

Verification Checklist

Verify every Use Case in Use Case diagrams

Compliance of the documentation guidelines

1. is UML syntax correct?
2. is there an actor for each use case?

Internal consistence of the model

1. when a Use Case has a relationship with another can you find that relationship also in scenarios related to the use Case?
2. Is every scenario described informally?

Consistence with the informal user requirements reference document

1. Is the actor of use cases in design architecture described in the informal use requirements?
2. is the use case behavior described again in the user requirements?

Verify every scenario

Compliance of the documentation guidelines

1. are all useful (for the main behavior of the system) output variables described?
2. does every scenario end with a behavior/not behavior of the system (e.g. behaviors can be the setting of parameters or the activation of actuators)?
3. are all steps if a scenario clear?
4. when a scenario refers to a use case does the scenario relate to the Use Case?

Internal consistence of the Model

1. is clear to which Use Case refers every scenario?
2. are clearly described all steps of communications among objects in a sequence diagram?
3. when a scenario refers to a use case is there in the appropriate sequence diagram a note with a pointer to the Use Case?

Compliance with the informal user requirements reference document

1. Are in scenarios referenced user requirements?
2. Does every scenario correctly depict user requirements?

Verify every class in the class diagram

Compliance of the documentation guidelines

1. Is UML syntax correct?
2. Does the class have attributes and methods?
3. Have the class relationships with other classes?
4. Are attributes and methods informally described?

Internal consistence of the model

1. When the class has a dynamic behavior is there a State Diagram for the class?
2. Are relationships with other classes depicted in the State Diagram?
3. Are methods correctly indicated in the State Diagram?
4. Are relationships with other classes used in the Sequence Diagrams?
5. Are methods of the class used in Sequence Diagrams?

Consistence with informal user requirements reference document

1. When the class is a class sensor/actuator is there a sensors/actuator described in the design architecture?
2. When the class is a control class is the class necessary in order to provide functionalities described in the informal user requirements?

Verify every sequence diagram

Compliance of the documentation guidelines

1. Is UML syntax correct?
2. Is there an Actor?
3. When there is more than one object for a class (also in other sequence diagrams) are those object referenced with proper names?

Internal consistence of the model

1. Is there a scenario for the sequence diagram?
2. Is there a documentation to which scenario belongs a sequence diagram?
3. Is the scenario information correctly described?
4. When an object of class receives notifications, are those notifications mapped as events?
5. When an object of class receives notifications, are those notifications mapped as methods defined in the class?
6. When an object of class receives notifications, are those notifications mapped as actions in the State Diagrams?

Verify every Collaboration Diagram

Compliance of the documentation guidelines

- Not necessary because automatically generated

Internal consistence of the model

- Is there for each sequence diagram a collaboration diagram?

Verify each State diagram

Compliance of the documentation guidelines

1. Is UML syntax correct?
2. Is there an initial point for the diagram?
3. Have state refinements been realized in each State diagram?
4. Is there any event in the exit status that is connected with an AND operator?
5. Can be spent more time in a certain state?
6. Can each state be reached?
7. Can each transition be accomplished?

Internal consistence of the model

1. When an external class calls a method is there the representation in class diagram?
2. When an external class calls a method is there the method in the class diagram?
3. Are all events from State Diagram that can be thrown to the class also modeled also in the Sequence Diagram?
4. Are all events from State Diagram that the class throws also modeled also in the Sequence Diagram?

Test of each user requirement

1. Id the user requirements referenced in at least one scenario?
2. Are user requirements really described in the above scenario, i.e. s each behavior and each aspect of the user requirement described?

Test of the traceability matrix

1. Are all user requirements and all classes of class diagrams tested?
2. Is there a user requirement not mapped to any class?
3. Are relationships correctly depicted in the table, i.e.:
 - a. Does any relationship miss?
 - b. Is there any wrong relationship?

Error classification

Errors found in the verifications get classified in the following classes.

Incompleteness (I)

Informations about an object are missing. For example a class has not been described in the class diagram but is used in a scenario

Wrong information (W)

A given information about an object is clearly wrong. For example position of the window is in class Door.

Over specification and useless information (R)

A given information is redundant, so that is not useful. An example in the class diagram in that of temperature. This is not important referring to expected functionalities.

Inconsistence or contradictions (C)

An information to an object is inconsistent or contradicts another information on the object.

Forward references and other errors (O) So are classified all other errors.