Simulation of SysML models

Cameo Simulation Toolkit supports Functional Mockup Interface (FMI) version 1.0. FMI is a standard that supports model exchange and co-simulation of models. A component which implements FMI is called FMU (Functional Mockup Unit). An FMU is a zipped file containing an XML description file and an implementation in source of binary form that executes the equation that represents the component Behavior.

Cameo Simulation Toolkit is capable to read FMU files. Before simulating FMU blocks that are in the FMU file (FMU blocks apply the *<<FMU>> stereotype* thus are recognizable), you have to be sure of the following

- The FMU file and the project you are working on (in which you want to simulate the FMU blocks) are in the same directory folder.
- The FMU file supports the platform you are using because Cameo Simulation Toolkit does not support cross-platform execution of FMU files. You can see all supported platforms in the **Binaries** folder of the FMU file. If the platform you are using is not in the Binaries folder, it is not supported.
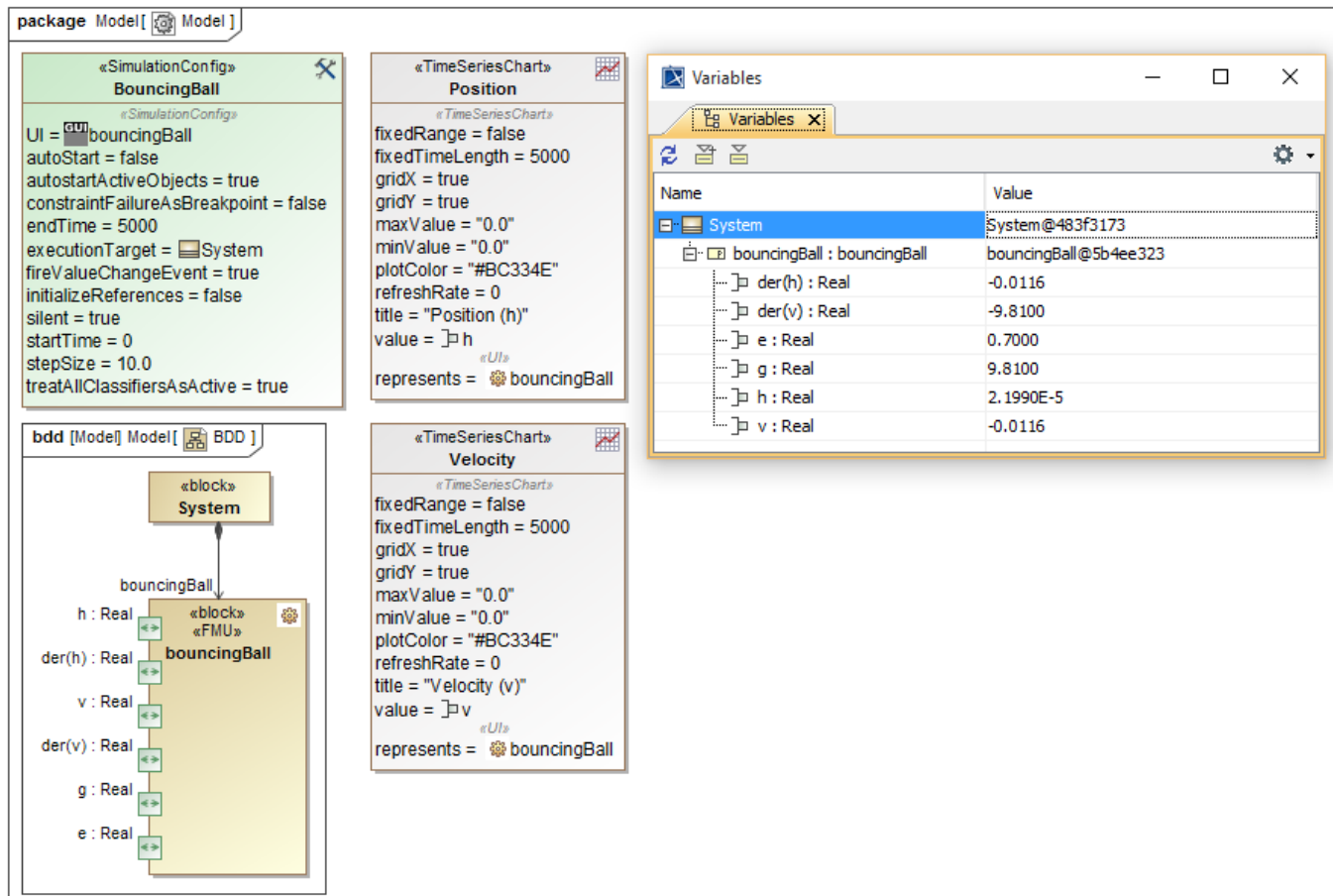
In order to co-simulate FMU blocks represented in SysML models, you need to have

- a config that specifies the start time, end time, and either step size or number of steps properties.
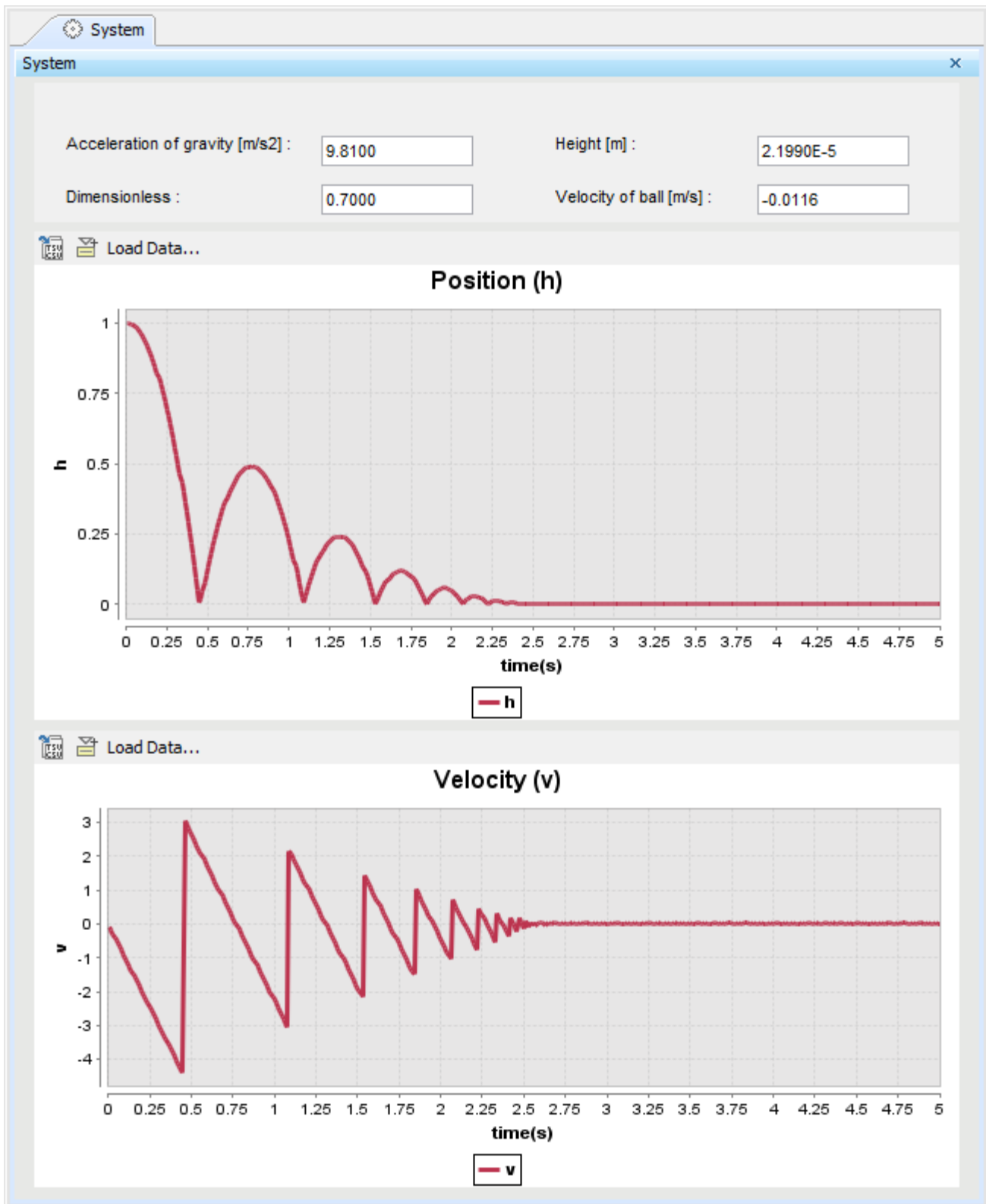
You can click and drag the FMU file to your project to simulate it. When simulating the FMU blocks, Cameo Simulation Toolkit does the following

- Runs the config and increase time.
- With each increment, it calls doStep() to every FMU block.
- Once Cameo Simulation Toolkit completes the steps, it updates the runtime variables from the FMU outputs.
- Repeats the steps until it reaches the end time.

An example of FMU blocks simulation is shown as follows

A Functional Mockup Unit blocks simulation.

System   ×

Acceleration of gravity [m/s2] :   9.8100   Height [m] :   2.1990E-5

Dimensionless :   0.7000   Velocity of ball [m/s] :   -0.0116

Load Data...

Position (h)

h

time(s)

— h

Load Data...

Velocity (v)

v

time(s)

— v

Simulation of a Time Series chart.