

**Report of the
SysML-Modelica Finalization Task Force 1.0
to the
OMG Platform Technical Committee
22 August 2011**

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Task Force Chair(s): Chris Paredis

Specification

Revised specification (clean): ptc/2011-08-14
Revised specification (change-bar): ptc/2011-08-15

Accompanying documents

Inventory: ptc/2011-08-16 Non-normative
Zip archive of machine-readable files ptc/2011-08-17 Non-normative

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Summary of SysML-Modelica 1.0 FTF Activities

Formation

- Chartered By: PTC
- On: 24 September 2010, Boston, Massachusetts
- Comments Due Date: 13 December 2010
- Report Due Date: 21 February 2010

Revision / Finalization Task Force Membership

Member	Organization	Status
Andreas Korff	Atego	Charter
Roger Burkhardt	Deere & Company	Charter
Wladimir Schamai	EADS	Charter
Chris Paredis	Georgia Institute of Technology	Charter
Sanford Friedenthal	Lockheed Martin	Charter
Nicolas Rouquette	NASA	Charter
Conrad Bock	NIST	Charter
Nerijus Jankevicius	No Magic, Inc.	Charter
Peter Fritzson	PELAB/IDA	Charter
Laurent Rioux	Thales Group	Charter

Issue Disposition:

Disposition	Number of Occurrences	Meaning of Disposition
Resolved	7	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	2	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	1	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	18 August 2011	16376, 16377, 16378, 16379, 16380, 16381, 16382,16383, 16384,16485,16490

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
Lockheed Martin	Yes to all
NASA	Yes to all
NIST	Abstain to all
No Magic, Inc.	Abstain to all
PELAB/IDA	No vote received
Thales Group	Yes to all

Summary of Changes Made

The SysML-Modelica FTF made changes that:

- 1). Provided additional convenience for implementers, 2). Increased the clarity of the specification

Here is the FTF's categorisation 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 implementation work	0	
Significant - Fixed problems with normative parts of the specification that raised concern about implementability	0	
Minor - Fixed minor	0	

problems with normative parts of the specification		
Support Text -Changes to descriptive, explanatory, or supporting material.	11	16376, 16377, 16378, 16379, 16380, 16381, 16382, 16383,16384, 16485,16490

Disposition: Deferred

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.

Discussion:

There has been insufficient input to the current FTF to consider the resolution at this time.

Disposition: Deferred

Disposition: Deferred

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.

Discussion:

There has been insufficient input to the current FTF to consider the resolution at this time.

Disposition: Deferred

Disposition: Resolved

OMG Issue No: 16378

Title: Section 2 Conformance

Source:

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

Summary:

Section 2 Conformance requires more detail for the practical definition of 'full realization' and 'abstract syntax compliance'.

Resolution:

Proposed change: leave out 'full realization' and 'abstract syntax compliance'. In addition, add a level 1 criteria referring to required level 0 compliance.

Revised Text:

Section 2 (Conformance):

2nd and 3rd paragraphs

Compliance to Level 0 entails full realization of all the modeling concepts included in the SysML4Modelica profile as defined in Part II of this specification. Since no concrete syntax has been specified, only abstract syntax compliance is required.

Compliance to Level 1 entails full realization of the bi-directional transformation between SysML4Modelica models and corresponding Modelica models.

Replace by:

Compliance to Level 0: This level entails the support of all the modeling concepts included in the SysML4Modelica profile as defined in Part II of this specification. The SysML4Modelica profile must be compliant with OMG SysML v1.2.

Compliance to Level 1: In addition to the capabilities provided by Level 0, Level 1 supports the successful bi-directional transformation between SysML4Modelica models and corresponding Modelica models. The bi-directional transformation is considered successful if the original Modelica model and the Modelica model generated by the round-trip transformation (Modelica->SysML4Modelica->Modelica) are semantically identical, that is, they result in the same simulation results.

Disposition: Resolved

Disposition: Resolved

OMG Issue No: 16379

Title: Sections 3.1 and 3.2

Source:

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

Summary:

3.1 should reference version 1.1 of QVT.

3.2: It's not clear how the MDA Foundation Model 'constitute provisions of this specification'.

Resolution:

Section 3.1 will reference version 1.1 of QVT and Section 3.2 will not refer to any non-normative references including the MDA Foundation Model.

Revised Text:

Section 3.1 (Normative References):

the 2nd bullet point

QVT, v1.0 (<http://www.omg.org/spec/QVT/1.0/>)

Replace by:

QVT, v1.1 (<http://www.omg.org/spec/QVT/1.1/>)

Section 3.2 (Non-normative References):

Replace the text in the section 3.2 by "None".

Disposition: Resolved

Disposition: Resolved

OMG Issue No: 16380

Title: 6.1: this SysML issue does not belong here as such

Source:

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

Summary:

6.1: this SysML issue does not belong here as such

Resolution:

Section 6.1 will be deleted.

Revised Text:

Delete Section 6.1 (Changes to Adopted OMG Specifications).

Delete the section heading 6.2. As a result, Section 6 won't have any subsections.

Rename Chapter 6 from "Additional Information" to "Acknowledgments".

Disposition: Resolved

Disposition: Resolved

OMG Issue No: 16381

Title: P6 uses 'meta-case' for transformation technology

Source:

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

Summary:

P6 uses 'meta-case' for transformation technology.

Resolution:

The capabilities of meta-CASE tools are not well-known. Therefore, the sentence mentioning the implementation of the SysML-Modelica mapping by meta-CASE tools is relaxed by referring to "tools" in general instead of "meta-CASE" tools.

Revised Text:

Chapter 7 (Transformation Approach):

Remove the word "meta-CASE" in the 5th paragraph.

The revised text is then:

Such a formal definition of the mapping has the advantage that tools can be used to generate executable transformations between SysML and Modelica modeling tools.

Disposition: Resolved

Disposition: Resolved

OMG Issue No: 16382

Title: Figure 2 uses stereotypes such as <<transformation>> that are not defined

Source:

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

Summary:

Figure 2 uses stereotypes such as <<transformation>> that are not defined

Resolution:

The <<transformation>> stereotype is a self-defined stereotype referring to a mapping definition.

Revised Text:

Section 7 (Transformation Approach):

Add the following sentence at the end of the 1st paragraph.

The «transformation» stereotype is a self-defined stereotype referring to a mapping between the Modelica metamodel and the SysML4Modelica profile.

Disposition: Resolved

Disposition: Closed, no change

OMG Issue No: 16383

Title: Section 8

Source:

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

Summary:

Section 8: presumably these are production rules for Modelica syntax. Does this need to be duplicated in this spec?

Discussion:

There is no added value in duplicating the Modelica grammar production rules from the Modelica specification. The grammar definition can be found in "Appendix B Modelica Concrete Syntax" of the Modelica specification.

Disposition: **Closed, no change**

Disposition: Duplicate/merged

OMG Issue No: 16384

Title: The QVT does not use the standard URI for the UML metamodel

Source:

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

Summary:

The QVT does not use the standard URI for the UML metamodel.

Disposition: **See issue 16385 for disposition**

Disposition: Resolved

OMG Issue No: 16385

Title: Not sure of the use of openmodelica.org

Source:

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

Summary:

Not sure of the use of openmodelica.org.

Resolution:

Issues 16384 and 16385 address the correctness of using non-normative URIs to identify the UML and Modelica metaclasses in the QVT transformation. The implementation of the transformation in QVT includes references to the metaclasses of both the UML and Modelica metamodels. These references are found next to the “modeltype” keyword at the beginning of each QVT transformation.

Since no normative Modelica metamodel exists, there are no normative URIs to identify the Modelica metaclasses. The QVT code can thus not refer to Modelica metaclasses through normative URIs and be considered normative. The use of non-normative URIs to identify the UML and Modelica metaclasses in the QVT transformation is therefore acceptable.

The QVT code does not need to be changed. However, the SysML-Modelica Transformation specification should not state that Parts III, IV and V of the SysML-Modelica Transformation specification are normative since they are all based on a non-normative Modelica metamodel from openModelica.

Revised Text:

Section 13 (Modelica Meta-Modeling Approach):

Remove the following sentences at the end of the 1st paragraph:

“For the purpose of this transformation specification, the Modelica abstract syntax metamodel defined in this Part of the specification is normative. This

allows for an unambiguous mapping between the SysML4Modelica profile and the Modelica language.”

Remove the the 2nd paragraph.

“Given the structure of the Modelica language as described in this document, the differences in abstract syntax between the different Modelica tools are likely to be small. Any difference in terminology or minor differences in structure can be handled with tool-specific transformations that will be performed on the ASTs.”

Replace the 1st footnote on page 34:

“Part III of the SysML-Modelica Transformation Specification is normative.”

by

“Part III of the SysML-Modelica Transformation Specification is non-normative.”

Replace the 1st footnote on page 53:

“Part IV of the SysML-Modelica Transformation Specification is normative.”

by

“Part IV of the SysML-Modelica Transformation Specification is non-normative.”

Replace the 1st footnote on page 63:

“Part V of the SysML-Modelica Transformation Specification is normative.”

by

“Part V of the SysML-Modelica Transformation Specification is non-normative.”

Replace the 3rd bullet point on page 1:

“Part III — Modelica meta-model (normative)”

by

“Part III — Modelica meta-model (non-normative)”

Replace the 4th bullet point on page 1:

“Part IV — SysML-Modelica mapping, a bidirectional mapping between the SysML4Modelica profile and the Modelica meta-model (normative)”

by

“Part IV — SysML-Modelica mapping, a bidirectional mapping between the SysML4Modelica profile and the Modelica meta-model (non-normative)”

Disposition: Resolved

Disposition: Resolved

OMG Issue No: 16490

Title: Incomplete Annex C Content

Source:

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

Summary:

The QVT code shown in Annex C is incomplete. In addition, a figure showing an overview of the QVT implementation approach would be useful.

Resolution:

The QVT code in Annex C is outdated and has to be replaced by the latest version. Since the current QVT code consists of approx. 5000 lines of code, it would be too large to be placed in Annex C. Instead, Annex C should contain a URL reference to a separate document containing all QVT transformations in a zipped file. In addition, a figure showing an overview of the QVT implementation approach should be placed in Annex C.

Revised Text:

Annex C (QVT Transformation):

The first sentence:

This part of the document includes the QVT-operational mapping rules. Each section of the mapping below refers to the rule labels introduced in Part IV.

will be replaced by

The overview of an implementation of the SysML-Modelica Transformation based on QVT is shown in Figure 37. All the Java and QVT transformation files used for the implementation of the transformation have been zipped into a common file that can be retrieved at this URL: <http://www.omg.org/cgi-bin/doc?ptc/2011-08-16>

Annex C will include the additional Figure 37:

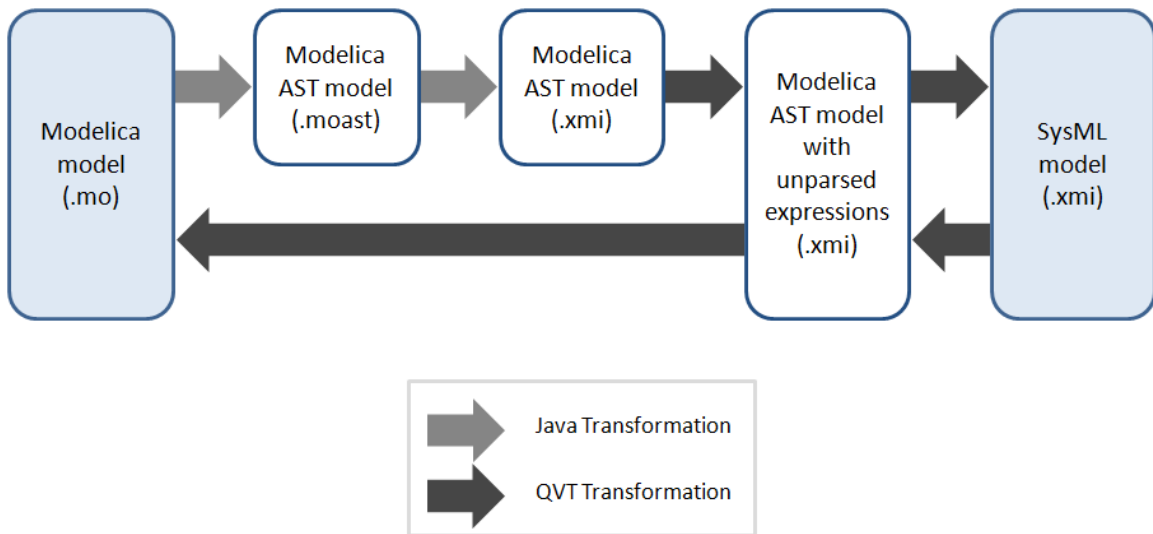


Figure 37 will have the caption “Overview of an implementation of the SysML-Modelica Transformation based on QVT”.

In addition, all the QVT code in Annex C will be removed.

Disposition: **Resolved**