Report of the
SysML-Modelica Finalization Task Force 2.0
to the
OMG Platform Technical Committee
20 February 2012

Document Number:	**ptc/2012-03-07**
Task Force Chair:	**Axel Reichwein**

Specification

Revised specification (clean):	**ptc/2012-03-09**
Revised specification (change-bar):	**ptc/2012-03-08**

Accompanying documents

Inventory	**ptc/2012-03-14**	**Non-normative**
SysML4Modelica Profile in XMI	**ptc/2012-03-13**	**Normative**
Modelica2ModelicaUnparsed.qvto	**ptc/2012-02-14**	**Non-normative**
ModelicaUnparsed2SysML.qvto	**ptc/2012-02-15**	**Non-normative**
SysML2ModelicaUnparsed.qvto	**ptc/2012-02-16**	**Non-normative**
ModelicaUnparsed2Modelica.qvto	**ptc/2012-02-17**	**Non-normative**
openModelica.emof	**ptc/2012-03-13**	**Non-normative**
SysML4ModelicaProfile.mdzip	**ptc/2012-03-12**	**Non-normative**

Table of Contents

Summary of SysML-Modelica 1.0 FTF2 Activities

Formation

- Chartered By: PTC
- On: 23 September 2011, Orlando, Florida
- Comments Due Date: 5 December 2011
- Report Due Date: 20 February 2012

Revision / Finalization Task Force Membership

Member	Organization	Status
Andreas Korff	Atego	Charter
Roger Burkhart	Deere & Company	Charter
Wladimir Schamai	EADS - Airbus	Charter
Axel Reichwein	Georgia Institute of Technology	Charter (chair)
Sanford Friedenthal	INCOSE	Added October 1, 2011
John Watson	Lockheed Martin	Charter
Nicolas Rouquette	NASA	Charter
Conrad Bock	NIST	Charter
Nerijus Jankevicius	No Magic, Inc.	Charter
Peter Fritzson	PELAB/IDA	Charter
Sam Mancarella	Sparx Systems Pty Ltd.	Charter
Laurent Rioux	Thales Group	Charter

Issue Disposition:

Disposition	Number of Occurrences	Meaning of Disposition
Resolved	4	The RTF/FTF agreed that there is a problem that needs fixing, and has

		proposed a resolution (which may or may not agree with any resolution the issue submitter proposed)
Deferred	0	The RTF/FTF agrees that there is a problem that needs fixing, but did not agree on a resolution and deferred its resolution to a future RTF/FTF.
Transferred	0	The RTF/FTF decided that the issue report relates to another specification, and recommends that it be transferred to the relevant RTF.
Closed, no change	0	The RTF/FTF decided that the issue report does not, in fact, identify a problem with this (or any other) OMG specification.
Closed, Out of Scope	0	The RTF/FTF decided that the issue report is an enhancement request, and therefore out of scope for this or any future FTF or RTF working on this major version of the specification. The RTF/FTF has closed the issue without making any specification changes, but RFP or RFC submission teams may like to consider these enhancement requests when proposing future new major versions of the specification.
Duplicate or merged	1	This issue is either an exact duplicate of another issue, or very closely related to another issue: see that issue for disposition.

Voting Record:

Poll No.	Closing date	Issues included
1	14 February 2012	16376, 16377, 16545, 16556, 16593

Voter	Vote in poll 1
Atego	Yes to all
Deere & Company	Yes to all
EADS	Yes to all
Georgia Institute of Technology	Yes to all
INCOSE	Yes to all
Lockheed Martin	Yes to all
NASA	Yes to all
NIST	Abstain to all
No Magic, Inc.	Abstain to all
PELAB/IDA	Yes to all
Sparx Systems Pty Ltd.	Yes to all
Thales Group	Yes to all

Summary of Changes Made

The SysML-Modelica FTF2 made changes that:

- Provided additional convenience for implementers
- Increased the clarity of the specification

Here is the FTF's categorization of the the resolutions applied to the specification according to their impact on the clarity and precision of the specification:

Extent of Change	Number of Issues	OMG Issue Numbers
Critical/Urgent - Fixed problems with normative parts of the specification which prevented	**1**	**16377**

implementation work		
Significant - Fixed problems with normative parts of the specification that raised concern about implementability	**0**	
Minor - Fixed minor problems with normative parts of the specification	**1**	**16593**
Support Text -Changes to descriptive, explanatory, or supporting material.	**2**	**16376,16545**

Disposition: Resolved

OMG Issue No: 16376

Title: Ecore is used for the Modelica metamodel in Part III rather than EMOF

Source:

Georgia Institute of Technology (Mr. Axel Reichwein, axel.reichwein(at)me.gatech.edu)

Summary:

Ecore is used for the Modelica metamodel in Part III rather than EMOF (EMOF is also supported by the EMF technology). Oddly though I can see no depiction of the metamodel in either ecore or EMOF: I would for example expect to see some UML class diagrams. Instead there is what appears to be Modelica syntax.

Resolution:

The abstract syntax of Modelica, in other words its metamodel, needs to be represented in UML class diagrams. Figure 13 containing a representation of some Modelica metaclasses in an Ecore diagram will be replaced by UML class diagrams.

Revised Text:

Section 13:

Delete the last paragraph as well as Figure 13 and replace it by:

The main openModelica meta-classes PROGRAM, CLASS and COMPONENT and their related meta-classes are presented in UML class diagrams in Figures 13, 14 and 15. All meta-classes are subclasses from a higher-level abstract meta-class whose name starts with “u”.

Figure 13 shows the CLASS meta-class consisting of a name, the declared class restriction, and the body of the declaration. The CLASS meta-class also includes properties indicating if it is partial and final. Figure 13 also shows the different meta-classes representing Modelica class definitions who all inherit from a common abstract meta-class named “uClassDef”. Figure 14 shows the

PROGRAM meta-class having a list of class definitions declared at the top level in the source file, combined with a within statement that indicates the hierarchical position of the program. Figure 15 shows the COMPONENTS meta-class and its related meta-classes including the COMPONENT meta-class.

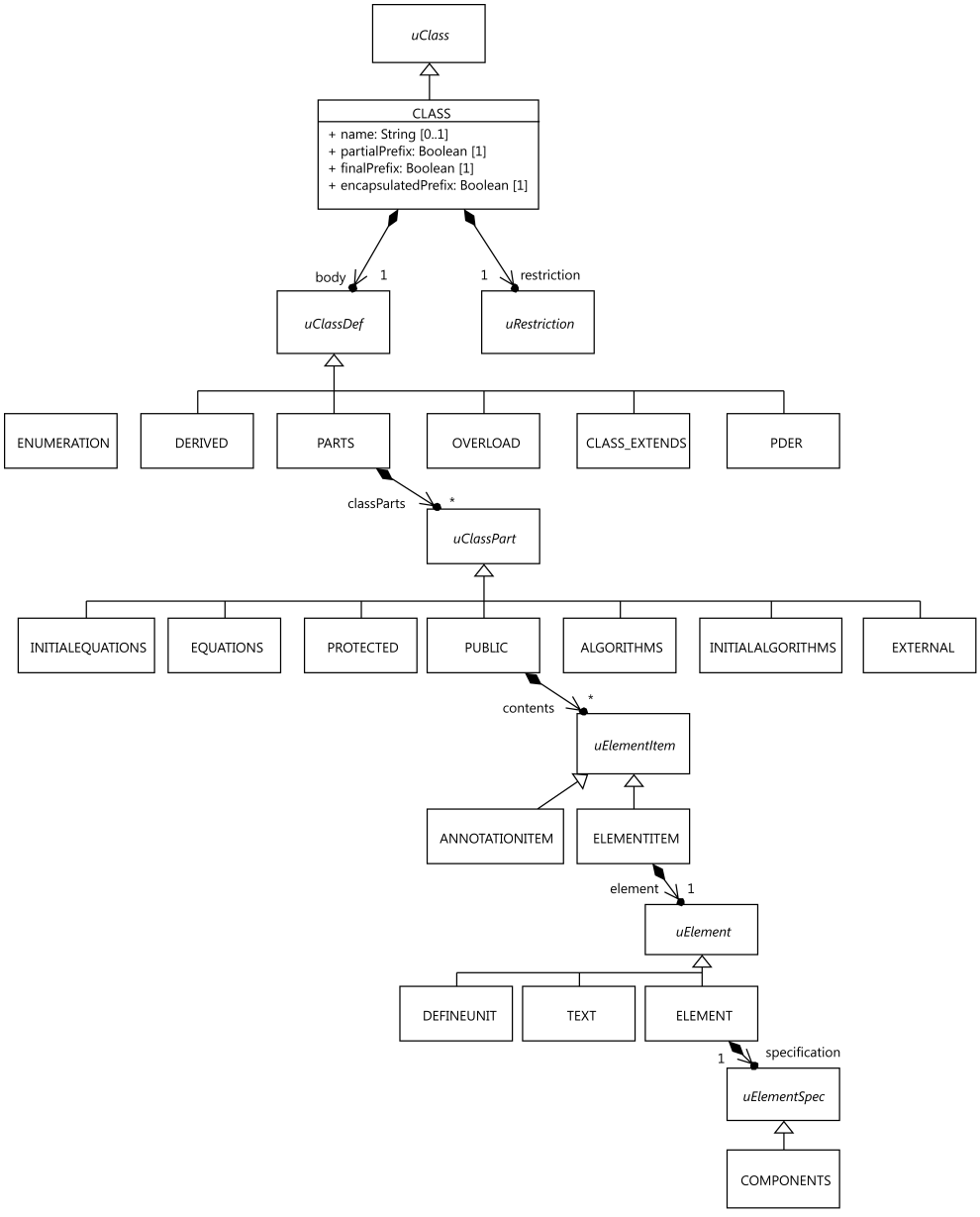

Figure 13: CLASS meta-class and relationships

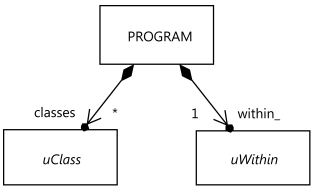

Figure 14: PROGRAM meta-class and relationships

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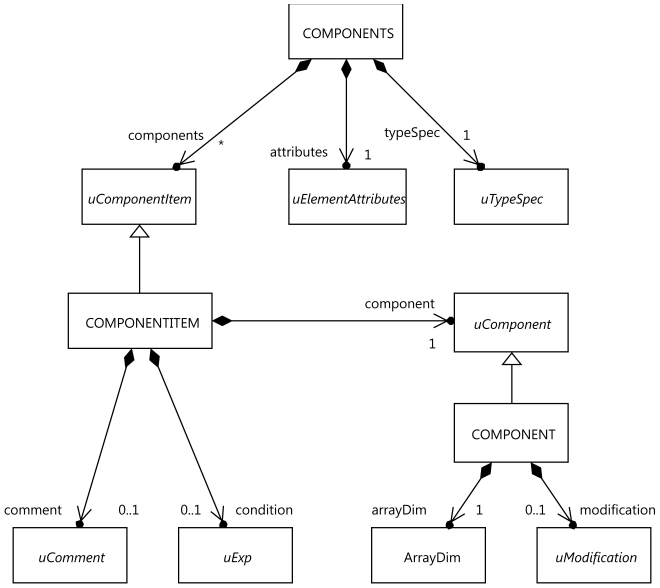


Figure 15: COMPONENTS meta-class and relationships

Disposition: Resolved

Disposition: Resolved

OMG Issue No: 16377

Title: The UML Profile is represented in proprietary Eclipse format

Source:

Georgia Institute of Technology (Mr. Axel Reichwein, axel.reichwein(at)me.gatech.edu)

Summary:

The UML Profile is represented in proprietary Eclipse format.

Resolution:

The SysML4Modelica has been converted into OMG-grade XMI and has been added to the inventory of files which still includes the profile in Eclipse format.

Disposition: **Resolved**

Disposition: Resolved

OMG Issue No: 16545

Title: SysML-Modelica Transformation Spec problem with <reference>

Source:

Lockheed Martin (Mr. Michael Jesse Chonoles, michael.j.chonoles(at)lmco.com)

Summary:

As found by Lenny Delligatti of Lockheed Martin.

On page 5 of the spec., it shows that the SysML4Modelica profile references the SysML profile (Figure 2 in the screenshot below):

But I believe that's an error. I believe that a «reference» dependency is only legal from a profile to a metamodel.

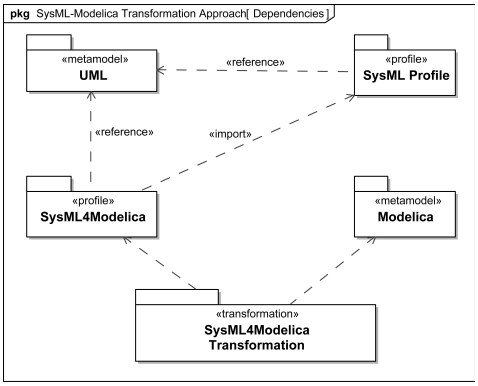
One profile can «import» another profile (and thus transitively reference a metamodel), but not «reference» another profile.

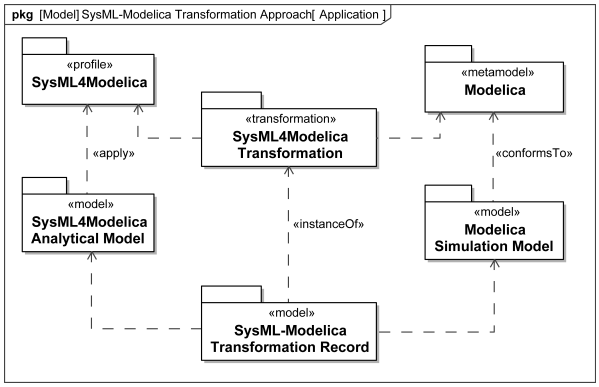
Resolution:

A UML dependency can be between any two NamedElements. The dependency can also be tagged with any stereotype and be given any name. So the <<reference>> dependency is by itself legal. However, a keyword such as <<import>> can also be applied to a dependency.The <<import>> keyword seems more suitable to be applied on a dependency between profiles. So the <<reference>> dependencies to the UML4SysML metamodel (as shown in the SysML spec) in Figure 2 are kept and the <<reference>> dependency between the SysML4Modelica and SysML profiles in Figure 2 is replaced by an <<import>> dependency.

Revised Text:

Figure 2 will be replaced by this Figure:





The new Figure also renames the Sys4MLModelica <<transformation>> package into “SysML4Modelica Transformation” as there is already another <<profile>> package named “SysML4Modelica”.

Disposition: Resolved

Disposition: Duplicate

OMG Issue No: 16556

Title: SysML-Modelica Transformation Spec problem with <reference>

Source:

Lockheed Martin (Mr. Michael Jesse Chonoles, michael.j.chonoles(at)lmco.com)

Summary:

As found by Lenny Delligatti of Lockheed Martin.

On page 5 of the spec., it shows that the SysML4Modelica profile references the SysML profile (Figure 2 in the screenshot below):

But I believe that's an error. I believe that a «reference» dependency is only legal from a profile to a metamodel.

One profile can «import» another profile (and thus transitively reference a metamodel), but not «reference» another profile.

Resolution:

See issue 16545 for disposition

Disposition: Resolved

OMG Issue No: 16593

Title: clarification needed for the fromLibrary attribute

Source:

Georgia Institute of Technology (Prof. Chris Paredis, chris.paredis(at)me.gatech.edu)

Summary:

In the SysML-Modelica Transformation Specification (http://www.omg.org/spec/SyM/1.0/Beta1/PDF/), the attribute fromLibrary for the stereotype «modelicaClassDefinition» is not sufficiently clearly defined (Section 8.2, page 10). The spec mentions that some details (e.g. "value properties and parts") can be omitted when using the fromLibrary tag, but the spec is not sufficiently precise as to which details exactly can/should be omitted and which should still be retained. Since this is a construct that will likely be used extensively, it should be defined more precisely.

Resolution:

The identified issue does not relate to the mapping of language constructs between SysML and Modelica but rather to a user- and tool-specific usability aspect of the transformation. The issue therefore does not identify a problem with the specification. Additionally, the “fromLibrary” attribute of the «modelicaClassDefinition» stereotype will be removed since it does not relate to the mapping of language constructs between SysML and Modelica.

Revised text:

Chapter 8.2 «modelicaClassDefinition»

Delete the last bullet point describing the “fromLibrary” attribute of the «modelicaClassDefinition» stereotype.

Disposition: **Resolved**