

Quick Reference Guide AT A GLANCE

The Truth is in the Models®

BLOCK DEFINITION DIAGRAM:

A Block Definition Diagram defines the features of a block and any relationships between blocks such as associations, generalizations, and dependencies, in terms of properties, operations, and relationships (for example, a system hierarchy or a system classification tree).

Blocks provide a general purpose capability to describe the architecture of a system, and represent the system hierarchy in terms of systems and subsystems. Blocks describe not only the connectivity relationships within / between a system and its subsystems, but also quantitative values as well as other information about that system (for example, documentation). A Structured block is a Block element that contains an Internal Block Diagram and a hyperlink to it.

Constraints and Constraint Properties.

Constraint Properties: Properties which are typed by Constraint Blocks, or subtypes of Constraint Block, always having 'composite' aggregation kind.

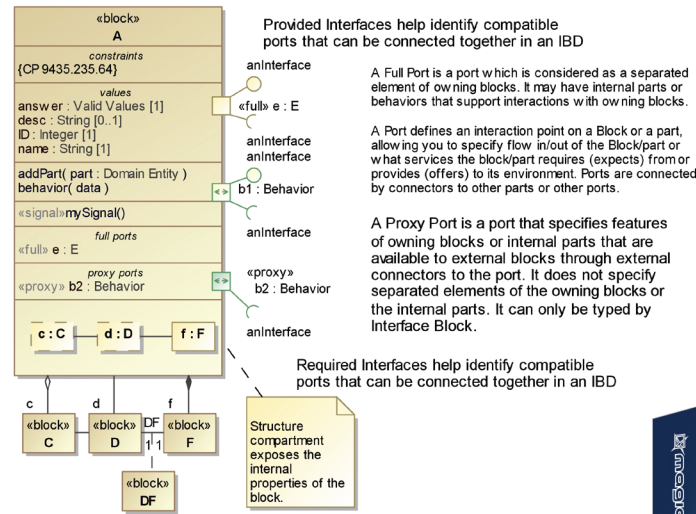
Value Properties: Properties which are typed by Value Types or subtypes of Value Type, always having 'composite' aggregation kind.

Part Properties: Properties which are typed by Blocks or subtypes of Block, except Constraint Block, having 'composite' aggregation kind.

Reference Properties: Properties which are typed by Blocks or subtypes of Block, except Constraint Block, having 'shared' and 'none' aggregation kind, respectively.

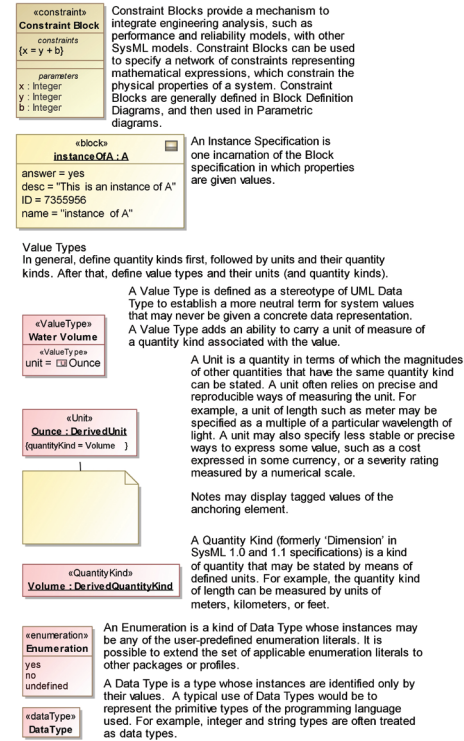
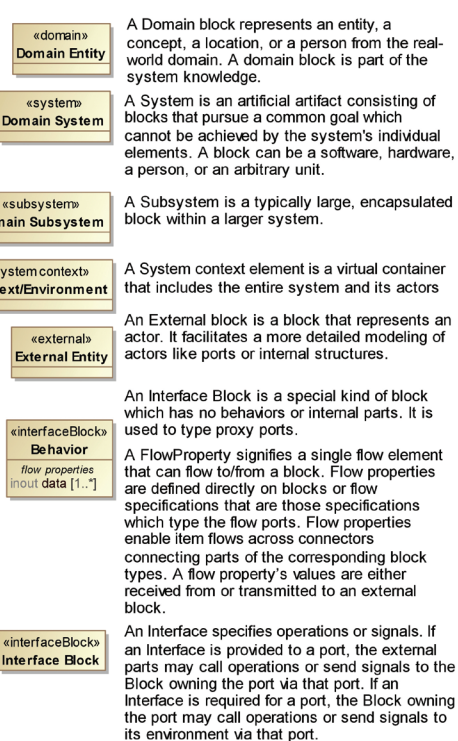
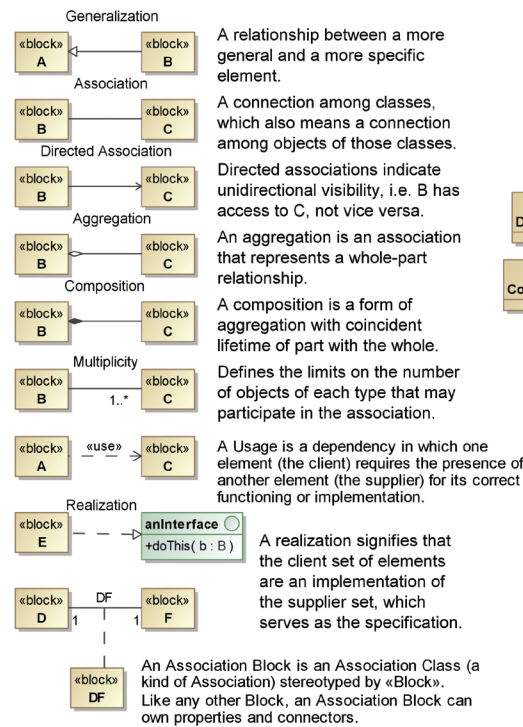
FlowProperty: A FlowProperty signifies a single flow element that can flow to/from a block. Flow properties are defined directly on blocks or flow specifications that are those specifications which tie the flow ports.

Flow Properties: Flow properties enable item flows across connectors connecting parts of the corresponding block types, either directly (in the case of the properties that are defined on the block) or via flowPorts. A flow property's values are either received from or transmitted to an external block.



A Distributed Property is a property of a Block or a Value Type, used to apply a probability distribution to the values of the property. Specific distributions can be defined by applying a subclass of the Distributed Property stereotype to the property.

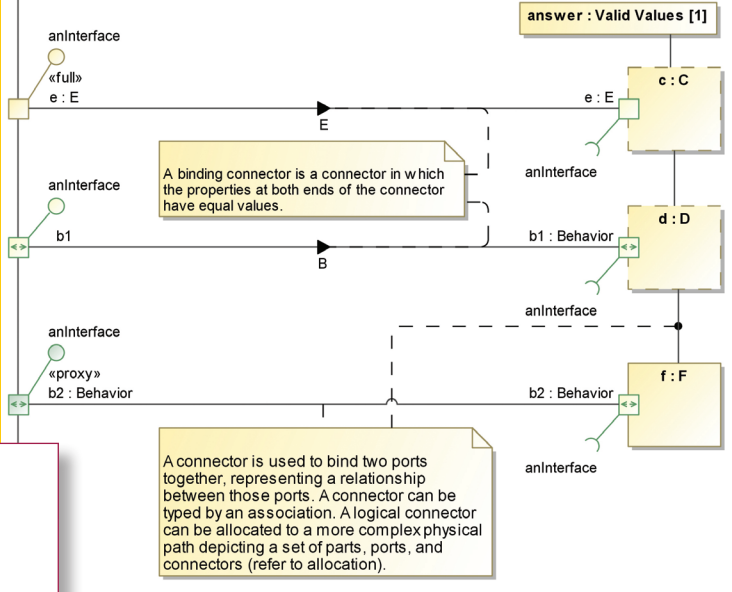
All other properties which cannot be classified into the previous compartments.



INTERNAL BLOCK DIAGRAM:

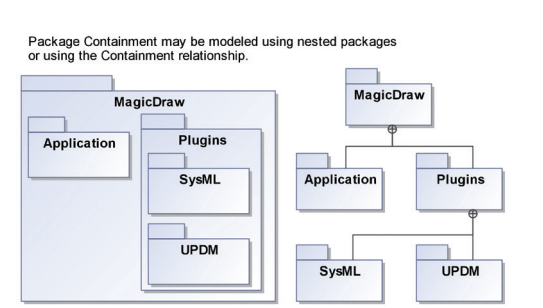
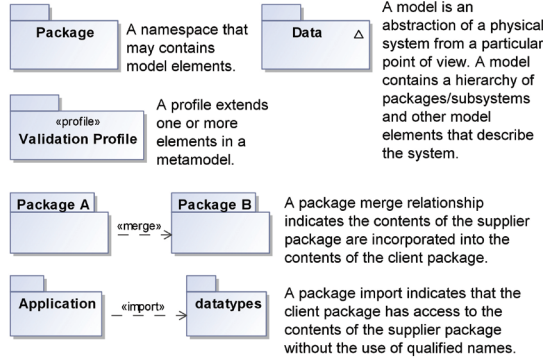
An Internal Block Diagram captures the internal structure of a Block in terms of properties and connections among properties. An Internal Block Diagram created for a Block (as an inner element) will only display the inner elements of a classifier (parts, ports, and connectors), an Internal Block Diagram created for a package will display additional elements (shapes, notes, and comments).

All properties and connectors that appear inside an Internal Block Diagram belong to (are owned by) a Block whose name is written in the diagram heading. That particular Block is the context of the diagram. SysML permits any property (part) shown in an Internal Block Diagram to display compartments within the property (or part) symbol.



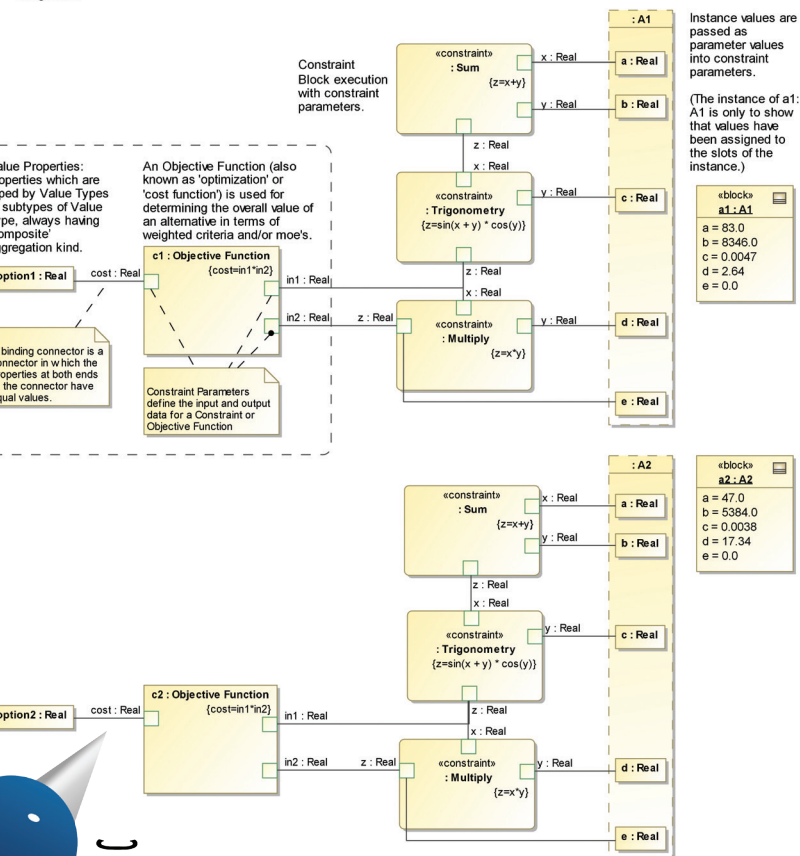
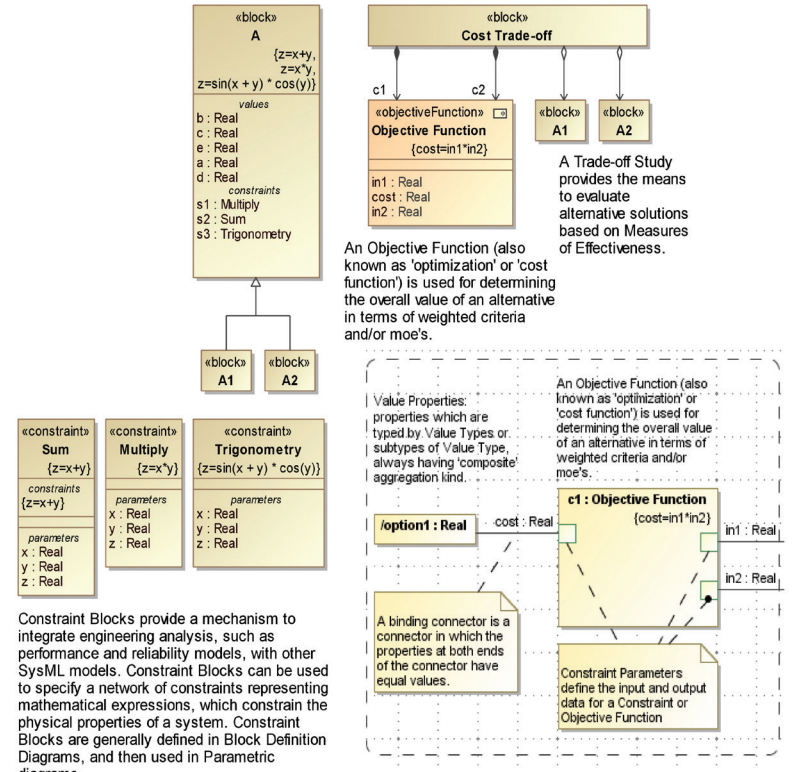
PACKAGE DIAGRAM:

A package is a namespace that may contain any model elements, including other packages. Packages may participate in the same set of relationships as a class. Package dependencies are derived from relationships between model elements contained in each pair of packages.



PARAMETRIC DIAGRAM:

Trade-off Study provides a comparison between block specifications based upon Measures of Effectiveness.



Register Now for No Magic SysML and MBSE Training Courses.

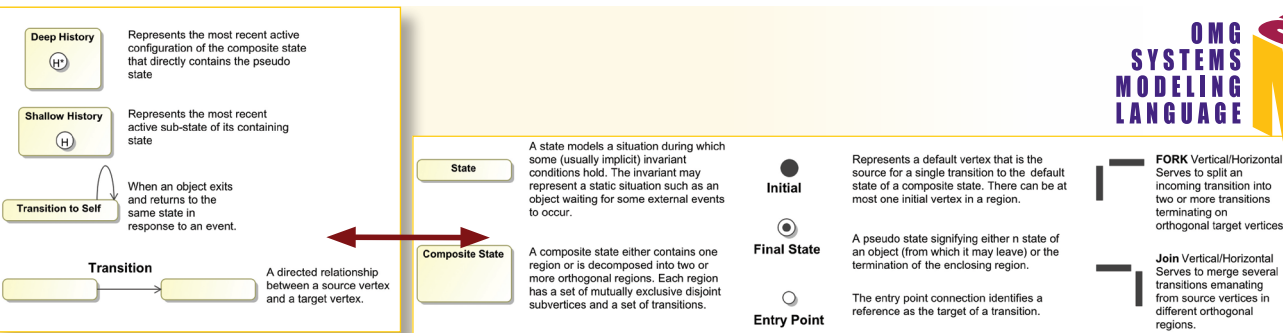
- SysML Online and Onsite Training – More details can be found for these courses at: <https://www.nomagic.com/services/training.html>
- MBSE Online Training – Our new three hour MBSE online training course taught by Sanford Friedenthal – More information can be found at: <https://www.nomagic.com/services/training.html>

Get Trained By No Magic, the team who writes the standards!

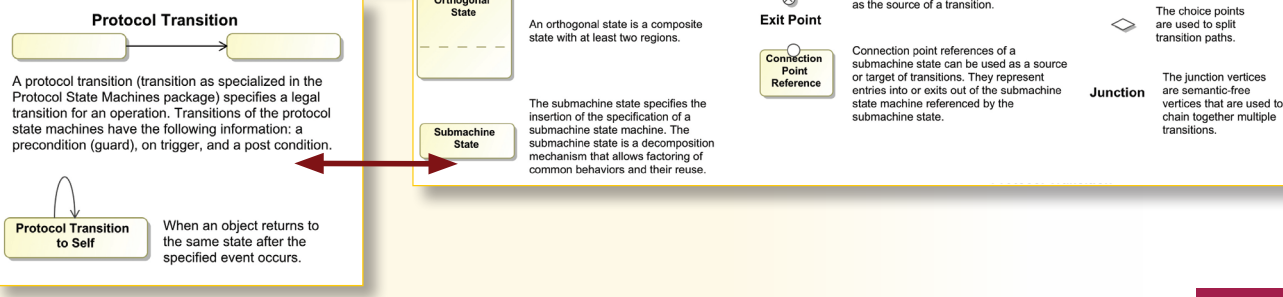


Corporate Headquarters
 One Allen Center
 700 Central Expressway South, Suite 110, Allen, Texas 75013
 Phone: 214.291.9100 Fax: 214.291.9099 E-mail: sales@nomagic.com
 Copyright © 2018 No Magic, Inc. MagicDraw is a registered trademark of No Magic, Inc.

STATE MACHINE DIAGRAM:



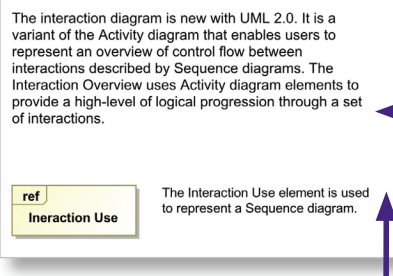
PROTOCOL STATE MACHINE DIAGRAM:



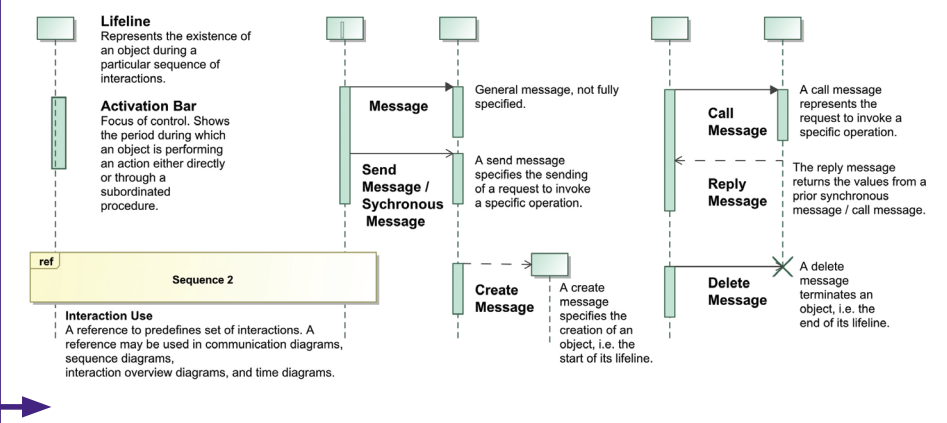
Quick Reference Guide AT A GLANCE

The Truth is in the Models®

INTERACTION OVERVIEW DIAGRAM:

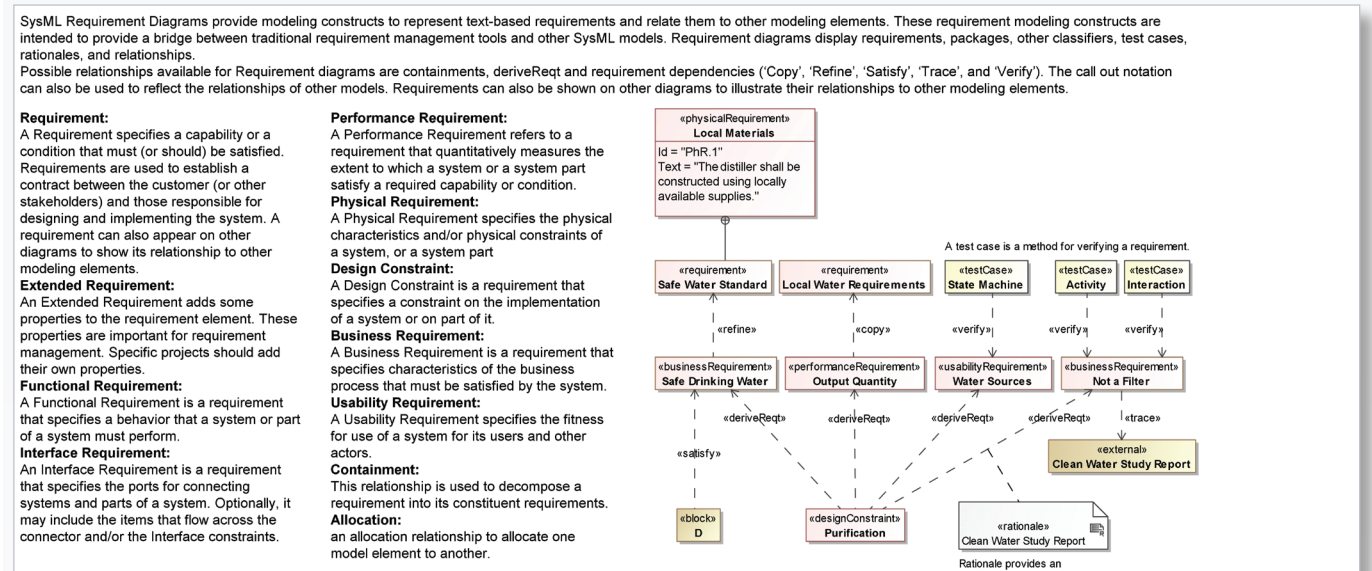


SEQUENCE DIAGRAM:

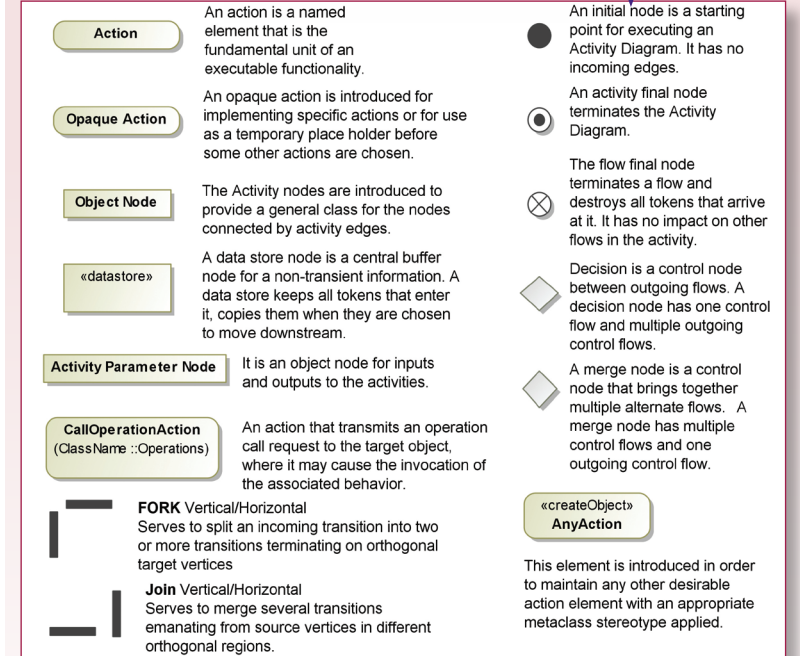


| | | | |
|---|--|---|---|
| <p>loop</p> <p>The loop combined fragment represents that the loop operand will be repeated a number of times. If the loop contains a separate interaction constraint with a specification, the loop will only continue if that specification evaluates to true during execution regardless of the minimum number of iterations specified in the loop.</p> | <p>break</p> <p>The interaction operator brk designates that the combined fragment represents a breaking scenario in the sense that the operand is a scenario that is performed instead of the remainder of the enclosing interaction fragment. A break operator with a guard is chosen when the guard is true and the rest of the enclosing interaction fragment is ignored.</p> | <p>opt</p> <p>The option combined fragment opt represents a choice of behavior where either the (sole)operand happens or nothing happens. An option combined fragment is used to model "if-then" construct.</p> | <p>neg</p> <p>The interaction operator neg designates that the combined fragment represents traces that are defined to be invalid. The set of traces that defined a combined fragment with interaction operator negative is equal to the set of traces given by its (sole) operand, only that this set is a set of invalid rather than valid traces.</p> |
| <p>alt</p> <p>The alternative combined fragment alt represents a choice of behavior. Alternative combined fragment has several operands. At most one of the operands has to be chosen. Using alternative combined fragment you can model if-then-else statement.</p> | <p>par</p> <p>The interaction operator par designates that the combined fragment represents a parallel merge between the behaviors of the operands. A parallel merge defines a set of traces that describes all the ways that occurrence specifications of the operands may be interleaved without obstructing the order of the occurrence specifications within the operand.</p> | <p>seq</p> <p>The interaction operator seq designates that the combined fragment represents a weak sequencing between the behaviors of the operands. It is the same as parallel execution, except that event on the same lifeline from different sub fragments are ordered in the same order as the sub fragments within the enclosing weak sequencing fragment.</p> | <p>consider</p> <p>The interaction operator con designates which messages should be considered within this combined fragment. This is equivalent to defining every other message to be ignored.</p> |
| <p>ignore</p> <p>The interaction operator ign designates that there are some message types that are not shown within this combined fragment. These message types can be considered insignificant and are implicitly ignored if they appear in a corresponding execution.</p> | <p>critical</p> <p>The interaction operator crt designates that there are some message types that are not shown within this combined fragment. These message types can be considered insignificant and are implicitly ignored if they appear in a corresponding execution.</p> | <p>strict</p> <p>The interaction operator str designates that the combined fragment represents a strict sequencing between the behaviors of the operands. The semantics of strict sequencing defines a strict ordering of the operands on the first level within the combined fragment with interaction operator strict.</p> | <p>assert</p> <p>The interaction operator asr designates that the combined fragment represents an assertion. The sequences of the operand of the assertion are the only valid continuations. All other continuations result in an invalid trace.</p> |

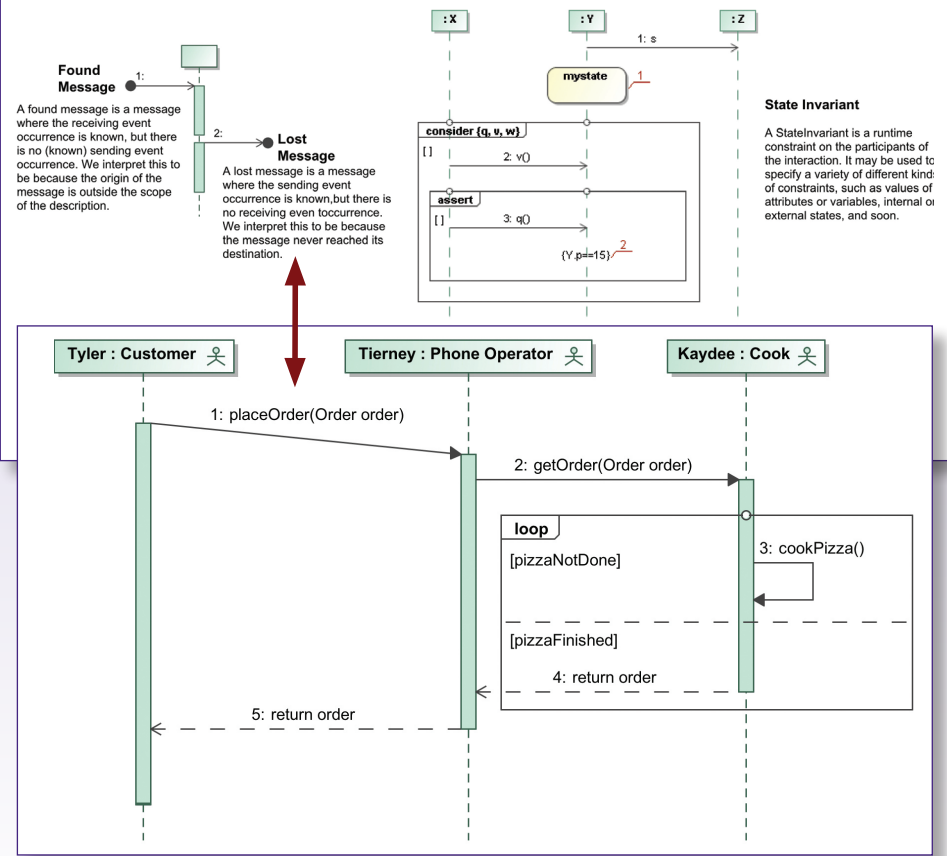
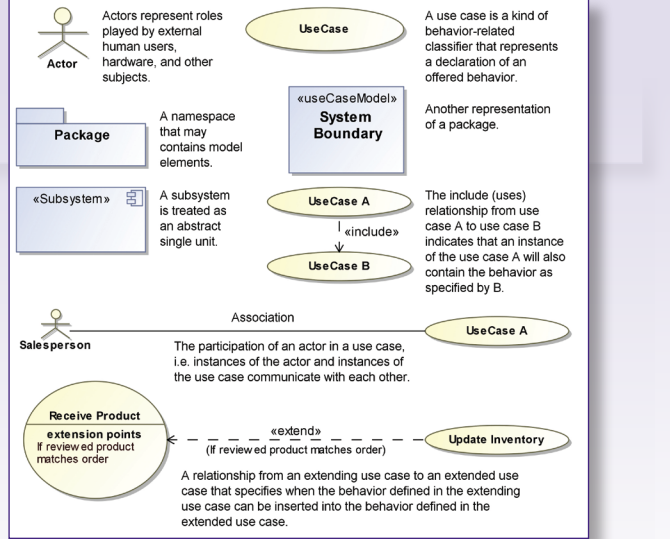
REQUIREMENTS DIAGRAM:



ACTIVITY DIAGRAM:



USECASE DIAGRAM:



Look for These SysML Related Solutions From No Magic.

- Cameo Systems Modeler** – For more information go to: <https://www.nomagic.com/products/cameo-systems-modeler.html>
- Cameo Simulation Toolkit** – For more information go to: <https://www.nomagic.com/products/magicdraw-addons/cameo-simulation-toolkit.html>
- ParaMagic**: For more information go to: <https://www.nomagic.com/products/magicdraw-addons/paramagic-plugin.html>