

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

**Document Number:** ptc/2012-03-17  
**Task Force Chair:** Axel Reichwein

**Specification**

**Revised specification (clean):** ptc/2012-03-18  
**Revised specification (change-bar):** ptc/2012-03-19

**Accompanying documents**

<b>Inventory</b>	<b>ptc/2012-03-22</b>	<b>Non-normative</b>
<b>SysML4Modelica Profile in XMI</b>	<b>ptc/2012-03-20</b>	<b>Normative</b>
<b>Modelica2ModelicaUnparsed.qvto</b>	<b>ptc/2012-02-14</b>	<b>Non-normative</b>
<b>ModelicaUnparsed2SysML.qvto</b>	<b>ptc/2012-02-15</b>	<b>Non-normative</b>
<b>SysML2ModelicaUnparsed.qvto</b>	<b>ptc/2012-02-16</b>	<b>Non-normative</b>
<b>ModelicaUnparsed2Modelica.qvto</b>	<b>ptc/2012-02-17</b>	<b>Non-normative</b>
<b>openModelica.emof</b>	<b>ptc/2012-03-13</b>	<b>Non-normative</b>
<b>SysML4ModelicaProfile.mdzip</b>	<b>ptc/2012-03-12</b>	<b>Non-normative</b>

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## 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	9	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	2	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
2	13 March 2012	17214, 17215, 17216, 17217, 17218, 17221

Voter	Vote in poll 1	Vote in poll 2
Atego	Yes to all	Yes to all
Deere & Company	Yes to all	Yes to all
EADS	Yes to all	Yes to all
Georgia Institute of Technology	Yes to all	Yes to all
INCOSE	Yes to all	Yes to all
Lockheed Martin	Yes to all	Yes to all
NASA	Yes to all	Yes to all
NIST	Abstain to all	Abstain to all
No Magic, Inc.	Abstain to all	Yes to all
PELAB/IDA	Yes to all	Yes to all
Sparx Systems Pty Ltd.	Yes to all	Yes to all
Thales Group	Yes to all	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
<b>Critical/Urgent</b> - Fixed problems with normative	<b>1</b>	<b>16377</b>

parts of the specification which prevented implementation work		
<b>Significant</b> - Fixed problems with normative parts of the specification that raised concern about implementability	<b>0</b>	
<b>Minor</b> - Fixed minor problems with normative parts of the specification	<b>2</b>	<b>16593,17217</b>
<b>Support Text</b> -Changes to descriptive, explanatory, or supporting material.	<b>7</b>	<b>16376,16545, 17214, 17215, 17216,17218,17221</b>

## **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.

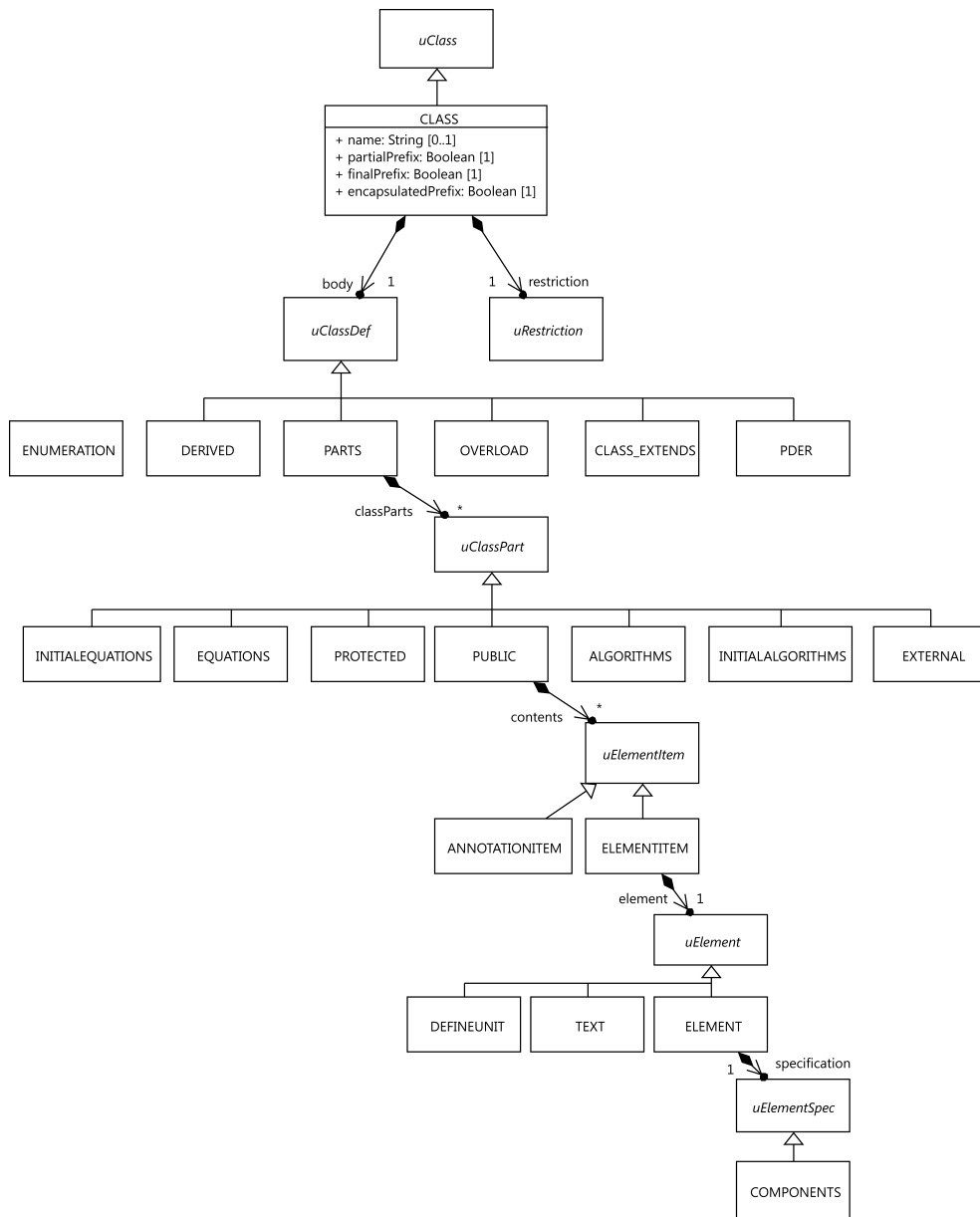


Figure 13: CLASS meta-class and relationships



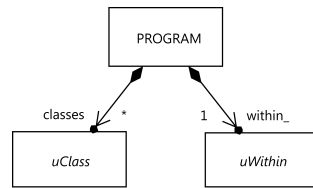


Figure 14: PROGRAM meta-class and relationships

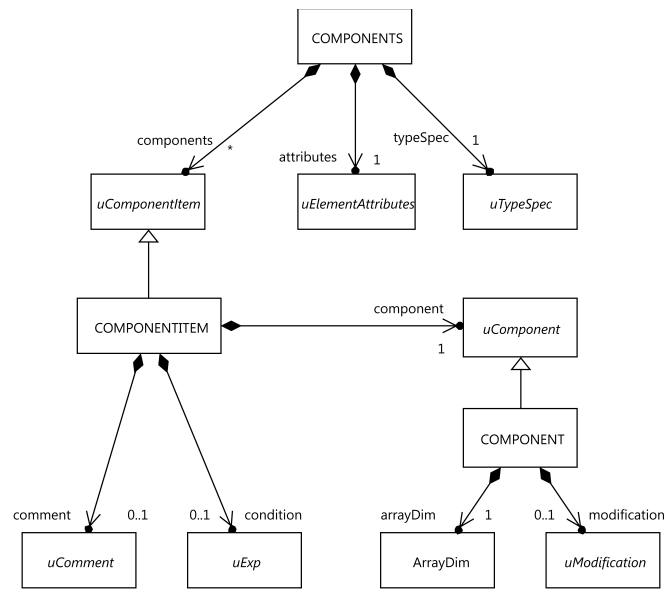


Figure 15: COMPONENTS meta-class and relationships

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.

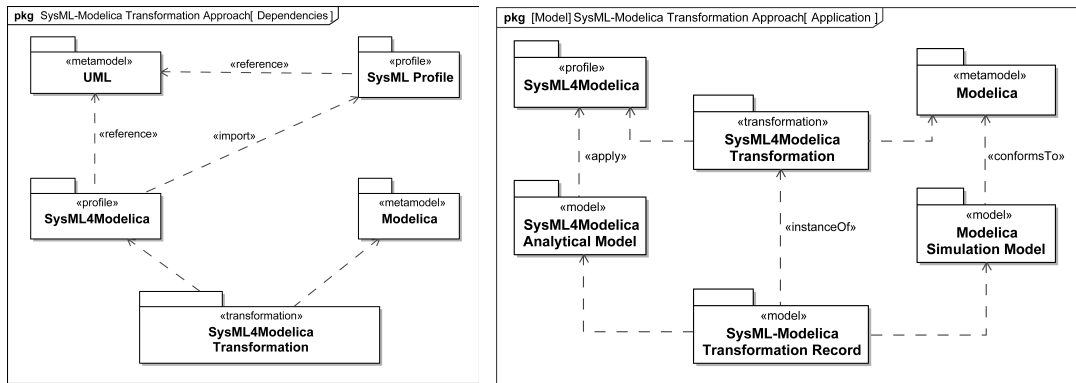
#### **Resolution:**

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:

## SysML-Modelica 1.0 FTF2



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**

# Disposition: Resolved

## OMG Issue No: 17214

**Title:** New figure uses <<conformsTo>>, <<transformation>> and <<instanceOf>> applied to lines using the Dependency notation

**Source:**

Adaptive (Mr. Pete Rivett, [pete.rivett@adaptive.com](mailto:pete.rivett@adaptive.com))

**Summary:**

The new figure still uses <<conformsTo>>, <<transformation>> and <<instanceOf>> applied to lines using the Dependency notation. These have no defined meaning (either as keywords nor as stereotypes defined either in this specification, SysML or UML). Whatever <<instanceOf>> means it's not the case that a transformationRecord is an instance of a transformation. If these stereotypes are retained there should be an explanation to say they are purely informal

**Resolution:**

An additional sentence needs to be added stating that the <<conformsTo>>, <<transformation>> and <<instanceOf>> stereotypes are purely informal.

**Revised Text:**

Insert at the end of the first paragraph in Section 7:

“The <<conformsTo>>, <<transformation>> and <<instanceOf>> stereotypes are purely informal.”

**Disposition:**                      **Resolved**

# **Disposition: Resolved**

## **OMG Issue No: 17215**

**Title: In general the Part structure used is not appropriate for  
OMG specifications**

### **Source:**

Adaptive (Mr. Pete Rivett, [pete.rivett\(at\)adaptive.com](mailto:pete.rivett@adaptive.com))

### **Summary:**

In general the Part structure used is not appropriate for OMG specifications. It does not make sense to label Part I as non-normative. Especially as Part I includes Conformance and Normative References!

### **Resolution:**

The part structure is kept since it is still considered helpful to structure the document. Part 1 needs to be labeled as normative.

### **Revised Text:**

Section 0, page 1:

Replace in the footnote:

“non-normative”

by:

“normative”

**Disposition:                      Resolved**



# **Disposition: Resolved**

## **OMG Issue No: 17216**

**Title: It's unclear what compliance would mean**

### **Source:**

Adaptive (Mr. Pete Rivett, [pete.rivett\(at\)adaptive.com](mailto:pete.rivett@adaptive.com))

### **Summary:**

Section 2 includes in Level 0 Compliance "The SysML4Modelica profile must be compliant with OMG SysML v1.3.". However a) this profile is part of this specification and b) SysML does not define compliance for Profiles. So it's unclear what compliance would mean

### **Resolution:**

In order to avoid any confusion, the sentence "The SysML4Modelica profile must be compliant with OMG SysML v1.3" should be removed.

### **Revised Text:**

Delete this sentence in Section 2 on Compliance Level 0:

"The SysML4Modelica profile must be compliant with OMG SysML v1.3"

**Disposition:                      Resolved**

# **Disposition: Resolved**

## **OMG Issue No: 17217**

**Title: namespace definition in the XMI and the URI attribute of the Profile**

**Source:**

Adaptive (Mr. Pete Rivett, [pete.rivett\(at\)adaptive.com](mailto:pete.rivett@adaptive.com))

**Summary:**

The namespace definition in the XMI and the URI attribute of the Profile is `xmlns:SysML4Modelica=http://www.omg.org/spec/SysM/20120213`. This uses SysM not the official directory (according to the other documents) which is the shorter SyM.

**Resolution:**

The spec name "SysM" was wrongly used in the XMI definition of the SysML4Modelica profile. It needs to be changed to the shorter "SyM" version.

**Revised text:**

Replace "SysM" by "SyM" in the XMI definition of the SysML4Modelica profile.

**Disposition:                      Resolved**

## **Disposition: Duplicate**

### **OMG Issue No: 17218**

**Title: Figure still uses <<conformsTo>> <<transformation>> and <<instanceOf>> applied to lines using the Dependency notation**

**Source:**

Adaptive (Mr. Pete Rivett, [pete.rivett@adaptive.com](mailto:pete.rivett@adaptive.com))

**Summary:**

The new figure still uses <<conformsTo>> <<transformation>> and <<instanceOf>> applied to lines using the Dependency notation. These have no defined meaning (either as keywords nor as stereotypes defined either in this specification, SysML or UML). Whatever <<instanceOf>> means it's not the case that a transformationRecord is an instance of a transformation. If these stereotypes are retained there should be an explanation to say they are purely informal

**Resolution: See issue 17214 for disposition**

# Disposition: Resolved

## OMG Issue No: 17221

**Title:** The figure references UML4SysML which is no longer part of/used by the version of SysML (1.3) included in the normative references

**Source:**

Adaptive (Mr. Pete Rivett, pete.rivett(at)adaptive.com)

### Summary:

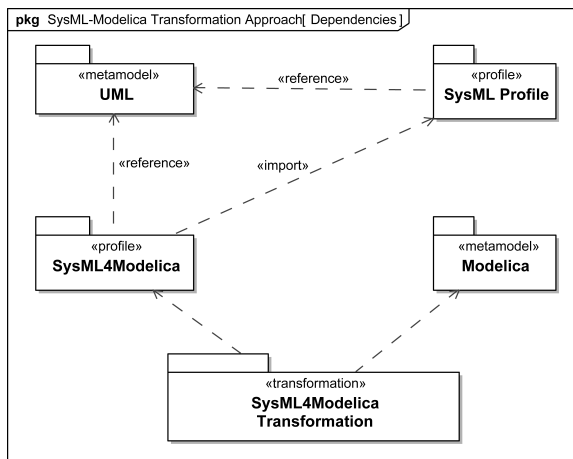
The figure references UML4SysML which is no longer part of/used by the version of SysML (1.3) included in the normative references

### Resolution:

The figure should reference UML package instead of the UML4SysML package.

### Revised text:

Replace the left part of Figure 2 by:



**Disposition:**

**Resolved**