

2021x Refresh2 Version News

SysML Plugin

Released on: December 3, 2021

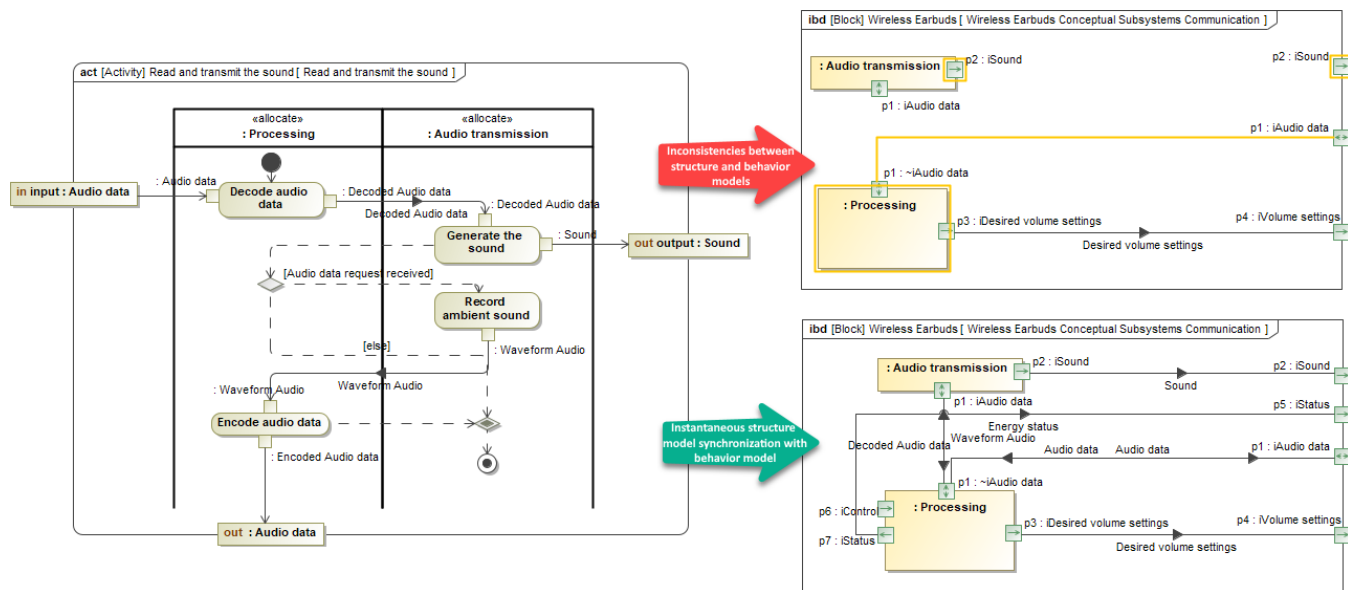
In this release, the Behavior-to-Structure Synchronization has undergone further improvements and now allows to completely synchronize the entire structure model with the behavior model. Additionally, the Requirements verification can now be performed directly in the Requirement Table. Moreover, the enhancements for Modelica allow importing Modelica files as well as extending the model generated as a Modelica code, using a Comment element with the «ModelicaExtension» stereotype.

To download the latest version, see [Downloading installation files](#). Don't forget to give us your feedback on [LinkedIn](#), [Twitter](#), or [Facebook](#). For further information, see the product [documentation](#).

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Behavior-to-Structure Synchronization

The Behavior-to-Structure Synchronization has undergone further improvements to enable you to completely synchronize the entire structure model with the behavior model. First, the set of validation rules has been extended by introducing the brand new validation rules for the detection of missing Connectors and Item Flows. That is not all! You can now automatically build the structure model according to defined Activities and, at the same time, generate an Internal Block Diagram by executing a single-click command.



Checking the consistency of the Internal Block Diagram with Activities and then handling detected inconsistencies using solvers.

[Learn more about behavior to structure synhronization>>](#)

Requirements Verification in Table

The Requirements verification can now be performed directly in the Requirement Table. The analysis is carried out by evaluating whether the value of the property satisfying the Requirement is within a range of lower and upper bounds extracted from the Requirement text. Additionally, the automatically calculated margin value helps to determine how close the system model is to fulfilling Requirements.

Criteria						
Scope (optional):		SUV_REGULAR Requirements		Context (optional):		SUV_REGULAR
Requirement Verification: ☐ Pass ☐ Fail						
#	△ Name	Text	Property	Bounds	Value	Margin
1	1 SUV_REGULAR Requirements					
2	1.1 Spring Coils	Spring shall have <u>less than 8</u> coils.	suspension.spring.coils : Real	<8	7	1
3	1.2 Spring Deflection Distance	Spring shall have <u>not more than 108</u> -mm deflection distance.	suspension.spring.deflectionDistance : diameter[metre]	<=108	132	-24
4	1.3 Spring Free Length	The spring shall <u>have a free length of 200</u> mm.	suspension.spring.freeLength : distance[millimetre]	=200	160	-40
5	1.4 Spring Outer Diameter	The diameter shall be <u>less than 105 mm and more than 95</u> mm.	suspension.spring.outerDiameter : diameter[millimetre]	(95;105)	85	-10
6	1.5 Shock Absorber Length	Overall shock absorber length shall be at <u>maximum of 600</u> .	suspension.shockAbsorber.length : distance[millimetre]	<=600	450	150
7	1.6 Shock Absorber Weight	Shock absorber shall weight <u>not more than 4</u> kg.	suspension.shockAbsorber.weight : mass[kilogram]	<=4	3	1
8	1.7 Tire Diameter	The tires shall <u>have 18</u> -inch rolling diameter.	suspension.wheel.tire.diameter : Integer	=18	17	-1
9	1.8 Tire Height	The tire height shall be <u>not less than 45 and not more than 60</u> .	suspension.wheel.tire.height : distance[millimetre]	[45;60]	50	5
10	1.9 Tire Width	The tire width shall be <u>between 205 and 270</u> millimeters.	suspension.wheel.tire.width : distance[millimetre]	[205;270]	185	-20
11	1.10 Rim Diameter	The rim diameter shall be <u>equal to 17</u> inch.	suspension.wheel.rim.diameter : length[inch]	=17	17	0
12	1.11 Rim ET	The rim shall <u>have ET of 10</u> .	suspension.wheel.rim.ET : Real	=10	9	-1
13	1.12 Rotor Diameter	The brake rotors shall <u>not exceed 0.28</u> meter diameter.	brake.rotor.rotorOuterDiameter : diameter[millimetre]	<=0.28	0.29	-0.01
14	1.13 Pad Center Length	The Pad Center Length shall be <u>between 0.075 and 0.14</u> meters.	brake.pad.padLength : length[metre]	[0.075;0.14]	0.15	-0.01
15	1.14 Brake Pad Life	Brake pads shall have a projected life of <u>at least 57500</u> km.	brake.pad.padLifeSpan : distance[kilometre]	>=57500	90000	32500
16	1.15 Pad Width	The Pad width shall be <u>more than or equals 45e-3 and less than 65e-3</u> meters.	brake.pad.padWidth : diameter[metre]	(0.045;0.065)	0.042	-0.003

Performing the Requirements verification analysis in the Requirement Table.

[Learn more about Requirements verification>>](#)

Modelica Enhancements

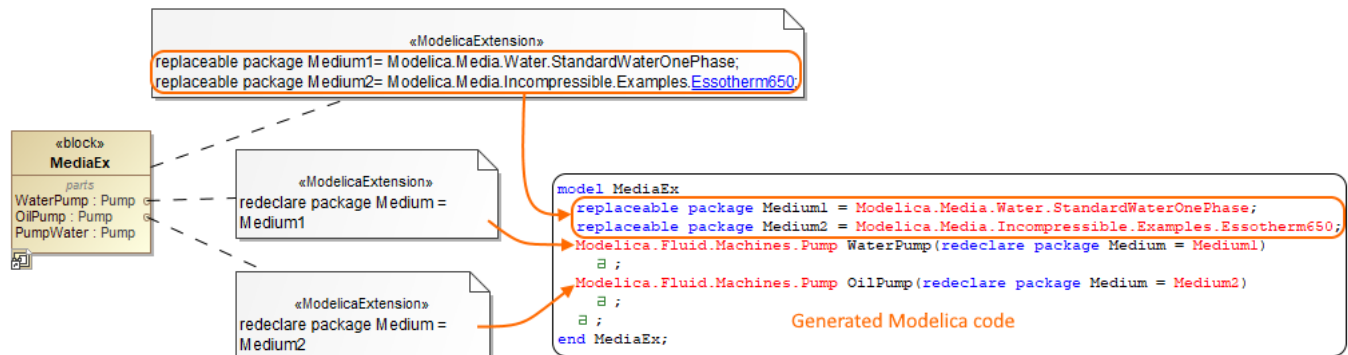
Importing from Modelica file

In this version, the Modelica import was enhanced. Previously, only Modelica Library import was available. Now you can import the Modelica file (*.mo) content into the single selected Block of your SysML model. During the import, context-specific initial values can be updated or missing classifiers can be created. Furthermore, connector, property, and port changes are also supported.

[Learn more about Modelica import >>](#)

Extending models with Comments

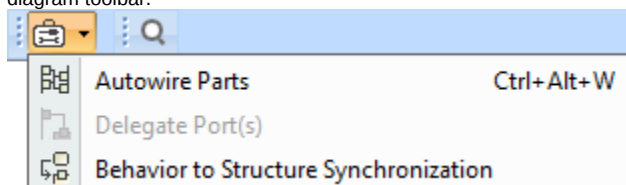
You can extend the model generated as a Modelica code, using a Comment element with the «ModelicaExtension» stereotype. The Modelica Extension content is exported to the Modelica file together with the model. As a result, the code is generated depending on where the Comment is attached.



[Learn more about extending the model >>](#)

Other Enhancements

- The Autowiring command was renamed Autowire Parts. You can find this command in the IBD diagram toolbar, Tools menu.
- The **Autowire Parts**, **Delegate Port(s)**, and **Behavior to Structure Synchronization** commands have been grouped under Tools in the diagram toolbar.



- You can now easily check if the Item Flow realized by the Object Flow is compatible with Pin types in a SysML Activity Diagram.

- You can now easily check the sent Signal compatibility with the Proxy Port specified in the **On Port** property of the Send Signal action or the compatibility of the accepted Signal with the Proxy Port specified in the **Port** property of the Accept Event action in a SysML Activity Diagram.