

Appendix D

Summary of Checks for V&V of the Quality of MOSS

Checks for V&V of the Diagrams in MOSS

Syntax Checks for Classes (Advanced)	Yes	No
1. Check class names.		
2. Check class stereotypes.		
3. Check the type of the class itself.		
4. Check attributes. It is important to subject the attributes to syntax checks that are language specific.		
5. Check attribute types.		
6. Check attribute initial values. Ensure that the types of value initialization and the attribute types are compatible.		
7. Check attribute visibility.		
8. Check attribute stereotypes.		
9. Check operations to ensure that their format compiles with the language of implementation.		
10. Check operation signatures.		
11. Check operation visibility.		
12. Check operation stereotypes.		

Semantic Checks for Classes	Yes	No
1. Check the meaning of the class.		
2. Check the meanings of the attributes.		
3. Check attribute initial values.		
4. What does an operation mean? Ensure that the meaning of the operation is reflected in its name and format.		
5. Check the pre- and postconditions of operations.		
6. Check the signature of the operation.		
7. Check the stereotypes of operations.		
8. Check the scope of operations.		
9. Check to see if the operations of a class are overloaded.		
10. If overriding operations exist, ensure their correctness.		
11. Check for overriding variables.		
12. Check for encapsulation.		

Aesthetic Checks for Classes	Yes	No
1. Check the number of attributes.		
2. Check the number of operations.		
3. Check the load on operations.		
4. Check the load on the class.		

Syntax Checks for Class Diagrams	Yes	No
1. Check that the multiplicity on an association is correctly represented on the class diagram.		
2. Ensure that stereotypes are represented by << >> on classes, attributes, operations and relationships on a class diagram.		
3. Check the association of classes with language libraries.		
4. Check to see if the class is an exception class.		
5. Check how error handling is modeled and implemented in the class.		

Semantic Checks for Class Diagrams	Yes	No
1. Check directions of association.		
2. Check the meaning of the relationships on a class diagram.		
3. Check for collection classes.		
4. Check the roles of classes.		
5. Check the business rules behind the multiplicity.		
6. Check for association classes.		
7. Check if the operations of a class that has been specialized (inherited from) are overloaded.		
8. Check for encapsulation.		
9. Ensure that language constructs subject to interpretations are checked for their implied meaning.		

Aesthetic Checks for Class Diagrams	Yes	No
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1. Ensure that technical classes are represented only by their names rather than by their entire qualifications.
2. Improve the aesthetics by letting the entity classes appear in more than one diagram.
3. Improve the aesthetics by redistributing the classes and their associations across more than one class diagram.
4. Ensure that sufficient explanatory notes are provided.

Syntax Checks for Sequence Diagrams	Yes	No
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1. Check the correctness of all objects on the sequence diagram.
2. Check the correctness of actors on the sequence diagram.
3. Check object-object interaction.
4. Check the message types shown in the sequence diagram.
5. Check the syntax of the message signatures and return values.
6. Check the syntax of multiple messages.
7. Check for multiple objects on the sequence diagram.

Semantic Checks for Sequence Diagrams	Yes	No
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1. Check the meaning behind the sequence diagram.
2. Check the meaning behind the focus of control.
3. Check to see if the sequence diagram depicts creation and destruction of objects.
4. Check to see if the sequence diagram is based on a pattern.
5. Check to see if there are alternative flows and create separate sequence diagrams for them.

Aesthetic Checks for Sequence Diagrams	Yes	No
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1. Ensure that the sequence diagram shows a cohesive set of interactions between collaborating objects.
2. Ensure that the sequence diagrams have sufficient notes and other annotations to explain the technicality of the diagrams.
3. Check the number of objects.
4. Check the number of messages.

Syntax Checks for Communication Diagrams	Yes	No
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1. Check the correctness of all objects.
2. Check the correctness of all messages.
3. Ensure that all messages are correctly numbered.
4. Check object-object interaction.
5. Check the message types shown in the communication diagram.

Syntax Checks for Communication Diagrams	Yes	No
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6. Check the syntax of the message signatures and return values.
 7. Check the syntax of multiple messages.
 8. Check for multiple objects on the communication diagram.
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Semantic Checks for Communication Diagrams	Yes	No
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1. Check the meaning behind the communication diagram.
 2. Check the meaning behind the focus of control.
 3. Check to see if the communication diagram depicts creation and destruction of objects.
 4. Check to see if the communication diagram is based on a pattern.
 5. Check to see if there are alternative flows and create separate communication diagrams for them.
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Aesthetic Checks for Communication Diagrams	Yes	No
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1. If an object is overloaded, ensure that its work is distributed among other objects by introducing a new object and its corresponding class.
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Syntax Checks for Object Diagrams	Yes	No
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1. Check the objects and links.
 2. Ensure that there is only one object per rectangle.
 3. Ensure that no attributes or operations are shown.
 4. Ensure that no multiplicity is shown.
 5. Ensure that notes are correctly represented on the diagram.
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Semantic Checks for Object Diagrams	Yes	No
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1. Ensure that example object diagrams are drawn whenever needed to clarify the links.
 2. Relate the objects on the object diagram to other diagrams (like class diagrams) whose meanings the object diagrams are supposed to clarify.
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Aesthetic Checks for Object Diagrams	Yes	No
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1. Ensure that there are not too many object diagrams.
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Syntax Checks for State Chart Diagrams	Yes	No
1. Check transitions.		
2. Check events.		
3. Check guard conditions.		
4. Check entry conditions.		
5. Check exit conditions.		
6. Check activity states.		
7. Check action states.		
Semantic Checks for State Chart Diagrams	Yes	No
1. Check messages going out to other objects.		
2. Check messages being received from other objects.		
3. Check nested states.		
4. Check historical states.		
5. Check parallel states.		
6. Check to see that state chart diagrams map with objects—shown for a class within a class diagram.		
Aesthetic Checks for State Chart Diagrams	Yes	No
1. Ensure that the number of states on a diagram and their complexity are understandable.		
Syntax Checks for Timing Diagrams	Yes	No
Checks described on p. 188 briefly.		
Semantic Checks for Timing Diagrams	Yes	No
Checks described on p. 188 briefly.		
Aesthetic Checks for Timing Diagrams	Yes	No
Checks described on p. 189 briefly.		