Decomposing Blocks

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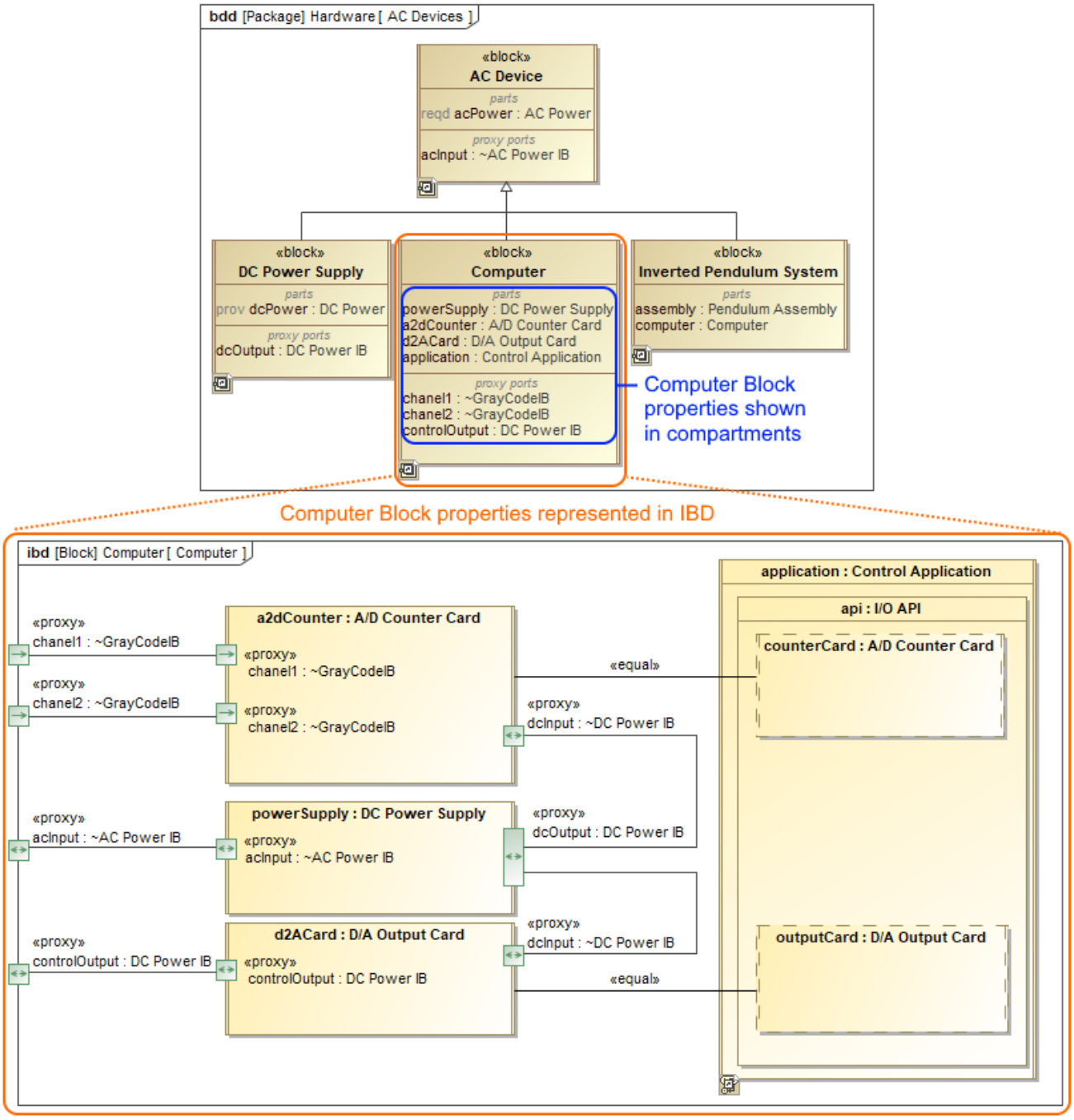
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Introduction

You can decompose Blocks by defining their specific features with properties. Block properties are used to capture the structural relationships and values of a Block. After the Blocks are defined in the SysML Block Definition Diagram, you can decompose each Block into:

- Structural properties:
  - Part Properties.
  - Reference Properties.
  - Value Properties.
  - Constraint Properties.
  - Ports (Flow Ports, Full Ports, Proxy Ports).
  - Flow Properties.
- Behavioral properties:
  - Operations.
  - Receptions.

In the figure below, you can see the *Computer* Block decomposed into four Part Properties and three Proxy Ports. This decomposition can be shown directly in Block compartments (highlighted in blue), or can be represented in the SysML Internal Block Diagram (highlighted in orange).



The Computer Block decomposition and its representation in SysML Internal Block Diagram.

Creating and managing Block properties

You can create and manage Block properties by using smart manipulator or Specification window. How to create and manage Block properties >>

Creating SysML Internal Block Diagram

The Block properties are represented in the SysML Internal Block Diagram. You can create this diagram directly for the selected Block shape. How to create SysML Internal Block diagram for a Block >>

If selected Block already has properties, the opened Display Parts/Ports dialog allows you to select which of properties you want to represent.

The SysML Internal Block Diagram can also be created in many other ways as described in the Creating diagrams page.

Representing Block Properties in SysML Internal Block Diagram

You can represent Block properties in the SysML Internal Block Diagram in by using the **Display Parts/Ports** dialog, diagram toolbar, the shortcut menu, smart manipulator, drag-and-drop operation. All of those ways are described in the Displaying parts and ports page.

If you displayed nested properties, you can select their representation way. You can represent nested properties by displaying the property shape inside another property shape or by using dot notation. The detailed procedures how to work with property path notation, read in the Property path notation page.

If properties have their own SysML Internal Block Diagrams, you can represent their internal structures inside shapes. How to display internal structures on structured classifiers >>

Selecting property types

The structural Block properties must have a type that may be another Block or another concept such as integer value. How to select a property type >>

Related pages

Unknown macro: 'list-children'

Sample model

The model used in the figure of this page is the **InvertedPendulum** sam ple model. To open this sample do one of the following:

- Download *InvertedPendulum.mdzip.*
- Find in modeling tool *<modeling tool installation directory>\samples\SysML\Inverted Pendulum\Inverted Pendulum.mdzip.*