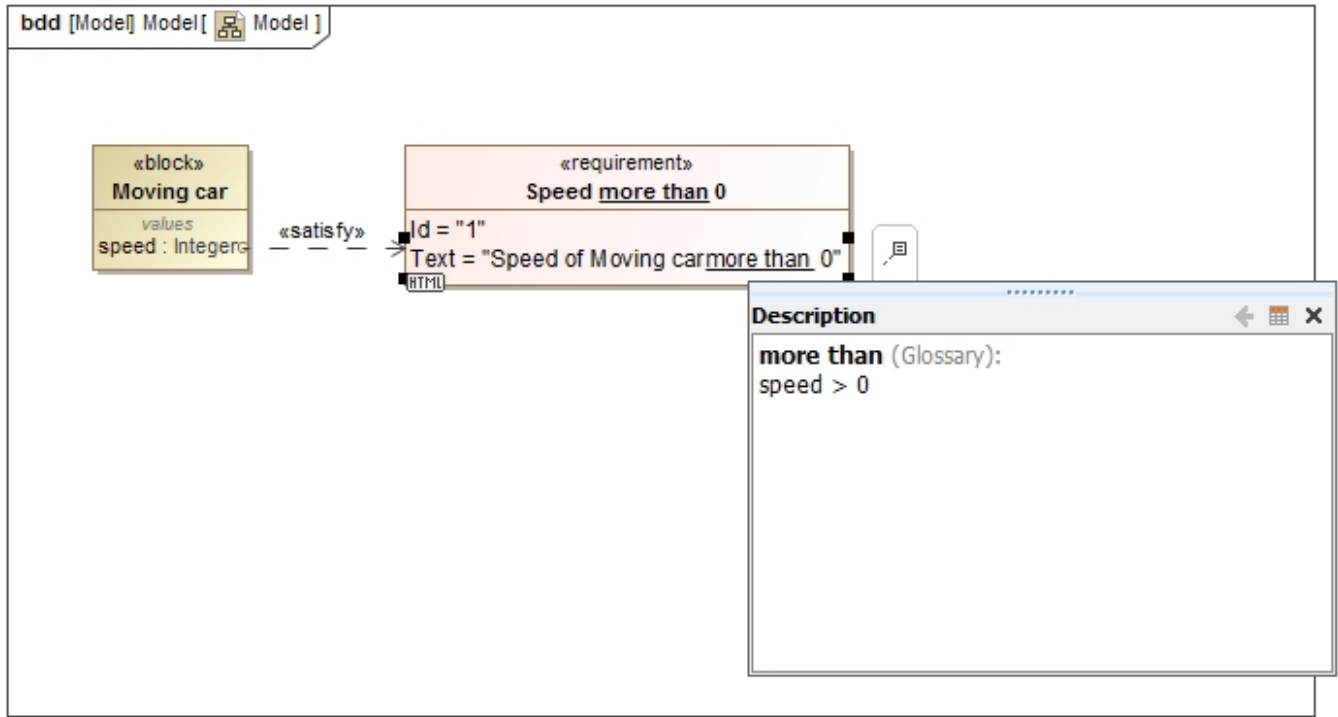


# Extraction of Constraints from Text Based Requirements

As of version 18.4, another new addition to Magic Model Analyst's already impressive repertoire, is the ability to automatically extract constraint equations from the text of a requirement.

For example, if a requirement text states that a moving car must have speed more than 0, then the constraint equation "speed > 0" is automatically extracted from the requirement text and will be evaluated upon running of a simulation.

While typing the requirement text, a shortcut menu appears as soon as you type some keywords which are available in the Glossary, see the example as follows



Constraints within text-based requirements.

For the constraint to execute properly, the requirement should be linked to a property, such as in the above example, a satisfy relation is used to link between the property and the requirement.

When the simulation is run, the constraint is evaluated and color-coded according to the result of the simulation, red if the constraint fails and green if it passes, as shown in figure below. Additionally, a mouse over the variable will display a tooltip.

The screenshot displays a modeling tool interface with two main sections: a Model editor and a Simulation window.

**Model Editor:** The central workspace shows a block diagram. On the left, a block named «block» Moving car has a value speed : Integer. An arrow labeled «satisfy» points from this block to a requirement block on the right. The requirement block is labeled «requirement» Speed more than 0 and contains the text Id = "1" and Text = "Speed of Moving car more than 0".

**Simulation Window:** This section is divided into several panes. The Sessions pane on the left shows a session for Moving car [Moving car@f641e0b] (Ready). The Console pane in the center displays a log of simulation events: 2016-06-01 12:19:44,770 : \*\*\*\* Block Moving car is initiated, 2016-06-01 12:19:45,090 : The constraint(s) {speed > 0} is/are not satisfied, and 2016-06-01 12:19:45,090 : The requirement Speed more than 0 is not satisfied. The Variables pane on the right shows a table with the following data:

| Name                   | Value              |
|------------------------|--------------------|
| Moving car {speed > 0} | Moving car@f641e0b |
| speed : Integer        | 0                  |

A yellow tooltip message at the bottom right of the simulation window states: Requirement 1 - "Speed of Moving car more than 0" is not satisfied.

Running a simulation evaluates the constraint within the requirement and color-codes it.