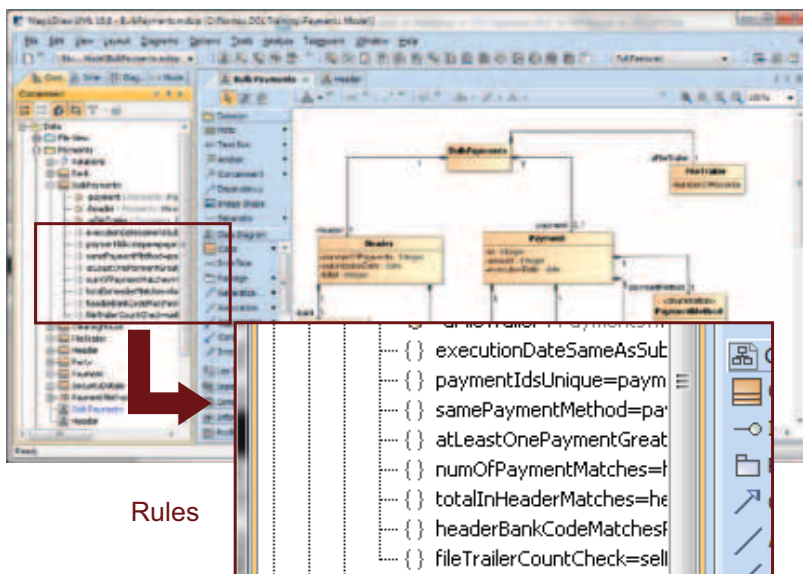# CAMEO OCL TRANSFORMER™

Powered by Nomos Software

OCL, Object Constraint Language, part of the UML standard

OCL is a declarative rules language that is part of the UML standard, and is used to define constraints and queries on UML models. Constraint rules define things that must be true in the modeled system. For example, suppose you were modeling a system login. You might define a 'password' attribute, and use an OCL rule to state that the password must always contain at least 8 characters.

MagicDraw support for OCL

MagicDraw includes comprehensive support for OCL. Not only can you add OCL rules to MagicDraw models, you can also execute the OCL over your models. Supplementing your model with rules makes your models more complete and precise. Executing the rules over your models or model instances provides a way to test that your modeling work is correct.

OCL constraints captured against UML metamodel elements can be used to validate MagicDraw models. OCL rules captured against UML model elements can be used to validate MagicDraw model instances.

Business Benefits:

- **Shared rules repository:** leverage MagicDraw as an OCL rules repository as well as a model repository
- **Cost savings:** reduce time and cost of development and test activities by generating code from the rules in the enterprise model
- **Higher quality models:** models that include rules and that are used for code generation have to be of higher quality. Software components, not just documentation, depend on them
- **More correct models:** the model and the code base are always in sync because the code for rules is generated from the model
- **Better reference documentation** for an organization's software systems because it's generated from high quality, correct models

Technical Features:

- Generates rules code for execution over XML data
- Compiles OCL, and highlights errors detected in MagicDraw
- Validates XML data, and highlights failed rules in MagicDraw
- Works with MagicDraw enterprise edition, version 17.0.1 or later
- Requires Cameo Data Modeler
- Generates Java code for Java 1.6 or later
- Generated rule sets can be deployed as a Java archive, or as a Java archive behind a 'validation' web service
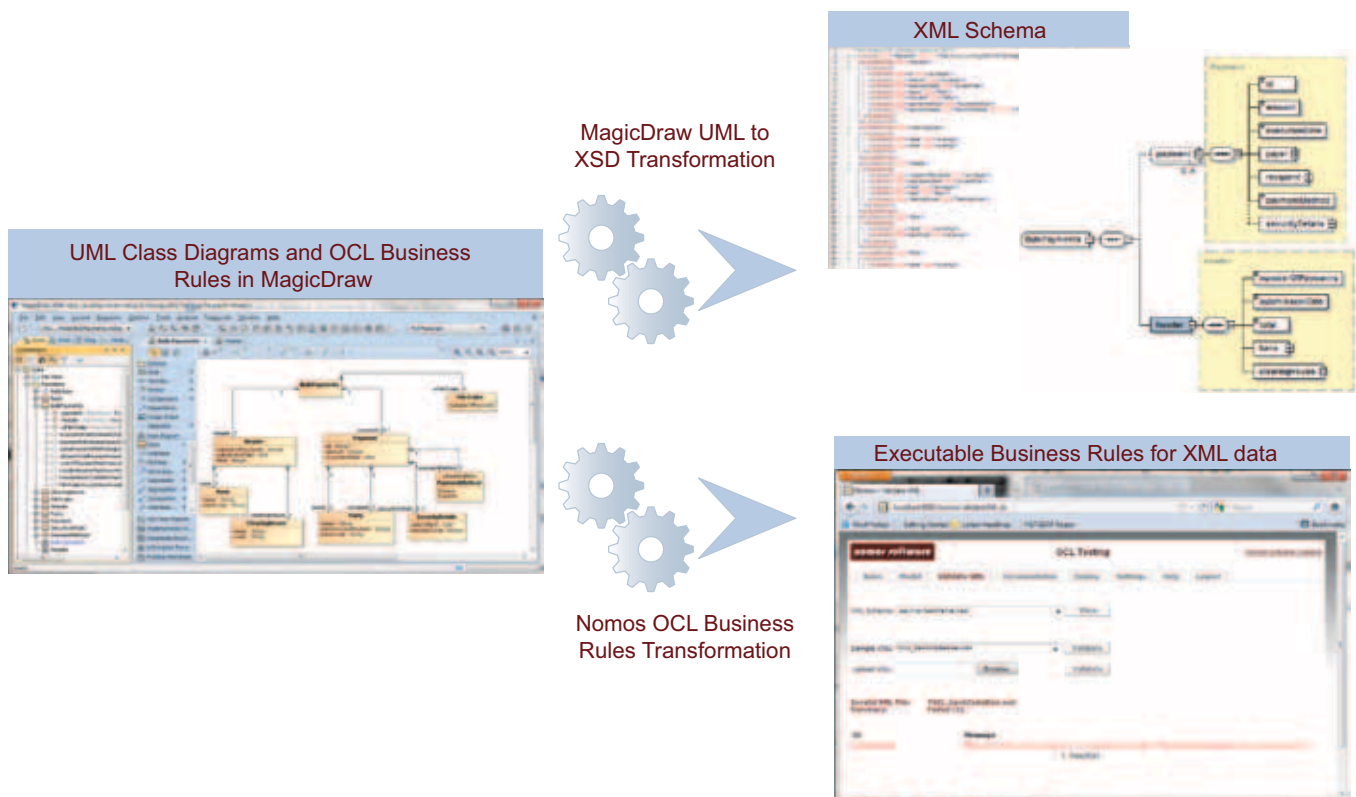
Rules

Capturing rules in MagicDraw models
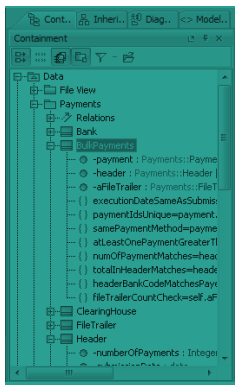
The Cameo OCL Transformer for XML

The Cameo OCL Transformer from Nomos Software runs OCL rules extracted from a MagicDraw model over XML data. For organizations that model data in MagicDraw, and transform the models to XML Schema Documents (XSDs), this provides a means to streamline the process for managing rules.

XML schemas are data models for XML data, and are used extensively by programming teams to make sure that the structure of XML data in software systems is correct. This is often referred to as ensuring that XML is 'valid against its schema.' The Nomos Software OCL Transformer allows you to follow a similar process for the business rules on the data.

If you add OCL rules to your data model in MagicDraw, you can use the Nomos Software OCL Transformer to transform the rules to executable Java code. This Java code can be used by the programming or test teams to check that XML data (that is valid against the XML schemas derived from the model) actually conforms to the rules.

XML Schema

MagicDraw UML to
XSD Transformation

UML Class Diagrams and OCL Business
Rules in MagicDraw

Executable Business Rules for XML data

Nomos OCL Business
Rules Transformation

Generating XML Schemas and Executable Business Rules from MagicDraw

Generate Rule Sets

Generating executable rule sets is easy. Any compilation errors detected during the OCL to java transformation are reported, and the OCL rules in error are highlighted in MagicDraw.
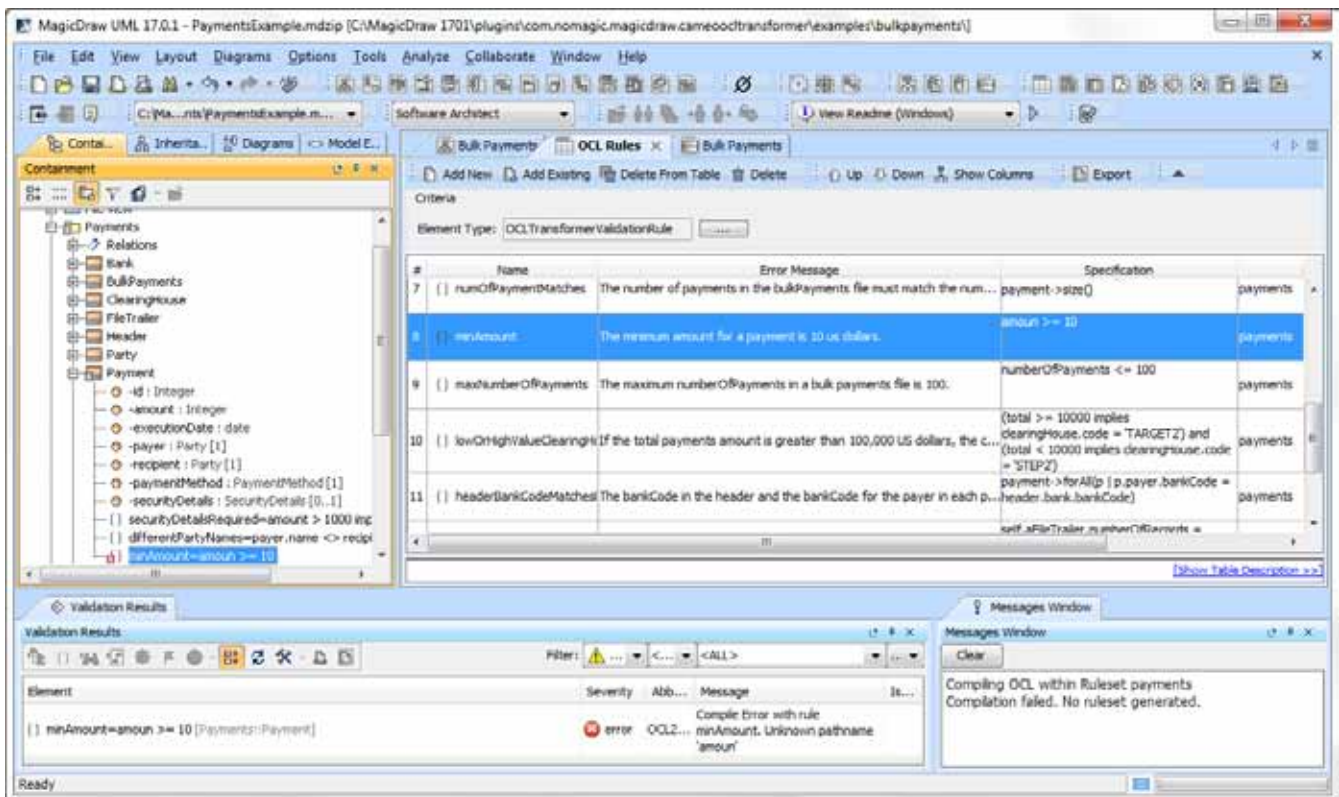
Capturing rules in MagicDraw models

Test Rule Sets

It's good to ensure that the OCL rules written behave as expected. The best way to do this is to execute the rules against real data. The Cameo OCL Transformer provides an option to execute the generated rule set from within MagicDraw. Create sample XML files with real data, and use the 'Validate XML' option to run the rule set over the data. Results are reported back to MagicDraw, and if the data doesn't conform to a rule, the rule gets highlighted in MagicDraw.
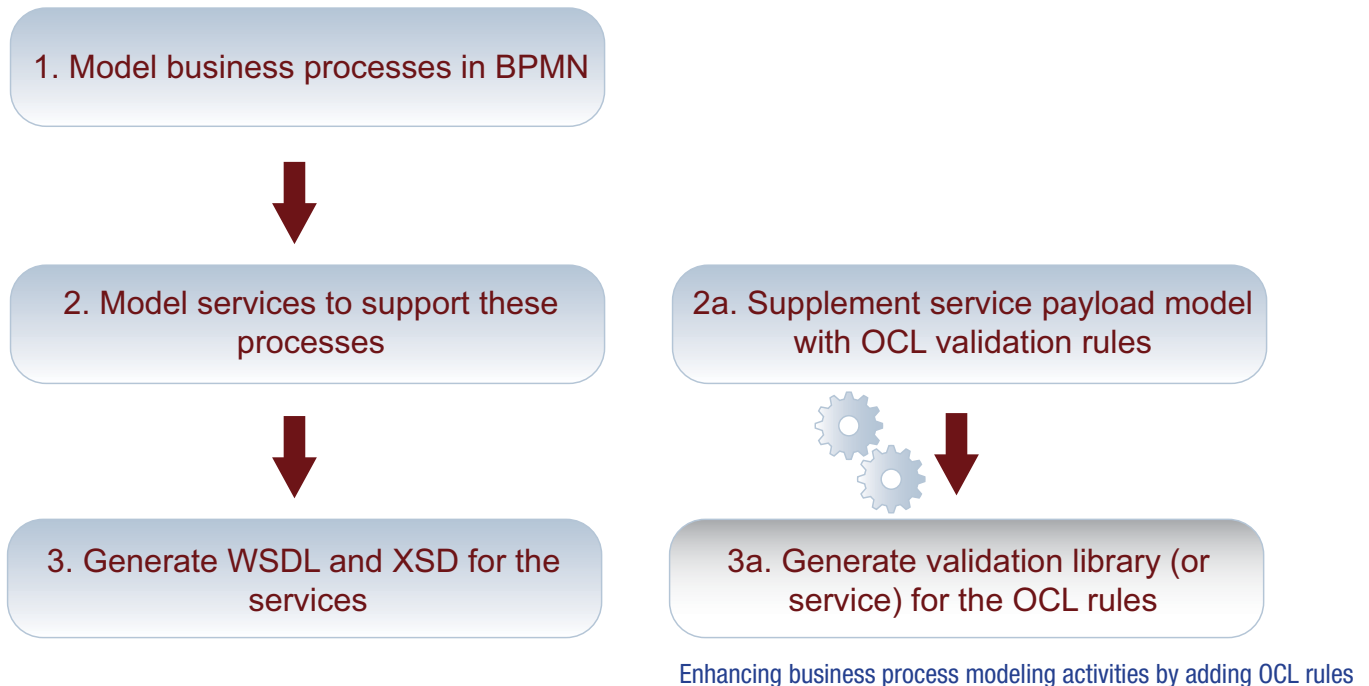
Deploy Rule Sets

The executable rule set, a java archive, can be deployed to test and production systems and called programmatically via a java application program interface. If the rule set needs to be shared by a number of remote applications (including non-java applications), it can be executed via the Nomos Software Validation Web Service.

Applicable for BPMN, soaML, etc.

Many modeling activities now result in the creation of XSDs. For example, business processes modeled in BPMN are often mapped to services modeled in soaML. These modeled services can then be transformed into WSDL and XSDs, the form in which services and service payloads are usually defined in programming environments.

You can enhance the modeling process by supplementing the service models with OCL validation rules for the service payload. With the Cameo OCL Transformer from Nomos Software, you can translate these OCL rules into executable rules libraries. The libraries can then be used to validate the actual service payloads (the services associated with the generated WSDL and XSD).

1. Model business processes in BPMN

2. Model services to support these processes

2a. Supplement service payload model with OCL validation rules

3. Generate WSDL and XSD for the services

3a. Generate validation library (or service) for the OCL rules

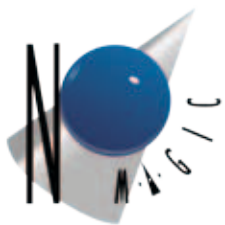Enhancing business process modeling activities by adding OCL rules

Enterprise Advantages

The team working with the MagicDraw models can take responsibility for more than the structure of the data being modeled; they can also capture rules about the data. MagicDraw serves not only as a model repository but also as a rules repository.

With the Cameo OCL Transformer from Nomos Software, the enterprise can generate libraries of executable rules from MagicDraw, saving time and cost on software projects.

For the enterprise, following this type of process results in more comprehensive enterprise models, stronger system documentation, and a more robust and cost-effective software development process.

For more information, go to https://www.magicdraw.com/cameo_ocl_transformer.
Cameo OCL Transformer, powered by Nomos Software, www.nomos-software.com.

NOMOS SOFTWARE

The Truth is in the Models™
www.nomagic.com
www.magicdraw.com