

Information Modeling Example

for Eclipse Papyrus extended with MetaModelAgent

Introduction

This document describes the *Information Modeling Example*. The purpose is to demonstrate domain-specific modeling capabilities when using the MetaModelAgent extension to Papyrus.

Artifacts included in the example

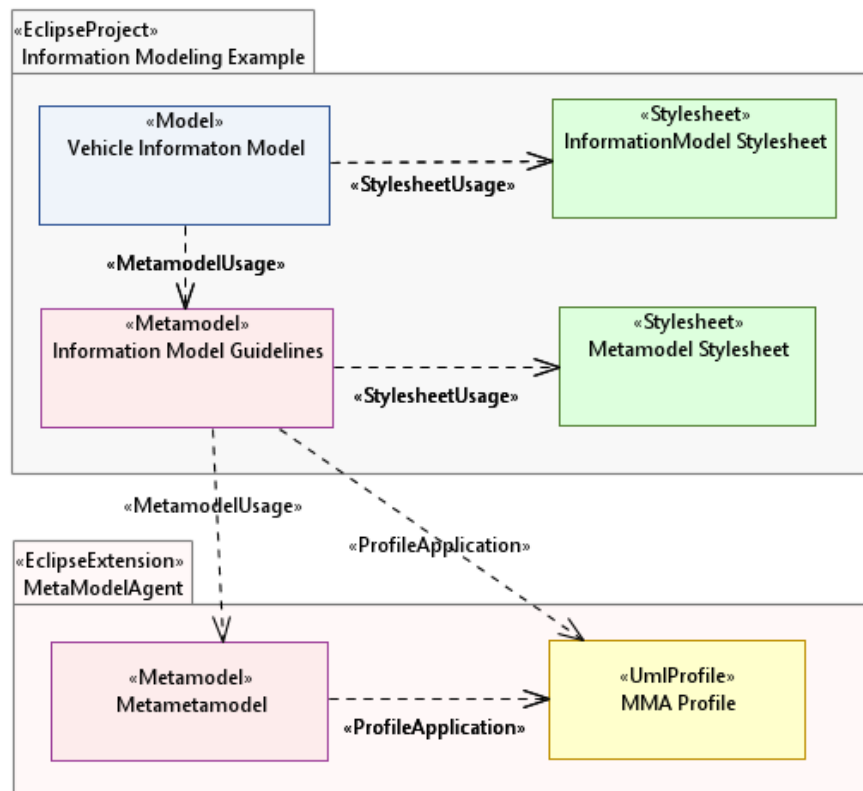


Figure 1: Schematic diagram of included artifacts, their relations and relations to artifacts provided by MetaModelAgent

Vehicle Information Model (Example Model)

An example of a model that is expected to conform to the metamodel *Information Model Guidelines*. The example contains a few information items, attributes, and relationships about different variants of vehicles.

The example model has a dependency relationship to the *Information Model Guidelines* metamodel which indicates to MetaModelAgent that the model must conform to that metamodel.

The diagram in the model is styled by the *Information Model Stylesheet*.

Information Model Guidelines (Metamodel)

The Metamodel defines the modeling rules for information models. The metamodel is used by MetaModelAgent to provide a customized UI together with model validation, model analysis and web publishing capabilities.

The metamodel uses the MMA profile which is built into the MetaModelAgent extension. The diagrams in the metamodel are styled by the Metamodel Stylesheet.

The metamodel defines the following concepts and rules on how to use them:

Concept (metaclass)	UML-representation	Description
Information Model	Model	The root element of an information model
Information Entity	Class	An entity, chunk of information
information Attribute	Property	A field in an Information Entity holding a part of the entity's information
Primitive Information Type	Primitive Type	A basic information type to be used as the type of Information Attributes
Enumerated Datatype	Enumeration	A type that represents a fix set of values
Enumerated Value	Enumeration Literal	A single value within an enumeration
Information Entity Inheritance	Generalization	Inheritance between two entities
Information Diagram	Class Diagram	A diagram displaying entities, their attributes and relations
Ownership	Association	A whole-part relationship between two entities
Simple Association	Association	A simple association between two entities representing that they are related in some way

Stylesheets

CSS Stylesheets are used by Papyrus to customize the graphical presentation of elements and relationships in diagrams. Stylesheets makes it easy to achieve a uniform look of the diagrams.

Information Model Stylesheet

Defines how the concepts are displayed in the diagrams in the Northern Europe Model.

Metamodel Stylesheet

Defines how metamodel concepts are displayed in the diagrams in a metamodel.

MetaModelAgent artifacts

The following artifacts are not part of the example. They are embedded in MetaModelAgent and only referred from the example. They are not visible in the workbench..

MMA profile

A UML profile that defines stereotypes to be used in metamodels. The *Information Model Guidelines* metamodel applies this profile.

Meta-metamodel

A metamodel that defines the rules for metamodels. This metamodel is useful when developing your own metamodel and make it possible to use MetaModelAgent even for metamodeling.

There is no need for a metamodel to have an explicit relationship to this meta-metamodel. MetaModelAgent knows that it should use this meta-metamodel when a metamodel is opened in the workbench.

Try out the example

Here are some suggestions on how to try out some of the features in MetaModelAgent by using the example.

Basics:

- Open the *Vehicle Example Model* and activate MetaModelAgent for the model. Depending on the MetaModelAgent preference settings this may happen automatically or after acceptance in a confirmation dialog. You can also activate MetaModelAgent for the model manually by the context menu entry *MetaModelAgent -> Activate -> Information Model Guidelines*.
- Switch to the MetaModelAgent perspective. Dependent on the setting this may happen automatically. If not, you do it manually from the main menu: *Window -> Perspective -> Open Perspective -> Other*. Select *MetaModelAgent* in the list of perspectives.
- Click around in the example model and study the content of the *MMA Property View*, *MMA Guidance View*, and *MMA Summary View*.

Model editing:

- Do some editing of existing elements in the MMA Property View. You will see that only significant properties according to the metamodel is displayed and that entered values are validated directly.
- Add some new nested elements to existing elements using the *MetaModelAgent->Add* context submenu. You will see that the submenu only will provide valid concepts to be created and the resulting wizard only will display properties relevant within information modeling.
- Add some elements that are incorrect in an information model. Note that they show up in the MMA Problem View and that they got problem decorators in the model explorer.

Basic model analysis:

- Display an overview of all entities using the *MMA Property Table View*. In the context menu of the model root select *MetaModelAgent -> Show in Property Table View -> Information Entity*.
- Display an overview of all inheritance relationships in the *MMA Trace Matrix View* for entity inheritance. In the context menu of the model root select *MetaModelAgent->Show in Trace Matrix View->Information Entity Inheritance*.

- Display the inheritance path from the Vehicle entity in the *MMA Trace Tree View* by selecting *MetaModelAgent -> Show in Trace Tree View -> Outgoing References -> Information Entity Inheritance*.

Model publishing:

- Publish a web site of the example model by invoking *MetaModelAgent->Publish web report* from the context menu of the model root.

References

- [1] Eclipse Foundation home page
www.eclipse.org
- [2] Papyrus Modeling Environment home page
www.eclipse.org/papyrus
- [3] MetaModelAgent home page
www.metamodelagent.com
- [4] CSS Stylesheets in Papyrus
<https://wiki.eclipse.org/MDT/Papyrus/UserGuide/CSS>
- [5] UML Profiles in Papyrus
www.eclipse.org/papyrus/resources/PapyrusUserGuideSeries_AboutUMLProfile_v1.0.0_d20120606.pdf
- [6] MetaModelAgent Metamodeling Manual
www.metamodelagent.com/documentation/MetaModelAgent_MetaModeling.pdf
- [7] MetaModelAgent User Manual
www.metamodelagent.com/documentation/MetaModelAgent_UserManual.pdf
- [8] MetaModelAgent Model Analysis Manual
www.metamodelagent.com/documentation/MetaModelAgent_ModelAnalysis.pdf