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# 09/15/2015 Meeting Notes

## Attendees

1. Yves Bernard
2. Sandy Friedenthal
3. Chas Galey
4. Rick Steiner
5. John Watson

## Meeting Agenda Topics

1. Review Action Items from previous meetings
2. Review new modeling approach from last week’s notes.
3. Discuss Sandy’s first cut of the System Hierarchy to-be diagram

## Meeting Notes

1. All actions to date have been closed.
2. New Modeling Approach - All agreed it is a better approach and should be pursued.
3. System Hierarchy to-be diagram discussion and concluding agreements
   1. Diagram discussion
      1. Changed “Model Element” to “Element”
      2. On Structural Element, changed parent/child roles to whole/part, respectively
      3. The use of stereotypes triggered a discussion about the use of UML in our examples. As a result the diagram utilizes multiple meta-levels, i.e. Kernel-Model (M2), Domain-Model (M1-Library) and the User-Model (M1). Chas produced a diagram that re-organization the model elements to demonstrate the multiple meta-levels.
      4. These stereotypes were used to fill a hole in the description language of UML with respect to displaying Sub-Types.
         1. SysML2 might want to include a specification for a compartment that allows display of Sub-Type.
         2. **Action** – John will add an issue SECM-Domain model to capture this thought.
   2. Our future diagrams need to be careful to avoid unintentionally implying UML concepts. Therefore:
      1. The domain library should be defined using only a UML Class, UML Association (including name, aggregationKind, role names, navigability and multiplicities), and UML Generalization;
      2. If at a later point if it is felt there is a need for additional constructs, they should not be used unless there is agreement across the team.
   3. Our approach should focus only on the Domain level.
      1. To re-iterate, the domain library will be used to describe the set of Systems Engineering terms and relationships between them that the SysML2 Language needs to be able to express
      2. The source of these terms to consider will be:
         1. The UML-4SE-RFP section of the SECM-Domain model
         2. The Oliver model that Rick produced
         3. The Use Cases
         4. Other external sources as they are made available
      3. The approach should resolve/close the issues generated in the UML-4SE-RFP section of the SECM-Domain model
      4. Some examples may be added to augment the understanding, however, they will be clearly marked as examples.
   4. The SECM-Kernel model
      1. This is a separate effort and should not influence the SECM-Domain model
      2. The Kernel will be used to define requirements on the SysML2 Language to ensure Domain concepts can be described
      3. At first the Kernel must (at minimum) define the sub-set of UML used to describe the Domain concepts
      4. As work on the Kernel matures more concepts from it may need to be added to describe the Domain
   5. Yves gave us an overview of the approached used to capture the MARTE specification. Each clause, e.g. Allocation Modeling, includes a Domain View and a UML implementation view. We should use this example to help guide us as we develop the SECM-Domain and SECM-Kernel model, respectively.

# 09/29/2015 Meeting Notes

## Attendees

1. Yves Bernard
2. Roger Burkhart
3. Sandy Friedenthal
4. Chas Galey
5. Rick Steiner
6. John Watson

## Meeting Agenda Topics

1. Review Action Items from previous meetings
2. Using INCOSE Handbook v4 and SEBoK as initial source for concept terms
3. Kernel/Domain Model integration Proposal

## Meeting Notes

1. All actions from previous session were completed.
2. Proposal from John - For the SysML V2 RFP model use the INCOSE Handbook and SEBoK as a credible initial source for SECM-Domain model concept terms, their definitions and context for the SysML V2 RFP Model
   1. Previously we said the sources for the concept terms would be:
      1. The UML-4SE-RFP section of the SECM-Domain model
      2. The Oliver model that Rick produced
      3. The Use Cases
      4. Other external SE Ontology and Concept sources as they are made available
   2. Going forward, update above to:
      1. Use the INCOSE Handbook and SEBoK as the initial and primary sources for concept terms, their definitions and other context for the SysML V2 RFP
      2. Go to these sources first to harvest concept terms and definitions and then integrate terms and context from the remaining sources shown above
   3. See John’s [presentation](http://www.omgwiki.org/OMGSysML/lib/exe/fetch.php?id=sysml-roadmap%3Asystems_engineering_concept_model_workgroup&cache=cache&media=sysml-roadmap:using_the_incose_handbook_and_sebok_as_initial_source.pptx) for justifications and issues
   4. **Conclusion**
      1. Use the SEBok and INCOSE as primary initial sources
      2. These primary sources integrate other sources including ISO 15288
      3. We need to get permission from INCOSE to use the material
      4. We are not constrained by these sources, but they will be used as a credible starting point
      5. Use the UML4SERFP structure as a systematic way to begin to define and package the domain concepts, but modify/add as needed
         1. Structure
         2. Behavior
         3. Requirements
         4. Parametrics
         5. Other
         6. ....
3. Proposal from Chas - Need a modeling language to describe the domain concepts and we need to better integrate it with the domain model
   1. Kernel
      1. Kernel gives us an added dimension which allows additional description to be placed on Domain concepts as groups
      2. Allows us to define the Domain as a library rather than as M2
      3. Kernel model will represent the subset of UML used to describe Domain Concepts
      4. If needed we can add M2 concepts in one of three ways
         1. Adding UML concept
            1. This would involve adding a UML concept as specified to enhance the Domain description
         2. Subclassing UML concept
            1. If the constraints imposed by UML is no longer sufficient or we might want to add additional narrative we can subclass an existing UML Element
            2. This should be done carefully to avoid refactoring pain
         3. Creating a Meta Concept
            1. We might create a meta concept from scratch either if a UML concept does not exist or if the connection to UML is unclear
            2. All efforts should be made to connect these meta elements to UML
      5. Kernel model will be added to domain model file
   2. Domain
      1. Kernel team (Chas) will look through diagrams to ensure things are documented properly
      2. Nothing changes for domain model process with respect to kernel model
   3. We will need to establish a set of guiding principles for the kernel going forward.
   4. **Conclusion** – Everyone agreed we should move ahead on this proposal
      1. Need a modeling language to describe the domain concepts
         1. Use a minimal subset of UML
         2. Augment with additional meta-classes when the subset is insufficient OR cumbersome
      2. User models will be developed to illustrate the domain concepts
      3. The starting paradigm for describing the domain is as follows (Refer to Chas Example below)
         1. M2 Layer: Minimal set of UML meta-classes augmented as needed to represent the domain concept
         2. M1 Layer (instances of M2)
            1. Model library of domain concepts (e.g. system of system, system, component)
            2. User model that specializes the domain concepts (e.g. Automobile, Engine, Piston)
4. Actions
   1. John to send Sandy request to send to INCOSE Central Office for permissions to use/copy SE Handbook
   2. Sandy to send request to INCOSE Central Office
      1. If this turns out to be too difficult, we will use SEBoK as primary reference for definition of terms since it is publically available on the SEBoK Wiki.



# 10/06/2015 Meeting Notes

## Attendees

1. Roger Burkhart
2. Sandy Friedenthal
3. Chas Galey
4. Rick Steiner
5. John Watson

## Meeting Agenda Topics

1. Review Action Items from previous meetings
   1. John – Compose permission request to use INCOSE SE Handbook
   2. Send Request to INCOSE
2. Discuss suggested updates from Yves on Chas’s model level diagram from last week
3. Discuss newest SysML V2 Structure diagrams

## Meeting Notes

1. Review Action Items from previous meetings
   1. An INCOSE copyright permission form was completed and sent to INCOSE, so John completed both actions
2. Discuss suggested updates from Yves on Chas’s model level diagram from last week
   1. The end goals are the same, but there are some differences in the approach for creating the kernel model and integrating it to the domain model
   2. We are converging on the approach to develop the to-be domain model based on the summary and follow-up emails from last week.
   3. Chas stated:
      1. The fundamental concepts would be put in the M2 model and a library will be available in the M1 model
      2. The intent is to minimize the content in the M2 model. The more constructs in the M2 model the more complicated
   4. Sandy stated our decisions should be based on “Goodness Measures” that we establish to verify we meet our requirements, for example,
      1. Simplicity – Minimize the set of concepts needed to express our domain
      2. Precision – Be able to represent all domain model concepts
3. Discuss newest SysML V2 Structure diagrams
   1. A well-done Domain model will provide a good analysis of the customer needs, i.e. Systems Engineers. Without a good quality model we may not address all those needs. John walked through the two new SysML V2 Structure diagrams, System Hierarchy and Environment. The intent is to demonstrate the approach and get agreement on this approach or to some modification of the approach.
   2. In these diagrams the SEBoK was used as the primary source of definition, relationships and understanding.
      1. John may have misinterpreted the SEBok or modeled it incorrectly, but the intent is that these diagrams represent a reverse engineering of the SEBoK sections that describe these concepts.
      2. Where more information or understanding was needed other concept sources listed below were used.
      3. The other sources below were also used to ensure all the related concepts represented in those sources were covered in these diagrams
   3. The resources that are being leveraged and the order of their precedence are:
      1. SEBoK
      2. INCOSE SE Handbook
      3. The UML 4SE RFP model
      4. The Oliver Model created by Rick
   4. The SEBoK or SE Handbook may be the primary source. For now we are using the SEBoK because we are waiting for copyright permission for the handbook and are still evaluating which is the best
   5. UML basic constructs were used as we discussed earlier. The diagram used is a class diagram and not a BDD
   6. Sandy mention a concern about how do we ensure all the SysML lessons-learned over the years have been addressed when this domain model is complete.
      1. Any of those concerns should be added to our issue list in the UML 4SE RFP model.
   7. All agreed we should continue with this approach for the SysML V2 domain model
4. A new source model was discussed. This model was created to support work during the creation of the SEBoK so it is circa 2011. Sandy provided a quick overview of the model to John after our session. Sandy will send this model to John to evaluate and we will discuss at our next session.
5. **Actions**
   1. John to continue refining the Domain Model
   2. John – Follow-up with INCOSE copyright permission form
   3. Sandy – Send an earlier version of SEBoK model to John
   4. **All** – Take a closer look at the diagrams we looked at today and forward any comments to John
   5. **All** – Add any know issues/lessons-learned to the Issue List in the model or send them to John and he will add them. As new issues/Lesson-learned surface and to the model.

# 10/13/2015 Meeting Notes

## Attendees

1. Rick Steiner
2. John Watson

## Meeting Agenda Topics

1. Review Action Items from previous meetings
2. Discuss early SEBoK model
3. Discuss Progress on SECM-Domain model
   1. Environment and System Hierarchy Diagrams are complete

## Meeting Notes

1. Items 1 and 2 were not discussed.
2. Rick and John discussed aspects of the SysML V2 Domain Structure Model for the diagrams Environment and System Hierarchy, namely system classifications and structure modeling.
3. The agenda for next week will be carried forward to next week’s session.

# 10/20/2015 Meeting Notes

## Attendees

1. Yves Bernard
2. Roger Burkhart
3. Rick Steiner
4. John Watson

## Meeting Agenda Topics

1. Review Action Items from previous meetings
2. Discuss use of SEBoK model created before SEBoK 1.0 (From Sandy)
3. Discuss Progress on SECM-Domain model

## Meeting Notes

1. Review Action Items from previous meetings
   1. John to continue refining the Domain Model - Done
   2. John – Follow-up with INCOSE copyright permission form
      1. We have received permission from INCOSE
   3. Sandy – Send an earlier version of SEBoK model to John - Done
   4. **All** – Take a closer look at the diagrams we looked at today and forward any comments to John
   5. **All** – Add any know issues/lessons-learned to the Issue List in the model or send them to John and he will add them. As new issues/Lesson-learned surface and to the model.
2. Discuss use of SEBoK model created before SEBoK 1.0
   1. This model was created by Steve Mitchel and Sandy before the first release of the SEBoK
   2. John’s observations shared with the attendees
      1. Uploaded model to our WIKI website
      2. It is a great source and I believe it will help going forward
      3. It is from 2011 so it does not include the latest updates on INCOSE Handbook and 15288:2015, however it is a valuable reference resource
      4. Will import sections that save time
      5. Tracing to SEBoK sections
         1. Differences in KA and Topic names and some organization differences from this model’s version (Pre-release v.9) to the latest version
      6. No definitions are in this model since it linked to the definitions in the SEBoK.
      7. Found some relationships that were different than SEBoK text expressed today
      8. The model uses SysML
3. Discuss Progress on SECM-Domain model
   1. Environment and System Hierarchy Diagrams are complete
4. **Action** - Rick will post a Web Document of the latest model

# 10/27/2015 Meeting Notes

## Attendees

1. Yves Bernard (Can’t make it)
2. Roger Burkhart
3. Sandy Friedenthal (Can’t make it)
4. Chas Galey
5. Rick Steiner (Can’t make it)
6. John Watson

## Meeting Agenda Topics

1. Review Action Items from previous meetings
2. Show Approach Update
3. What are the next steps for modeling
4. Discuss Harold role

## Meeting Notes

1. Review Action Items from previous meetings
   1. Rick to post html model
      1. Never discussed will add this action to this week’s action
2. Show update to “SECM Approach” slide
   1. Made some additional refinements
   2. What is (and isn’t) SysML V2 RFP model
      1. The concept of block will not be in the RFP model
      2. It will contain model concepts that represent refactored domain concepts.
      3. It is not a meta-model.
   3. The SysML Spec will consist of a meta-model and a Service Specification.
   4. The domain model will be linked to the V2 RFP model. These linkages will show how the domain concepts are intended to be realized with concepts in the RFP model.
   5. The slide will be cleaned up and distributed to this team
3. What are the next steps for modeling
   1. We agreed the SECM model and the V2 RFP model can proceed in parallel
   2. We still need to select and prioritize the topics that will be addressed in the Domain Model. Some of these topics may not be represented completely in the SEBoK, such as variants.
   3. Lower priority topics may initially only represent very high level concepts (stubs)
4. Discuss Harold role
   1. Harold will be available the first 2 weeks in November to assist the team.
   2. Sandy will discuss with Harold that he can begin working on parts of the V2 RFP model
5. Actions
   1. John – Clean-up “SECM Approach” slide and distribute to team
   2. Rick - Post a Web Document of the latest SECM Domain model

# 11/10/2015 Meeting Notes

## Attendees

1. Yves Bernard
2. Roger Burkhart (couldn’t attend)
3. Sandy Friedenthal
4. Chas Galey
5. Rick Steiner
6. John Watson

## Meeting Agenda Topics

1. Review Action Items from previous meetings
   1. John – Clean-up “SECM Approach” slide and distribute to team
   2. Rick - Post a Web Document of the latest SECM Domain model
2. Discuss Progress on SECM Industry Reference: 2015
   1. Organization, color coding of concepts, topics addressed
3. Discuss first steps for SECM SysML V2 RFP
4. Prioritize SEBoK topics to be modeled
   1. Requirements, Interfaces, Risk, Behavior, V&V, Variant, others?

## Meeting Notes

1. Review Action Items from previous meetings
   1. John – Clean-up “SECM Approach” slide and distribute to team, done and presented at last roadmap meeting
   2. Rick - Post a Web Document of the latest SECM Domain model – Will be done soon.
2. Discuss Progress on SECM Industry Reference: 2015 (IR model)
   1. John explained changes in the organization, color coding of concepts, and the added guidelines for contributing to the IR model.
3. Discuss first steps for SECM SysML V2 RFP (V2 model)
   1. The SECM SysML V2 RFP model can proceed in parallel to the work being done in the IR model. We don’t need to wait for the IR model to be finished before starting the V2 model.
   2. As concept diagrams are completed in the IR model they will be reviewed. Once the review is complete each reviewed diagram will provide topics for work in the V2 RFP model.
   3. Team members will apply as much time as they feel appropriate to review concept diagrams but, at a minimum, each member should examine the diagrams outside the meeting session looking for items that they feel aren’t clear or raise a question
   4. We will then assign a diagram or two to meeting session to discuss these items.
   5. If it is helpful, please feel free to set up meeting with John to answer questions more immediately.
4. Concept Diagrams discussed at this session – Considered to be mostly Sandy’s input for this set of diagrams. We still need input from other folks not at the session or that don’t feel as though their input was complete.
   1. System Hierarchy
      1. Property relationships was based on Oliver model. The Oliver model is no longer used as a reference. This should be stated as an issue if SEBoK and INCOSE Handbook aren’t complete and consistent.
      2. The term Function was avoided because of the observed differences in the references. It should be added and an issue raised if necessary.
      3. Associations for structure – Did they come from SEBoK – **Answer** Yes the definition provided from SEBoK defines it that way. See definition (1).
      4. System Element – Has a specialization to System and Element. Should it be one or is two ok? (John)
   2. Environment
      1. Concept of Operations – Check the direction and verb phrase
      2. View and Viewpoint – Are they defined in SEBoK? **Answer** Yes, see definition provided in view and viewpoint. Both are from SEBoK
      3. Is System Context a view? – **Answer** - Yes, see definition for system Context and multiple references in SEBoK text. This view can vary (narrow to very wide) depending on the task and approach.
   3. Life Cycle
      1. Check for cyclic relationships between Life cycle, engineered system and SoI. **Answer –** Looks correct. All Eng Systems have a life cycle (by aggregation) therefore SoI has a type of life cycle because it specializes Eng System. A Life Cycle Model is an instance of a Life Cycle for a system being worked (life cycle under consideration), i.e. an SoI, by SoI definition.
      2. System Breakdown Structure – Is this the same as Work Breakdown Structure. If so make an issue that Work Breakdown Structure is more commonly used.
   4. Generic Life Cycle Model
      1. Should Generalization between Life Cycle Model (LCM) and Generic Life Cycle Model (GLCM) be reversed? – **Answer** – No. The GLCM is an LCM by definition. There is no one size LCM that fits all, each SoI has a unique LCM that would also specialize off of LCM specifying the stages and the process activity that will take place for that specific project. The intent of the GLCM is to define a reference LCM that can be used as a starting point for the most common versions.
5. Concept Diagrams to close issues or discuss at our next session
   1. System Hierarchy
   2. Environment
   3. Life Cycle
   4. Generic Life Cycle Model
   5. SE Processes
6. Prioritize SEBoK topics to be modeled
   1. Requirements, Interfaces, Risk, Behavior, V&V, Variant, others?
   2. No time to discuss, will follow-up next session.
7. Actions
   1. John - Clean-up “SECM Approach” slide and distribute to team
   2. Rick - Post a Web Document of the latest SECM Domain model
   3. All – Review Concept diagrams listed in item 5.
   4. John – Address open issues from reviewed diagrams

# 11/17/2015 Meeting Notes

## Attendees

1. Yves Bernard
2. Roger Burkhart
3. Sandy Friedenthal
4. Chas Galey
5. Rick Steiner
6. John Watson

## Meeting Agenda Topics

1. Review Action Items from previous meetings
   1. John - Clean-up “SECM Approach” slide and distribute to team
   2. Rick - Post a Web Document of the latest SECM Domain model
   3. All – Review Concept diagrams listed in item 5 from previous meeting notes.
   4. John – Address open issues from reviewed diagrams. See Below
2. Issues not addressed from previous session
   1. Property relationships was based on Oliver model.
   2. System Element – Has a specialization to System and Element. Should it be one or is two ok? (John)
   3. Concept of Operations – Check the direction and verb phrase
   4. System Breakdown Structure vs. Work Breakdown Structure.
3. Prioritize SEBoK topics to be modeled
   1. Requirements, Interfaces, Risk, Behavior, V&V, Variant, others?

## Meeting Notes

1. Review Action Items from previous meetings
   1. John - Clean-up “SECM Approach” slide and distribute to team- Done
   2. Rick - Post a Web Document of the latest SECM Domain model - ?
   3. John – Address open issues from reviewed diagrams. See Below
   4. All – Review Concept diagrams listed in item 5 from previous meeting notes.
2. Model Updates
   1. Added Issues package and added 1st issue
   2. Completed 1st pass at Configuration Management Concept diagram
3. Issues not addressed from previous session
   1. Property relationships was based on Oliver model. The Oliver model is no longer used as a reference. This should be stated as an issue if SEBoK and INCOSE Handbook aren’t complete and consistent.
      1. The term Function was avoided because of the observed differences in the references. It should be added and an issue raised if necessary.
   2. System Element – Has a specialization to System and Element. Should it be one or is two ok? (John)
   3. Concept of Operations – Check the direction and verb phrase
   4. System Breakdown Structure – Is this the same as Work Breakdown Structure. If so make an issue that Work Breakdown Structure is more commonly used.
4. Prioritize SEBoK topics to be modeled
   1. Requirements, Interfaces, Risk, Behavior, V&V, Variant, others?

# 11/24/2015 Meeting Notes

## Attendees

1. Yves Bernard
2. Roger Burkhart
3. Rick Steiner
4. John Watson

## Meeting Agenda Topics

1. Review Action Items from previous meetings
2. SEBoK coverage and metrics
3. Diagrams status
4. Where to go to review diagrams

## Meeting Notes

1. Review Action Items from previous meetings
   1. John Close Issues discussed at previous sessions
2. SEBoK coverage and metrics
   1. Focus on Parts 2 and 3, and some of 5
   2. Collect metrics in these sections to measure the progress of the amount of SEBoK content is available in the SECM Industry Reference
3. Diagrams status – Reviewed diagrams in Web Published version dated 11/23
   1. Diagrams previously examined
      1. System Hierarchy – No Change
      2. Environment
         1. Move ConOps to a more appropriate diagram
      3. Life Cycle – No Change
      4. Generic Life Cycle Model – No Change
      5. SE Processes – No Change
   2. More Diagrams
      1. Configuration Management
         1. Complete references from CR to SCN to CI
         2. Fix multiplicity placement on association from Baseline to Engineered system
      2. Requirement Traceability
         1. Change Requirement Trace to something more generic, like trace, so it can be used on non-requirement traceability.
      3. Architecture (still being worked)
         1. Still under construction. Will probably be broken up to 2 separate diagrams
         2. Also examined this diagram in the model to show where it was going.
         3. Should Software architecture be included? John will investigate?
4. Where to go to review diagrams
   1. Web Publish document was generated containing 2015 Industry Reference Package
   2. This is available for download on our Wiki in the Model/HTML section (near the bottom of the web page)
5. Actions
   1. All – Review Web Published version available on the Wiki
   2. John – Make changes in the model as discussed
   3. Should Software architecture be included on Architecture diagram? John will investigate?
   4. Rick – Will make the Web Published version available on his Blog so it can be accessed directly w/o needing to download it first.