SIEMENS
Ingenuity for life

# Simcenter 3D Motion Systems and Controls

**Benefits**

- Reduce risk during mechatronics system design and gain engineering insight by correctly simulating the combined system
- Design accurate and robust actuators and controllers
- Virtually test closed-loop driving maneuvers for vehicle ride, handling and durability studies


**Summary**

The Simcenter™ 3D Motion Systems and Controls software module provides interfaces to MATLAB®/Simulink® for the dynamic simulation of mechatronic systems.

Simcenter 3D Motion Systems and Controls uses a coupled method to solve the mechanical system equations simultaneously with the controller or actuator system equations. The results (including 3D animation) are available for inspection both in Simcenter 3D as well as in the control and actuator simulation tools.


**MATLAB/Simulink Interface**

Simcenter 3D Motion Systems and Controls easily integrates with MATLAB/Simulink for simulation of full, nonlinear mechanical systems, including controls.

The software enables two types of co-simulation with MATLAB/Simulink:

- Using the Simcenter 3D Motion Solver as master. This leverages the backward difference formula (BDF) integrator solver scheme to solve the mechanical equations
- Using MATLAB/Simulink as master program to integrate the combined equations

In the latter case, the Simcenter 3D model can be represented as a MATLAB S-function. It provides the physical information on masses, inertia and joints, as well as the geometry for animation. Up to two MATLAB S-functions can be added, referencing different motion models.

The result of the co-simulation can be used for interactive 3D animation of controlled mechanical systems when verifying controls design. The process is very streamlined, enabling effective what-if analysis.

Results for both Simcenter 3D Motion Systems and Controls and MATLAB/Simulink are produced in their native formats so you can review them as if they were run independently.

# Simcenter 3D Motion Systems and Controls

**Prerequisites**
The Simcenter 3D Motion Systems and Controls is an add-on module within the Simcenter 3D suite.

It requires a license of Simcenter 3D Motion Modelling and Simcenter 3D Motion Solver as a prerequisite.

**Supported hardware and operating systems**
All standard hardware/OS platforms are supported (including Windows®, Linux® and selected 64-bit platforms). Contact Siemens PLM Software for any other hardware/OS support requests.

**Siemens PLM Software**
**www.siemens.com/plm**

Americas +1 314 264 8499
Europe +44 (0) 1276 413200
Asia-Pacific +852 2230 3308

© 2016 Siemens Product Lifecycle Management Software Inc. Siemens and the Siemens logo are registered trademarks of Siemens AG. Simcenter is a trademark or registered trademark of Siemens Industry Software NV or any of its affiliates. All other trademarks, registered trademarks or service marks belong to their respective holders.
58460-A7 1/17 P