

Rollup Pattern simulation

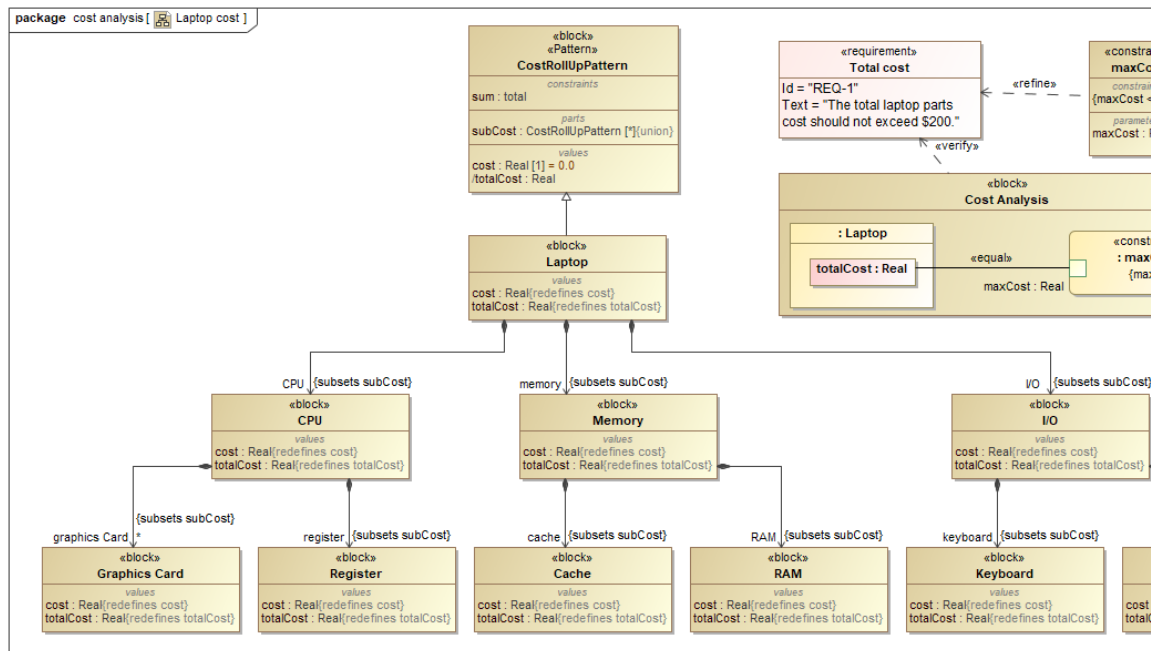
On this page

- [Simulation with a built-in rollup pattern](#)
- [Simulation with a custom rollup pattern](#)

Cameo Simulation Toolkit supports rollup calculations of total mass, cost, power, and another system dimension, based on individual values of all the parts in the model. Please refer to [Rollup Pattern Wizard](#), [applying Rollup Pattern Blocks](#), and **LaptopCostAnalysis** and **SpacecraftMassRollup** built-in samples for more details.

Simulation with a built-in rollup pattern

The **LaptopCostAnalysis** sample applies built-in **CostRollUpPattern**. The sample uses the **Cost Analysis** Block with the **Laptop** context Block as the Part. Optionally, you can add any constraint (*maxCost*) and Requirement (*Total cost*) and use a Parametric diagram to connect them as shown in the figure below.



The Cost Analysis Block containing the Laptop context Block applied with built-in CostRollUpPattern as the Part.

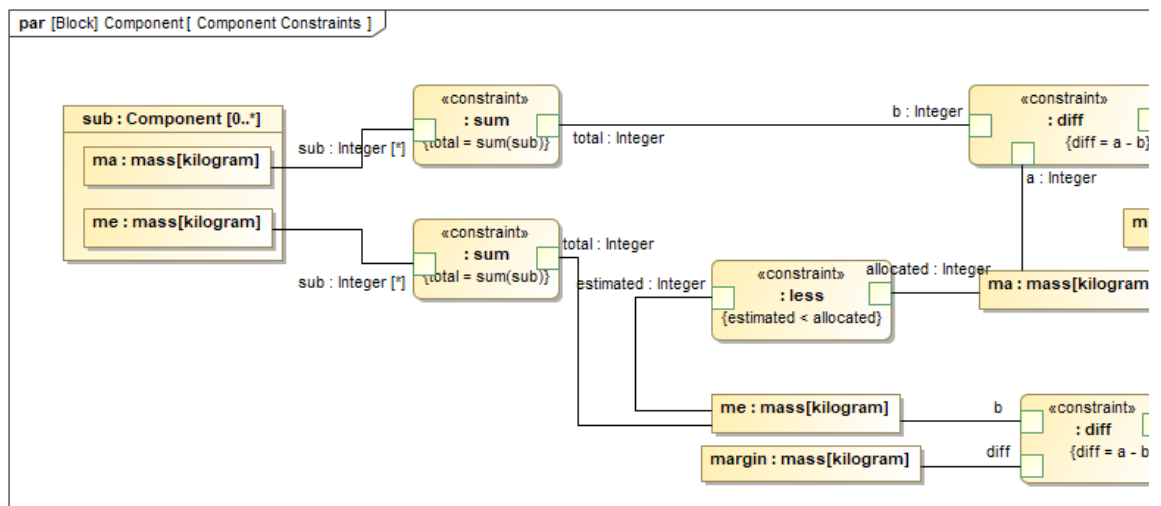
You can also either run the simulation through the **Cost Analysis** Block directly or use a [SimulationConfig](#) with `executionTarget = the Cost Analysis Block`. The result will be shown in the **totalCost** context Block, e.g., 220 (80+50+90) as shown in the figure below.

Simulation		Results	
Simulation Variables Sessions Console Breakpoints		Criteria Classifier: CostRollUpPattern Scope (optional)	
Name	Value	#	Name
Cost Analysis	analysis : Cost Analysis@5e19af...	1	analysis
Laptop	laptop : Laptop@6b314543	2	laptop
cost : Real	0.0000	3	io
totalCost : Real	220.0000	4	keyboard
CPU : CPU {subsets subCost}	cpu : CPU@21080ae8	5	touchpad
cost : Real	80.0000	6	memory
totalCost : Real	80.0000	7	ram
gcard : Graphics Card [*] {subsets subC...	register : Register@4e3100db	8	cache
register : Register {subsets subCost}	io : I/O@7e981cf6	9	cpu
I/O : I/O {subsets subCost}	0.0000	10	register
cost : Real	50.0000	11	gcard
totalCost : Real	50.0000		
keyboard : Keyboard {subsets subCost}	keyboard : Keyboard@281fc64f		
touchpad : Touchpad {subsets subCost}	touchpad : Touchpad@a9b895		
cost : Real	50.0000		
totalCost : Real	50.0000		
memory : Memory {subsets subCost}	memory : Memory@4b9179d9		
cost : Real	50.0000		
totalCost : Real	90.0000		
cache : Cache {subsets subCost}	cache : Cache@5b4f2e96		
RAM : RAM {subsets subCost}	ram : RAM@213e1de		
cost : Real	40.0000		
totalCost : Real	40.0000		

The totalCost context Block as the result of Laptop cost analysis applied with CostRollUpPattern.

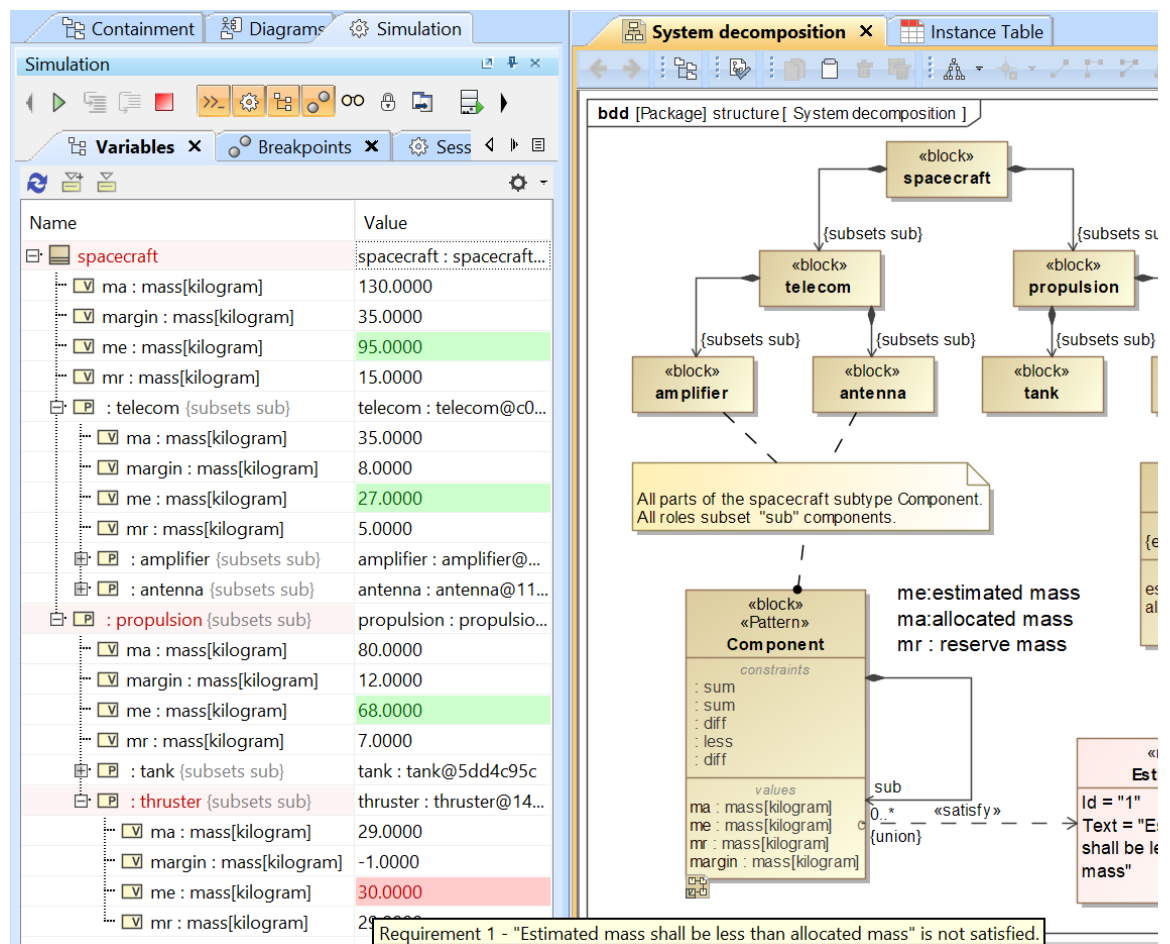
Simulation with a custom rollup pattern

The **SpacecraftMassRollup** sample applies a custom rollup pattern through the same [applying Rollup Pattern Block](#) like the built-in one but requires selecting a Pattern Block for the custom rollup pattern, e.g., **Component**. The **Component** Pattern Block uses value type properties binding with 5 constraint properties in the Parametric diagram as shown below.



A Parametric diagram of the Component custom rollup pattern as a Pattern Block.

Optionally, you can add any constraint (*less*) and Requirement (*Estimated mass*), and then run the *spacecraft mass analysis* [SimulationConfig](#) with the *executionTarget* as an instance of the spacecraft to run. The result of evaluation, according to the *me < ma* rule, will be highlighted at *me : mass[kilogram]* for each component shown on the right side in the Block Definition diagram as shown below.



The evaluation result (me : mass[kilogram]) of the SpacecraftMassRollup sample applied with the Component custom rollup pattern.