

Automatic Instantiation wizard

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Introduction

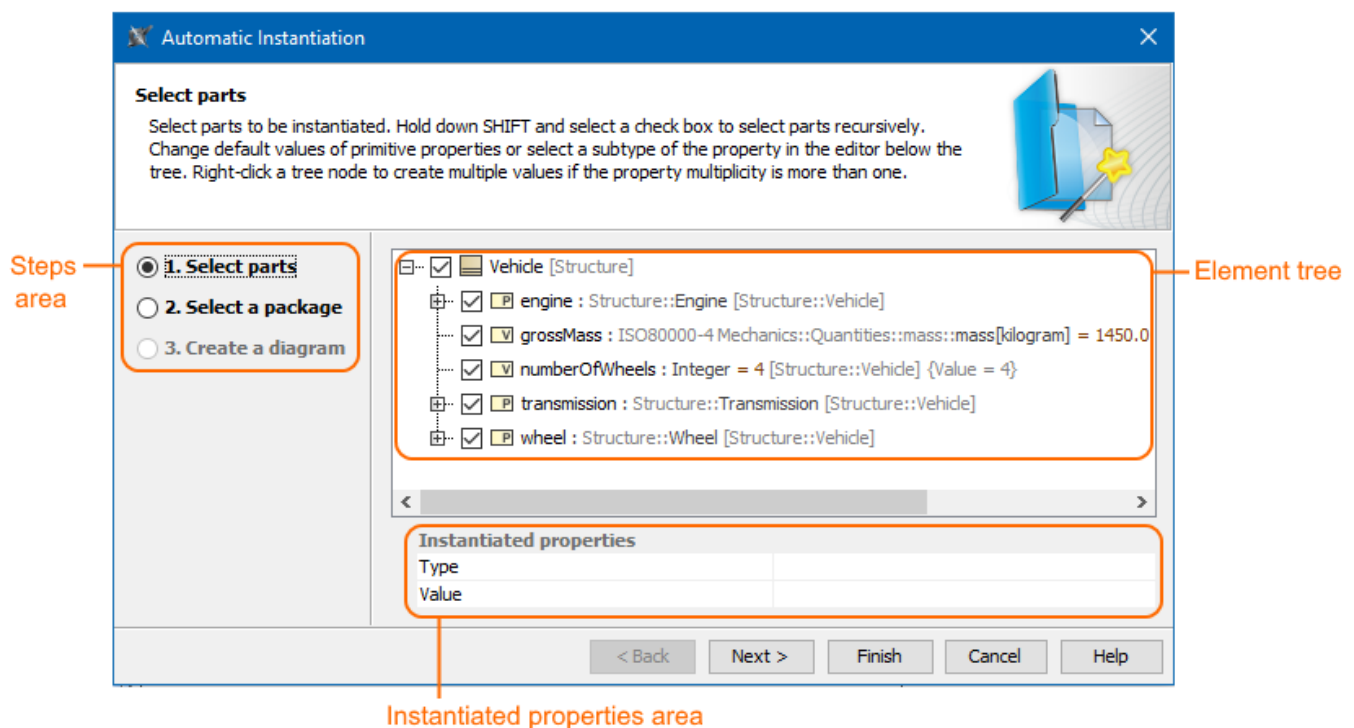
The **Automatic Instantiation** wizard analyzes the structure of a selected element and collects all available information about that element from the model (attributes, properties, and so on). It evaluates collected information and suggests all possible instances to be created.

This tool allows you to create instances of various entities with just a few clicks. It is useful for working with complex models, and for assembling large systems from parts. For properties having a multiplicity of more than 1, you can create as many instances of the same type as you need, since parallel parts can be added while creating instances. While creating instances automatically, you can:

- Select properties for which the instances will be created.
- Change types of the instantiated properties.
- Change names of the instantiated properties.
- Apply custom stereotypes to the instantiated properties.
- Assign default values for the instantiated properties.

The wizard consists of the following areas:

- **Steps area:** displays all steps of the wizard and shows the current step you are working on.
- **Element tree:** displays the entire internal structure of the selected element.
- **Selection area:** allows you to select the elements to be instantiated.
- **Instantiated properties area:** allows you to change the default values and create several different sets of instances.



The Automatic Instantiation wizard of the *Vehicle* Block with the main areas highlighted: Steps area, Element tree, Selection area, and Instantiated properties area.

Using the Automatic Instantiation wizard

To create and display instance specifications of Blocks in the diagram by using the **Automatic Instantiation** wizard

1. Select the Block for which you want to create instances.

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- The screenshot shows a UML Package Structure diagram for a vehicle. The main package is 'bdd [Package] Structure [Vehicle Structure]'. Inside this package, there is a 'Vehicle' package. The 'Vehicle' package contains several components: 'Transmission', 'Brake', 'Rotor', and 'Caliper'. The 'Transmission' package is connected to the 'Vehicle' package via a 'transmission' relationship. The 'Brake' package is connected to the 'Vehicle' package via a 'brake' relationship. The 'Rotor' and 'Caliper' packages are connected to the 'Brake' package via 'rotor' and 'caliper' relationships respectively. A context menu is open over the 'Vehicle' package, listing various actions. The 'Tools' menu item is highlighted, and a sub-menu is visible showing options like 'Create Instance...' and 'Extract Legends'.
- | Action | Shortcut |
|----------------------------------|-----------|
| Specification | Enter |
| Symbol Properties | Alt+Enter |
| Element Group | > |
| Create Diagram | |
| Select in Containment Tree | Alt+B |
| Select in Inheritance Tree | |
| Select in Structure Tree | |
| Go To | > |
| Display | > |
| Related Elements | > |
| Refactor | > |
| Tools | > |
| Edit Compartments | |
| Stereotype | |
| Simulation | > |
| Hierarchy Diagram Wizard... | |
| Create Setters/Getters... | |
| Implement/Override Operations... | |
| Create Instance... | |
| Extract Legends | |

-  If you are satisfied with the default values provided in the **Automatic Instantiation** wizard, you can finish the wizard in the first step without making any changes. The instances will be created with the default values and in your working package. To change default values or create

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- The screenshot shows the SysML editor interface. On the left, the 'Model' tree displays the hierarchy of the vehicle model. The 'Instance of the vehicle' block is highlighted. The main area shows the SysML Block Definition Diagram (SysML BDD) for the vehicle. The diagram includes several blocks and their relationships:
- vehicle : Structure::Vehicle** (Root block)
 - engine = vehicle.engine
 - vehicle.engine : Structure::Engine
 - engineRPM = 0.0
 - transmission = vehicle.transmission
 - vehicle.transmission : Structure::Transmission
 - axleRPM = 30.0
 - numAxleGearTeeth = 100.0
 - numEngineGearTeeth = 50.0
 - wheel = vehicle.wheel
 - vehicle.wheel : Structure::Wheel
 - brake = vehicle.wheel.brake
 - vehicle.wheel.brake : Structure::Brake
 - caliper = vehicle.wheel.brake.caliper
 - vehicle.wheel.brake.caliper : Structure::Caliper
 - caliperFrictionForce = "140"(unit = newton)
 - diameter = "0.038"(unit = metre)
 - partNumber =
 - pressure = "7.8"(unit = megapascal)
 - springForce = "250"(unit = newton)
 - pad = vehicle.wheel.brake.pad
 - vehicle.wheel.brake.pad : Structure::Pad
 - brakeMU = 0.6
 - centerLength = 0.08(unit = metre)
 - thickness = 0.01(unit = metre)
 - width = 0.038(unit = metre)
 - rotor = vehicle.wheel.brake.rotor
 - vehicle.wheel.brake.rotor : Structure::Rotor
 - outerDiameter = "0.25"(unit = metre)
 - tire = vehicle.wheel.tire
 - vehicle.wheel.tire : Structure::Tire
 - diameter = 16.0
 - tireMU = "0.9"

The Block Definition Diagram with instances of the vehicle Block is created by using the Automatic Instantiation wizard.

Related pages

- [Steps of the Automatic Instantiation wizard](#)

Sample model

The model used in the figures of this page is the **VehicleStructure** sample model. To open this sample, download [VehicleStructure.mdzip](#).