transformation, if done manually, would take man-years to complete.”

Total time to export: Less than a day

--

“The Publisher for Rhapsody quickly enabled us to automate the migration from Rhapsody UML models to Cameo/MagicDraw SysML models.”

Sean F., Dynetics Project Manager and Lead Systems Architect

Redstone Arsenal

NORTHROP GRUMMAN

Content to export: 220,000 elements and 300 diagrams in Rhapsody SysML

Expected time w/o Publisher: ”Redoing an entire model that months were spent on because of tool changes, would have been a huge waste of resources”.

Total time to export: 30 minutes

--

“We like it and the management is very pleased. Redoing an entire model that months were spent on because of tool changes, would have been a huge waste of resources.”

Maxwell Yavaraski., Principal System Engineer

How MagicDraw Publisher products have helped our customers

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SAVE ENGINEERING TIME
(faster)

Save months or years of critical engineering resources converting and validating manually re-written models.

With the Publisher for Rhapsody, users of Rhapsody can **automate the export and publish of models to MagicDraw** to meet industry standards within minutes or hours.

MAINTAIN DATA INTEGRITY
(better)

With a fully automated transformation, data is converted consistently within and between projects, in a **reproducible** way.

Any transferred data is uniquely identified **preserving traceability** after the conversion.

INCREASE ROI
(cheaper)

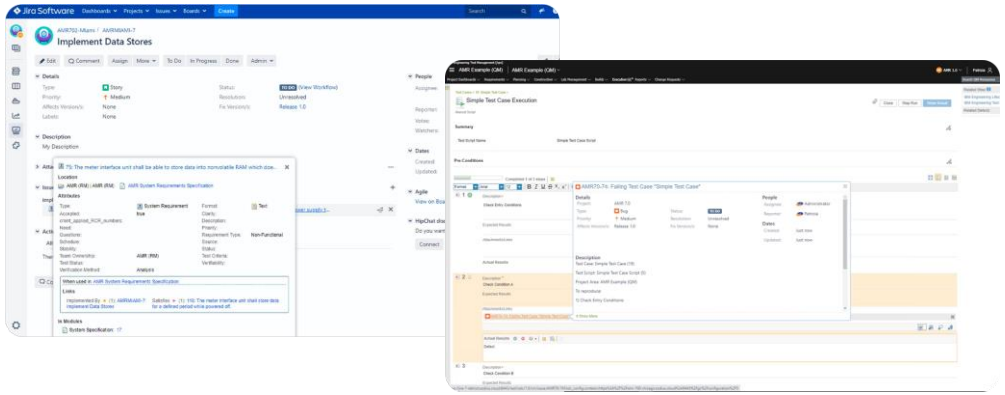
By converting semantic and diagrams in the transformation process, you preserve the modeling intent. Your **engineering added-value is transferred to your new target environment increasing the ROI of modelling activities** in your organization by saving months to years of manual (re-) modeling.

Enabling reuse of data in Systems Engineering and Application Lifecycle Management by leveraging Open Services for Lifecycle Collaboration (OSLC)

OSLC Connect for Jira

Integrate Jira with IBM ELM or Siemens Polarion ALM

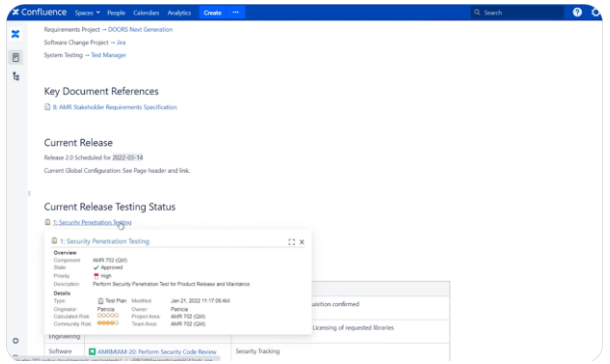
- ✓ Track relationships between IBM ELM or Polarion ALM artifacts and Jira issues
- ✓ Support for Global Configurations
- ✓ Built on the OSLC standard



OSLC Connect for Confluence

Embed IBM ELM or Siemens Polarion ALM artifacts into Confluence pages

- ✓ Track IBM ELM or Polarion ALM artifacts in Confluence
- ✓ Support for GCs
- ✓ Built on the OSLC standard



Presented by:

Jeff Pilato – Chief Strategy Officer Sodius Corp

jpilato@sodius.com // 847-476-8000

For more information visit sodiuswillert.com

U.S.A - SODIUS CORP

418 N. Main Street 2nd Floor

Royal Oak, MI 48067, USA

+1 (248) 270-2950