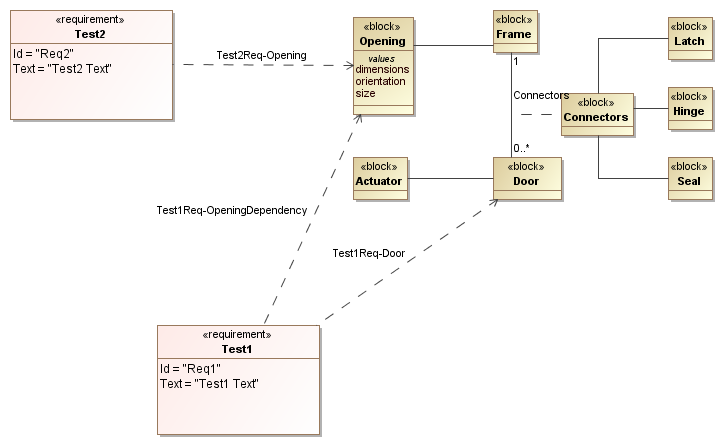
Patterns for Mapping Requirements and Reference Architecture to AMIL

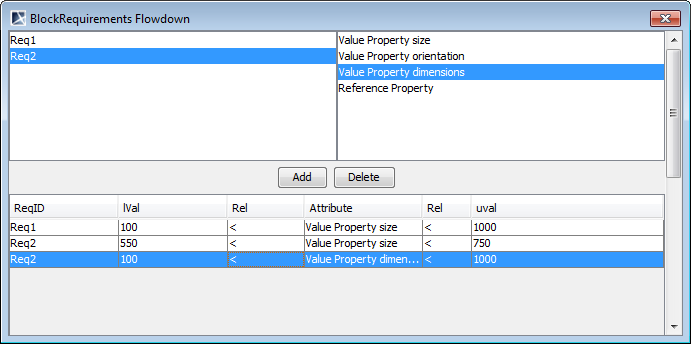
Requirements are mapped onto SysML blocks in the reference architecture. Depending on the type of requirements, many of these requirements will map down to desired values or ranges of values of the properties of the blocks.



While the <<requirements>> can be mapped directly to the property, in MD at least, this use of SysML can lead to some unruly and unmaintainable diagrams and models. A <<requirement>> may affect more than one property of the block, and multiple <<requirements>> may place constraints on the values of the same property.

To handle this, a prototype dialog box, implemented in the MD plug-in, is used to manage the requirements mapped onto a block and the properties they affect.

The screen shot below shows the dialog box for the Opening block, with <<requirements>> Req1 and Req2 placing constraints on the size property. The prototype captures ranges of values, in the form lVal < property < uVal. This can change to deal with other syntax, tolerances, or more general expressions as we evolve the solution.



This information should be reflected in the AMIL graph. Below is a proposed pattern for mapping this example into AMIL.



Blocks, properties, and requirements are each mapped to their own AMIL node. The arc from block to property represents containment. Attributes of the property, such as type, description etc., are not shown. The block would also have additional attributes that are not shown.

The arcs from requirements to property represent the constraints or desired values of the property, and the range expression is mapped to attributes of the arc. Here, the lVal and uVal ranges are included on the arcs.