Realtime technologies, inc
simulation vehicle dynamics human factors

Realtime Technologies' (RTI) off road simulator is built for both training and research purposes. It is completely scalable using RTI's SimCreator software. You can configure systems with up to five visual channels. Each channel can be configured as front or rear projection, head mounted displays, or CAVE Automatic Virtual Environment systems.

Six Degrees of Freedom Motion Base

Our off road simulator includes a small six-degree-of-freedom motion base. This provides important cues such as orientation on off-road terrain as well as speed and roughness information not available in fixed-base systems.

In addition, a high-fidelity control loading system provides feedback on the steering wheel that is directly coupled with the vehicle dynamics at 2000 Hz. Important factors such as power steering boost curves,

and tire aligning torque, are included in the steering model. The cab itself can be laid out to represent any number of wheeled vehicles. You can modify the steering wheel, seat, and gear shift system to represent the appropriate vehicle. We also deliver larger and more detailed cabs based on your specifications.

Multi-body Vehicle Dynamics

The multi-body vehicle dynamics model can be configured to represent a variety of vehicles including 4x4, 6x6, and 8x8 wheeled vehicle configurations. The models can be tailored to meet specific vehicle performance curves, accurately reproducing acceleration, braking, and on-grade performance.

Off Road Driving Simulator

The vehicle model 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 as a separate body connected by a prismatic joint to the base body. In addition a Magic Formula tire model is used 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. Parameters such as torque converter efficiency, shiftmaps, and gear ratios can be adjusted based on specific vehicle requirements. Lockup transfer cases and differentials can also be incorporated. The brake model includes models of the master cylinder, prop valves, wheel cylinders, pad friction, and rotor and wheel diameters.

A reconfigurable operator's console allows real-time external monitoring of all vehicle outputs and external control of the simulation using a web based operator's console. Performance metrics can be collected and vehicle performance can be modified in real time.
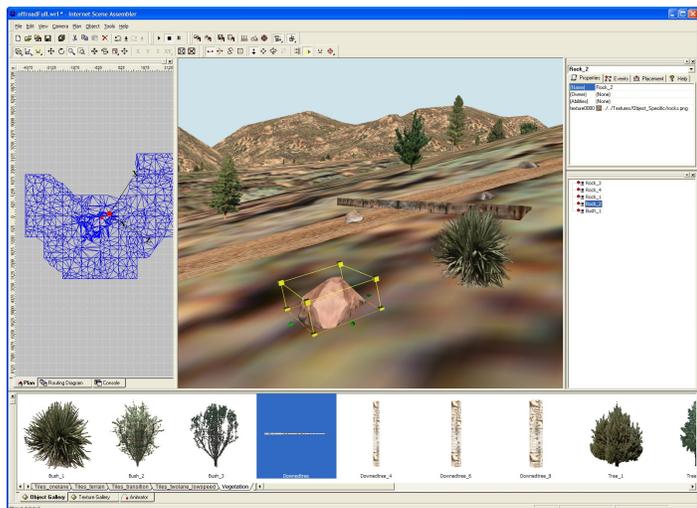
highlights

- High fidelity models for 4x4 to 8x8 vehicles.
- Easily integrated with many visual display systems such as CAVE, front or rear protection, or HMD (in stereo or mono).
- Multiple cab configurations from minimal operator controls to full vehicle body.
- Scalable motion system options.
- Multiple database capability — off road and on road.
- Scene and scenario creation tool compatible.
- Active control loading and force feedback steering.
- Compact, portable configurations.
- Flexible data collection and review

for more information contact:

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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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