

SECM –Team Work Area Guidance

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1 Work Areas

1.1 Location

Each Group has access to a work area, i.e. a package, in the SECM. Your work area package is contained in the highest level SECM package called “5-Core Team Work Areas”. If you don’t see a work area that is appropriate please let us know.

1.2 Work Area Guidance

1. For now, any changes made in the SECM by a workgroup should be done only in the workgroup areas. Do not change any of the other areas unless it is first coordinated with the model administrators at jcwatson@ieee.org.
 - a. For example, to propose a change to an existing requirement in the SysML v2 RFP section, copy the requirement to your workgroup’s area to propose the change. Once it is approved it will be integrated into the RFP section by the model administrators.
2. The intent of your work area is to provide a modeling area to create your team’s contributions to the SysML v2 RFP concepts, diagrams, and requirements.
3. All modeling should use SysML constructs (not UML).
4. The organization and content of this work area is based on your team’s needs. Who changes it or when it is changed is also up to your team’s needs.
5. Supporting material and examples are encouraged.
6. If a modeling error or warning is detected in your work area by Magic Draw please resolve it as soon as possible.
7. When the appropriate terms, requirements and/or diagrams have been sufficiently reviewed and are stable they will be integrated into the SysML v2 RFP section by the RFP Modeling Team.

2 Naming Conventions

2.1 Blocks, Value Properties, Requirements, Requirement Groups

The naming convention uses Standard English grammar rules for titles. Therefore:

1. Capitalize the first letter of each word
2. Place a space between words
3. Do not capitalize articles (a, an, the)
4. Do not capitalize coordinating conjunctions (*and, or, nor, but, for, yet, so*)
5. Here is a reference to use if there is a question, Titles from Grammar.com.
6. Examples:
 - Verification Success Criteria
 - Create by Batch Mode
 - Requirement Type or Category

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2.2 Associations and Role Names

1. Use lower case on words and spaces between the words.
2. Examples:
 - a. allocate to
 - b. unit under verification

2.3 Spaces and Names

1. Spaces makes it easier to read and allows us to wrap multiple word names providing more options for an optimized diagram layout. (see examples above)

3 SysML v2 RFP Glossary Terms

1. All finalized terms used for the SysML v2 RFP will be maintained in the in the “6-SECM - SysMLv2 RFP::Appendix A References & Glossary Specific to this RFP::A.2 Glossary Specific to this RFP” package.
2. The glossary consists of only approved terms and your work area will not be able to add, delete or modify these terms. The RFP modeling team will integrate them into the glossary when they have been reviewed and are stable.
3. A term may be a concept term or any other term where establishing a clear definition provides value.
4. All terms that appear in “approved” requirements should be defined and maintained in this glossary area.
5. The SECM uses the Magic-Draw glossary table feature. Therefore if a glossary term is used in any text throughout the model, including the name and description field, it is underlined and the tool tip feature will allow the definition to pop-up.
6. Also the list of glossary terms can be viewed by opening the Magic Draw Glossary Table or by opening a generic table called “SysML v2 Glossary Terms and Definitions” located in “6-SECM - SysMLv2 RFP”.
7. The minimum requirements for a term in the glossary;
 - a. It is a SysML block
 - b. It contains a definition in the Documentation property
 - i. The definition must reference at least one source in the “Bibliographic Citation List for this RFP”.
 - ii. These references are listed in a comment located in the SECM at “6-SECM - SysMLv2 RFP::Appendix A References & Glossary Specific to this RFP::A.1 References Specific to this RFP”
 - iii. If the reference you need is not in the list, send an email to jcwatson@ieee.org with an appropriate citation to the source material.
 - c. The term has the “glossary” stereotype applied and a selection is made in the “owner” attribute tag.
 - i. This stereotype is located in the SECM at “6-SECM - SysML v2 RFP\SysML v2 RFP Profile”.

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4 Creating New Terms in your Work Area

1. If a concept term is needed in your work area and already exist in the glossary, one suggestion is to:
 - a. Create and use a specialization of the existing term
 - b. Name the new term with the same as the term in the glossary and append a suffix that identifies your work area.
 - c. Properties and relationships can be added to the new term as needed.
2. If an appropriate term does not exist in the glossary;
 - a. Create a new term in your work area using the “minimum requirements” stated in section 3, SysML v2 RFP Glossary Terms.

5 Creating Requirement Groups in your Work Area

1. A Requirement Group is used to contain a group of related requirements and to provide additional context.
2. The additional context is in the form of one or more textual paragraphs. This text can contain related supporting information to help understand the requirements such as an introduction, examples and/or clarification information.
3. A Requirement Group is not a requirement, and therefore does not contain a “shall” statement.
4. To create a Requirement Group:
 - a. Use the SysML Requirement construct and apply the stereotypes **«reqtComAttr»** and the **«reqtGrp»** to all SysML v2 requirement groups.
 - b. A requirement group template is available in the SECM to reduce the effort for creating a requirement group in your work area. This template already has the stereotypes applied and some attributes completed.
 - i. The requirement group template is available in the SECM package “5-Core Team Work Areas::0-0-Work Area Guidelines and Examples”.
 - ii. Copy and paste the requirement group template into your area.
 - c. Update the attributes for a requirement group as follows.
 - i. **ID** – ABC x.y.z where;
 1. ABC is a 3 letter abbreviation prefix for a significant collection of requirements, e.g. API for the Application Programming Interface collection.
 2. Try to select a prefix without vowels. This makes more unique and can be used in the table filter.
 3. The requirement group number is captured using x.y.z where x, y and z is a number from 1 to 9
 4. A requirement group will be the parent of a set of requirements or requirement groups so the group will always be a level above its children.
 5. Each level adds another number, e.g. a level 1 example is ABC 1, level 2 would be ABC 1.3 and a level 3 example would be ABC 1.3.9
 - ii. **Name**
 1. Refer to naming conventions in Section 2, Naming Conventions.

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2. Short names are preferred.
 3. It may be helpful to add the word “Group” at the end the name.
 - iii. **Text Statement Guidelines** – Leave this field empty for a requirement group.
 - iv. **WG Owner** – This attribute must be completed. The field identifies the work group that owns this requirement group. Multiple work groups can take ownership but it is not encouraged. Select the appropriate entry or entries from the enumerated list.
 - v. **Status** – This attribute must be completed. This attribute defines the present maturity level of the associated requirement group. Select one of the values in the enumerated list. When the requirement groups are stable and ready to be moved the status should be “Approved”.
 - vi. **Supporting Information** – This attribute is a text string. This information provides a capability to add additional information that is helpful in understanding the intent of the set of requirements in the group. This text can contain generally contains an introduction to the set of requirements in this group. This text can also contain hyperlinks to other supporting information such as information that is contained in the model (e.g. compelling examples, notes, etc.), external documents, or web pages.
 - vii. **Req Group** – This attribute must be completed by selecting the pull-down entry of “ReqGrp”. This attribute identifies this construct as a requirement group. This entry is useful in filtering just on groups to help manage the groups.
- d. Add the child requirements to the Requirement Group using containment (i.e., crosshairs).

6 Creating Requirements in your Work Area

1. Use the SysML Requirement construct and apply the stereotypes «**reqtV2Attr**» and the «**reqtComAttr**» for all SysML v2 requirements.
2. Requirement Templates are available for use in the SECM to reduce the effort in creating requirements in your work area. These templates already have the stereotypes applied and some attributes completed.
 - a. The requirement templates are available in the SECM package “*5-Core Team Work Areas::0-0-Work Area Guidelines and Examples*”.
 - b. Copy and paste the data model requirement template or a service requirement template into your work area.
3. Requirement Attributes - Update the attributes for a SysML v2 requirement as follows:
 - a. **ID** – ABC x.y.z where;
 - i. ABC is a 3 letter prefix for a significant collection of requirement topics, e.g. API for the Application Programming Interface collection. The assigned requirement ID prefixes are as follows:
 1. ANL = Analysis
 2. API – Application Programming Interface
 3. BHV - Behavior
 4. CMC – Common Core
 5. CNF – Conformance requirements

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6. CSN – Concrete Syntax
 7. EXG - Exchange
 8. FML - Formalism
 9. ITF – Interface
 10. MCS – Model Construction
 11. MMN – Model Management
 12. OTR – Other
 13. PRP – Properties
 14. RQT – Requirement
 15. SVC – Services
 16. STC – Structure
 17. VRT – Variants
 18. VRF – Verification
 19. VSZ – Visualization
 20. WKF - Workflow
- ii. The requirement number is captured using x.y.z where x, y and z is a number from 1 to 9
 - iii. Each level adds another number, e.g. a level 1 example is ABC 1, level 2 would be ABC 1.3 and a level 3 example would be ABC 1.3.9
- b. Name**
- i. Refer to naming conventions in Section 2, Naming Conventions.
 - ii. Short names are preferred.
- c. Text Statement Guidelines**
- i. Use the verb “shall” for all mandatory requirements.
 - ii. Use terms that reflect concepts that are defined in the SysML v2 Glossary located in the Systems Engineering Concept Model (SECM) in package “6-SECM - SysMLv2 RFP::Appendix A References & Glossary Specific to this RFP::A.2 Glossary Specific to this RFP”.
 - iii. If a new term is identified in your requirement, add it to your work area as described in section 4
 - iv. Data model requirement text statement guidelines
 1. Abstract the requirement to reflect the system modeling concept without over constraining the metamodel and profile implementation in the SysML v2 specification.
 2. Wherever practical, the requirement should reflect the real-world concept that is being modeled (e.g., the abstract semantics).
 3. Cross check the requirements against the original requirements SysML v1 requirements which are contained in the [UML for SE RFP](http://syseng.omg.org/UML_for_SE_RFP.htm) (http://syseng.omg.org/UML_for_SE_RFP.htm)
 4. The sentence structure of a data model requirement should be of the form:
 - a. SysML v2 shall include a capability to represent [SE Need statement].
 5. For Example:
 - a. SysML v2 shall include a capability to represent a modular unit of structure called a Definition Element that contains value properties, ports, constraints, and behavioral features.

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- v. Service requirement text statement guidelines
 - 1. Specify the function that a user or external software application requests to operate on the model.
 - 2. The inputs and outputs of the function should be consistent with the SECM terms and definitions defined in the SysML v2 Glossary located in the Systems Engineering Concept Model (SECM) in package “6-SECM - SysMLv2 RFP::Appendix A References & Glossary Specific to this RFP::A.2 Glossary Specific to this RFP”.
 - 3. Define pre-conditions and post-conditions that reflect the state of the model prior to and after the function is performed
 - 4. Include reference to how this function supports one or more system modeling tasks where practical
 - 5. The sentence structure of a service requirement should be of the form:
 - a. SysML v2 shall specify [Service Name] service that includes {Service Description}
 - 6. For Example:
 - a. SysML v2 shall specify an analysis setup service that includes identification of the following: a) Objectives b) Key metrics c) The representation of the system which is being analyzed, d) the cases/scenarios for which our analysis will be performed e) Tools needed to perform the analysis, both software and hardware tools.
- d. **WG Owner** – This attribute must be completed. This field identifies the work group that owns this requirement. Multiple work groups can take ownership but it is not encouraged. Select the appropriate entry or entries from the enumerated list.
- e. **Status** – This attribute must be completed. This attribute defines the present maturity level of the associated requirement. Select one of the values in the enumerated list. When the requirements are stable and ready to be moved the status should be “Approved”.
- f. **Supporting Information** – This attribute is a text string. This information provides a capability to add additional information that is helpful in understanding the intent of the requirement. This text can contain hyperlinks to other supporting information such as information that is contained in the model (e.g. compelling examples, notes, etc.), external documents, or web pages.
- g. **SysML 1.x** – This attribute reflects an evaluation of the extent to which the requirement is addressed by SysML v1 with the values of Yes, No, or Partial.
- h. **SysML 1.x Construct** – If the requirement is fully or partially satisfied by this requirement, this attribute identifies the SysML v1 construct(s) that satisfies the requirement, e.g. block, full port, value property, etc.
- i. **SysML 1.x Issue** – This field is a text field
 - i. If the requirement is not fully satisfied by SysML v1.x, this attribute provides the text that refers to the issue or limitation that is being addressed. This may include a concept in the SEBoK, or a current RTF issue with the current SysML modelling.

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- ii. In some cases, the issue may be associated with a usability issue related to productivity or understandability rather than a capability that cannot be modeled. In this case a single phrase like “Usability” could be entered.
- iii. If the issue can be identified by one or more existing SysML RTF (Revision Task Force) issues, then the RTF Issue IDs could also be entered.
- j. **Precondition** – This attribute is a text field and only needs to be completed for behavioral requirements such as a service requirement.
- k. **Post Condition** - This attribute is a text field and only needs to be completed for behavioral requirements such as a service requirement.
- l. **Req Group** – This attribute should not be used for a requirement. A default value of “- -” can appear but it should not contain the value used for a requirement group.

7 Tracing Requirements

1. Each requirement should trace to one or more concepts in your work area model.

8 Capturing Open Issues

1. Capture any open issue using a SysML <<Problem>> construct.
2. Use anchors to tie the issue to associated model elements.
3. A list of open issues located in any of the work areas located in high level SECM package called “5-Core Team Work Areas” or in the “6-SECM - SysML v2 RFP” package are presented in the Open Issues Table also located in the “5-Core Team Work Areas” package.