



SimVehicleLT™ is a high-fidelity, multibody, real time vehicle dynamics model.

SimVehicleLT can represent a variety of four-wheel vehicles. Selectable input data files are the key to how SimVehicleLT represents multiple vehicle models. You can edit each data file to develop new vehicle models. We've developed a GUI editing system, using .NET technology and an excel spreadsheet to make it a snap for you to create the models you need. SimVehicleLT can be used in both operator-in-the-loop and hardware-in-the-loop simulators.

SimVehicleLT is made up of models of the four corners of the vehicle that are coupled with a 6DOF Body component. This includes the Newton-Euler equations of motion. A powertrain model calculates the torques at the wheels based on brake pedal, gear, and accelerator pedal inputs.

High Fidelity Model

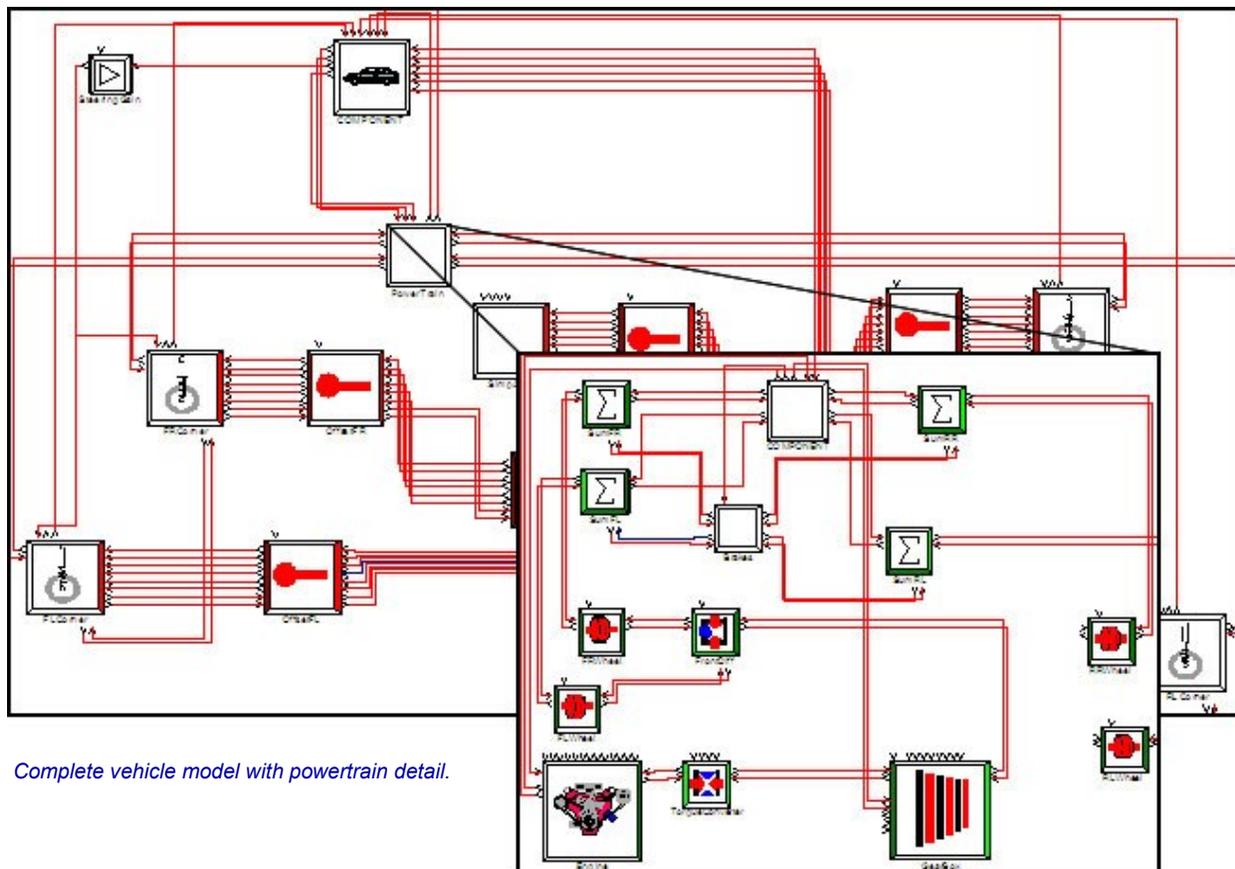
Each vehicle corner component takes into account spring and damping rates, bump stops, anti-sway bars, anti-squat anti-dive geometry, and roll axis height. The unsprung mass is modeled

Benefits

- Test vehicle designs before performing costly prototyping.
- Evaluate ECU hardware design using hardware-in-the-loop simulation.
- Develop control strategies in a flexible software environment.
- Perform operator-in-the-loop testing using a robust vehicle model.

as a separate body connected by a prismatic joint to the base body. In addition, we use a Magic Formula tire model to predict the tire forces at each wheel.

The powertrain model contains complete engine, transfer case, differential, and torque converter models. The engine model is based on a torque lookup map. You can specify parameters such as torque converter efficiency, shiftmaps, and gear ratios in the SimCreator data file. You can also incorporate lockup transfer cases and differentials. The brake model includes models of the master cylinder, prop valves, wheel cylinders, pad friction, and rotor and wheel diameters.



Complete vehicle model with powertrain detail.

SimVehicleLT™

another SimCreator[®] product

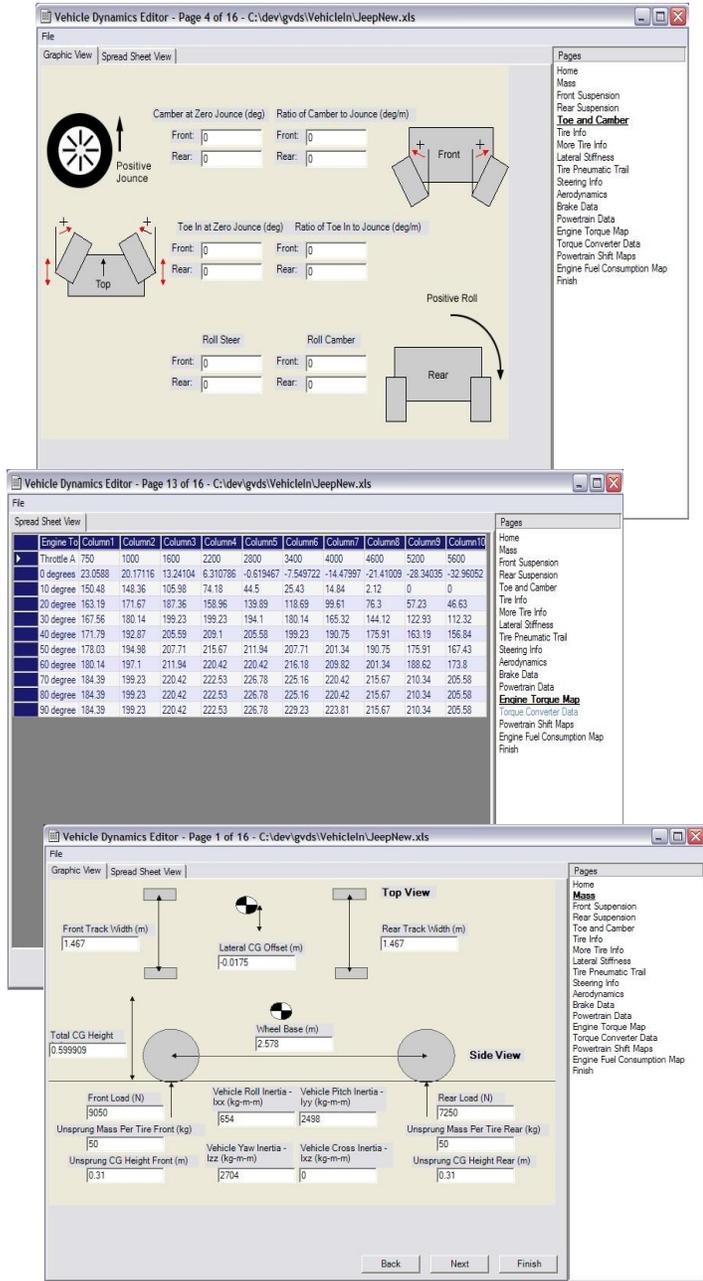
SimVehicleLT was developed with SimCreator using its C Code generation features. SimVehicle uses all of SimCreator's real time features, giving SimVehicleLT:

- Error exception handling with the capability to reset the SimVehicleLT simulation.
- Real time external monitoring of all vehicle dynamics output.
- External control of all unconnected simulation input.
- Variable step size integration.
- Optional integration method selection.

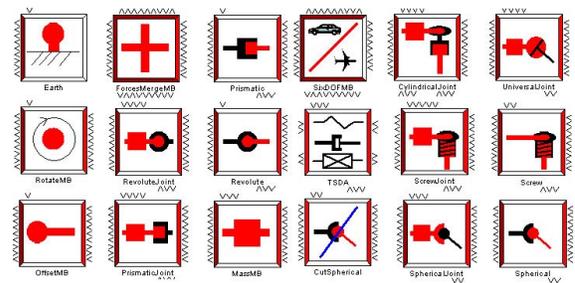
SimVehicleLT has been compiled for embedded applications using SimCreator's code generation facilities. In addition SimVehicleLT can be rapidly reconfigured using the SimCreator GUI.

To support development using SimVehicleLT, RTI has created several component libraries that you can use to enhance SimVehicleLT's performance.

SimVehicleLT™



SimVehicleLT interface showing spreadsheet and graphical views.



Sample components from RTI's Multibody Components Library — the cornerstone of SimVehicleLT's

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Realtime Technologies, Inc. (RTI), specializes in real time multibody vehicle dynamics, and graphical simulation and modeling. We offer simulation software applications, consulting services, custom engineering, software, and hardware development. Realtime Technologies' customer base includes international, government and private entities. RTI was founded in 1998. For more information, visit us at www.simcreator.com.

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