Realtime
technologies

PRODUCT CATALOG

RESEARCH SIMULATION SIMPLIFIED

## COMPLETE SOLUTIONS FOR DRIVING RESEARCH

RDS SIMULATORS

Realtime Technologies' driving simulators are turn-key driving simulation platforms for research, training, or automotive product development programs.

Our modular, scalable designs allow you to add components to your existing simulator, avoiding the need to replace your entire simulator as your fidelity needs increase.

Features:

- Complete software and hardware solutions
- Real-time dynamics
- Visual systems
- Scenario authoring
- Scalable products
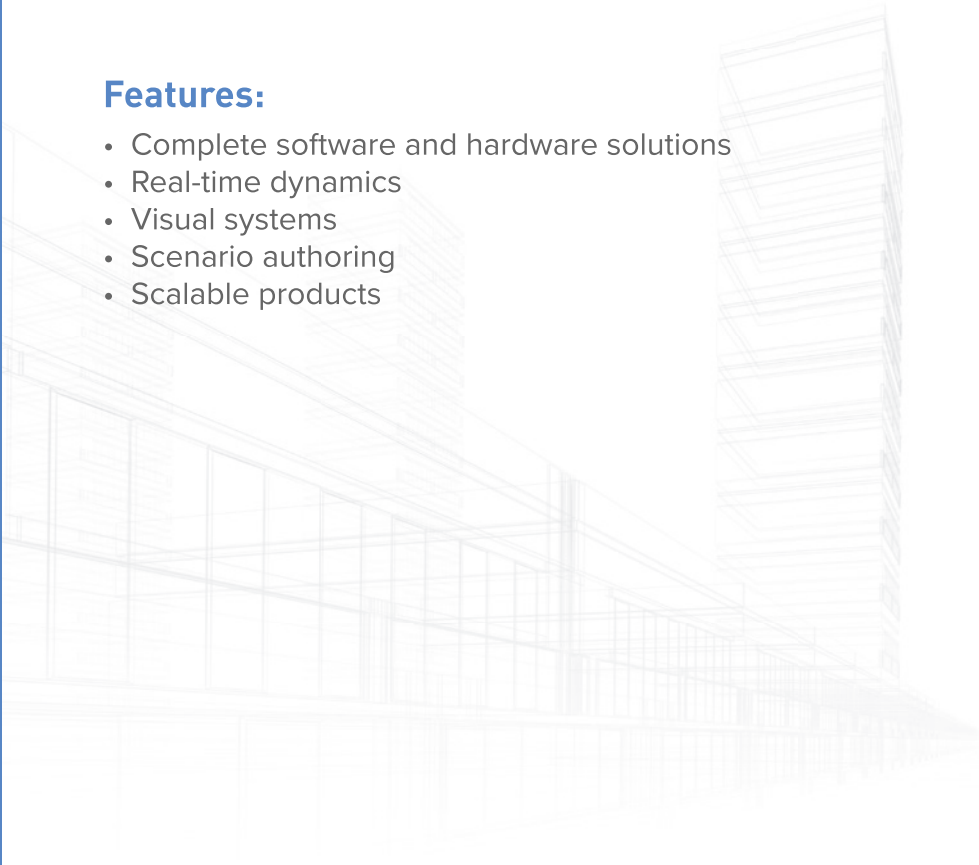
RDS-2000

RDS-1000

RDS-MODULAR

RDS-500

RDS-100

RESEARCH BIKE

CONFIGURATION SHOWN MAY VARY

Includes:

- Full or half-cab options
- High-fidelity steering subsystem
- Real brake and accelerator pedals
- Cab input/output signals from turn signals, headlights, steering wheel buttons
- Fully customizable virtual dashboard
- Fully customizable center stack touchscreen
- Three HD high-lumens projectors for 180° FOV
- LCD side mirrors embedded into a real mirror
- Host and visual channels to match the visual system
- 5.1 surround sound audio system
- Vibration transducer for road rumble feel

Options:

- Motion options in 3DOF or 6DOF
- Five HD projectors up to 270° FOV
- Curved screen upgrade
- Tablet RSCP (Remote Simulation Control Panel)

For the ultimate research driving simulation experience, step into the RDS-2000 full-size cab simulator. This full-scale cab has all the features you would find in a real vehicle. All the driving components can be linked directly to the Realtime Technologies' software providing realistic driver feedback and accurate data collection. The fully instrumented vehicle cabin allows for a more life-like experience that will, in turn, give you the data needed for your research.

RDS-1000 SINGLE SEAT

The RDS-1000 has the smallest footprint for real-vehicle equipment, including a real steering wheel with control, loaded steering, real accelerator, and brake pedals, along with a fully customizable virtual dashboard.The RDS-1000 features a quarter cab design with a standard 205-degree horizontal field of view and 38-degree vertical field of view, using 65 inch displays"

Includes:

- Open quarter-cab design
- High-fidelity steering subsystem
- Real brake and accelerator pedals
- Cab input/output signals from turn signals, headlights, steering wheel buttons
- Fully customizable virtual dashboard
- Fully customizable 11.6 inch center stack touchscreen
- Three large-panel monitors with inset mirrors
- Host and visual channels to match the visual system
- 5.1 surround sound audio system
- SUV seating height
- 4 generic physical response buttons in the center console
- Dedicated SimDriver automation button

Options:

- 3DOF motion system
- Tablet RSCP (Remote Simulation Control Panel)

Includes:

- Aluminum open structure
- High-fidelity steering subsystem
- Real brake and accelerator pedals
- Cab input/output signals from turn
   signals, to steering wheel buttons
- Fully customizable virtual dashboard
- Fully customizable center stack touchscreen
- Three HD high-lumens projectors for 180° FOV
- Three small mounted LCDs for rear-view mirrors
- Host and visual channels to match the visual system
- 5.1 surround sound audio system

Options:

- A-pillar design
- Five HD projectors up to 270° FOV
- Passenger seat
- Curved screen upgrade
- Tablet RSCP (Remote Simulation Control Panel)

The RDS-Modular Cab provides a real-life driving experience similar to the full-cab setup, but it with more flexibility when making modifications to the hardware. The hardware can be rolled in and out of the space.

RDS-500 ENTRY LEVEL

The RDS-500 is the best value in research driving simulation, utilizing the same robust software found on high-fidelity research simulators. Realtime Technologies has created a low-cost, network capable, lightweight research simulator with perpetually licensed software.

Includes:

- Operator station laptop
- High-end simulation computer
- One 55-inch HD monitor
- USB-based steering wheel and pedal set
- 5.1 surround sound audio system

Options:

- Larger steering wheel upgrade
- LCD touchscreen center stack
- LCD virtual dash
- Tablet RSCP (Remote Simulation Control Panel)
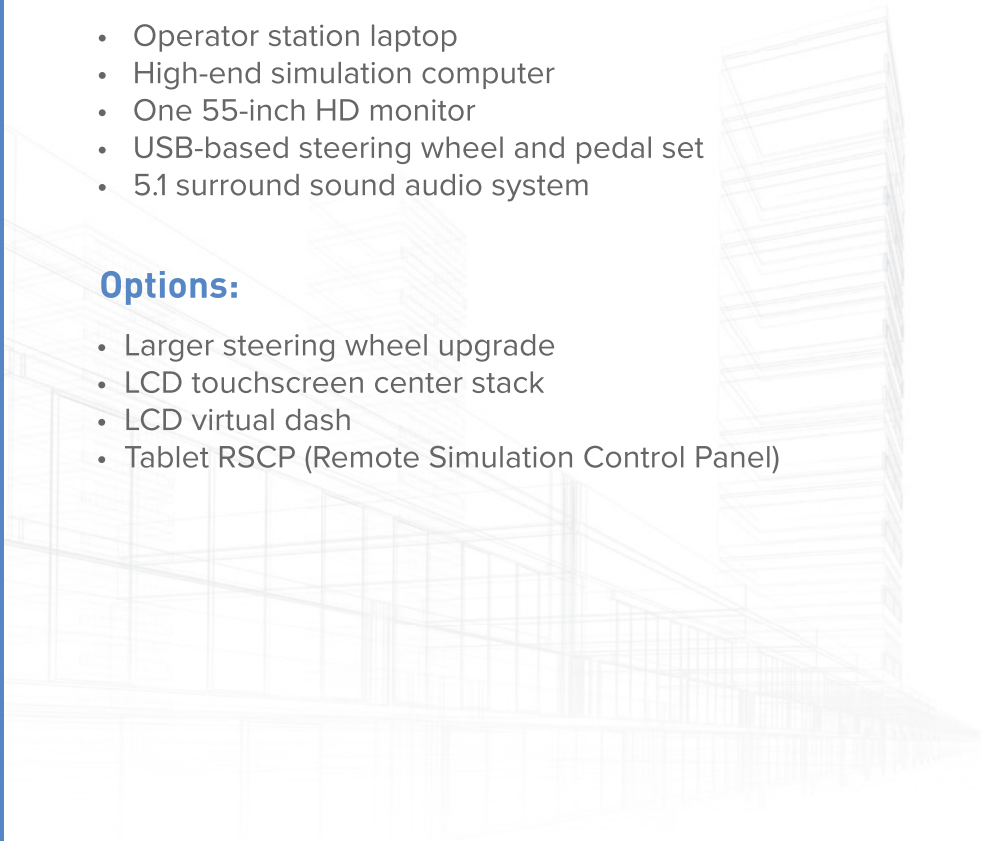
RDS-100 Includes:

- Operator station laptop
- High-end simulation computer
- Three 27-inch HD monitors up to 100° FOV
- USB-based steering wheel and pedal set
- 2.0 audio system

RDS 100 Dev Includes:

- High-end simulation computer
- One 27-inch HD monitor
- 2.0 audio system
- Mouse/keyboard

The RDS-100 Simulator brings the performance of mid-to-high-fidelity simulators into a compact lower-fidelity package. Using Realtime Technologies' core software, complex simulations run on a high-performance PC platform.

The RDS-100 Dev Simulator brings the off-line scenario editing and development capabilities to your lab. This development system will add capacity to your lab allowing the main simulator to be running studies, while others develop scenarios for later use on the larger main simulator.
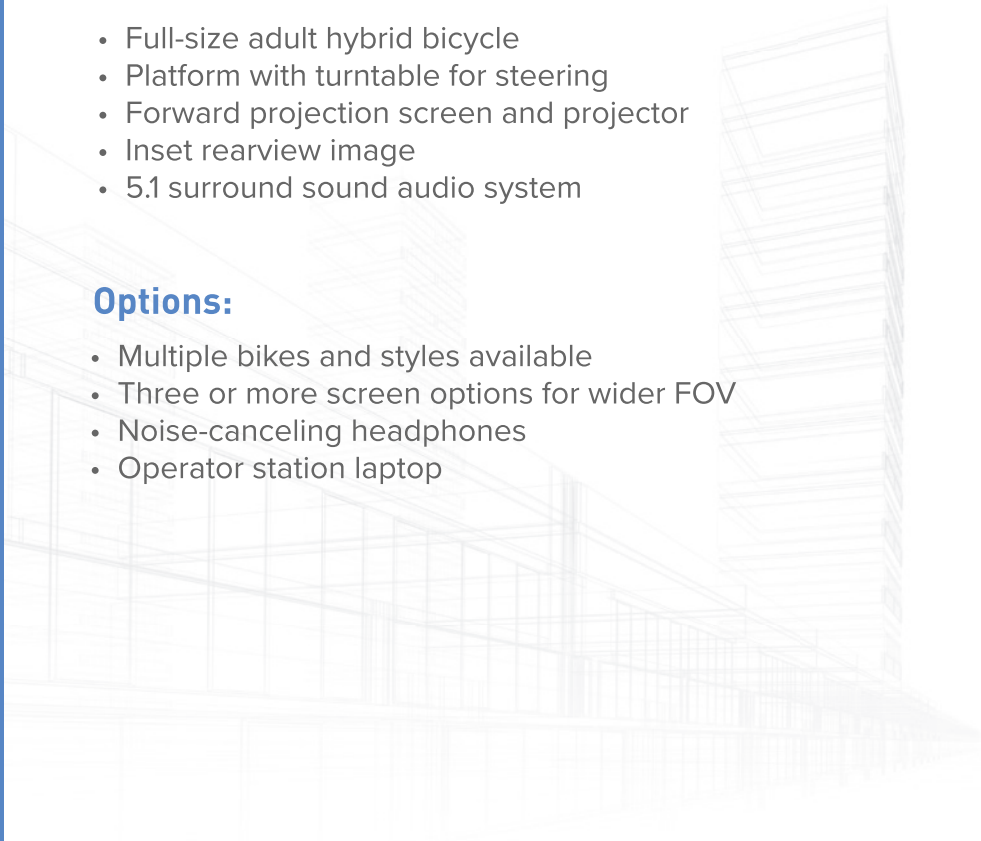
RESEARCH BIKE SIMULATOR

The research bike simulator is available as an add-on to the RDS products. A mirror will be inset onto the projector screen so the rider can see behind them. Sensors are placed at the front and rear wheels to measure wheel turning angle and speed of the rider. A constant force-resistance attachment will also be placed for rear-wheel pedal force. The short-throw front projector will be combined with one computer for SimCreator and visuals.

Includes:

- Full-size adult hybrid bicycle
- Platform with turntable for steering
- Forward projection screen and projector
- Inset rearview image
- 5.1 surround sound audio system

Options:

- Multiple bikes and styles available
- Three or more screen options for wider FOV
- Noise-canceling headphones
- Operator station laptop
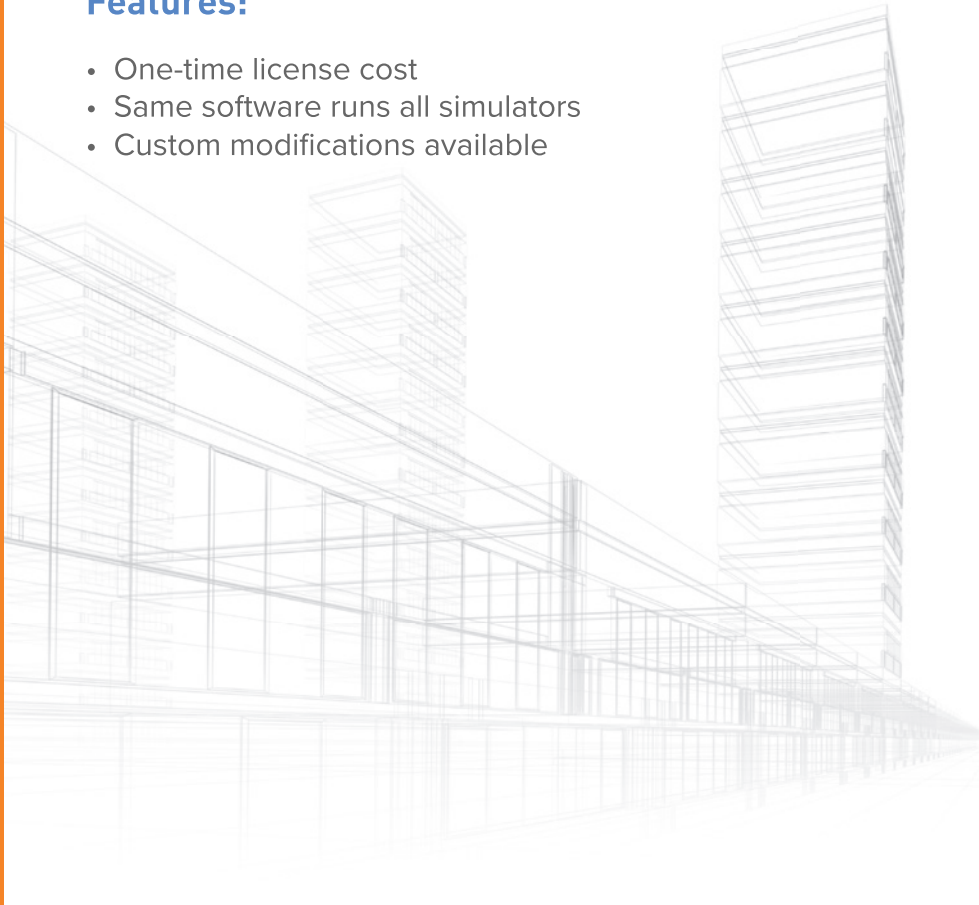
CONFIGURATION SHOWN MAY VARY

SOFTWARE

Included with simulator purchase

Regardless of which simulator you purchase, the same world-class, leading research software is included.

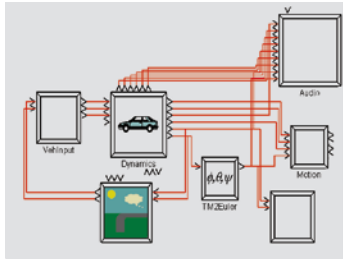SimCreator and SimCreator DX are included with all new simulator purchases.

Features:

- One-time license cost
- Same software runs all simulators
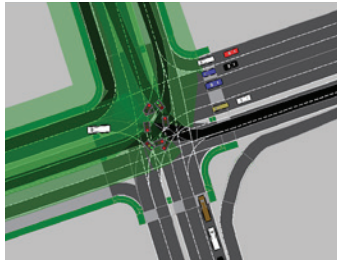- Custom modifications available

CORE

SimCreator

The core software package used to run the simulator and manage the communication between the different subsystems such as audio, visuals, motion, dynamics, steering, scenarios, etc.

ADVANCED

SimCreator DX

The next-generation user interface that allows you to create your own rapid and advanced scenario authoring, as well as advanced experimental control ability.

SIMCREATOR

Real-Time Simulation and Modeling System

SimCreator provides the core software for all of the vehicle simulators and is a high-fidelity, real-time driving simulation software. It is a Windows-based graphical modeling environment with a standard library of components for basic mathematical operations and signals.

The software manages the communications between all of the relevant subsystems, including visuals, scenario control, audio, motion, control loading, and data collection. SimCreator supports exporting models to C/C++ code and libraries for use in external code. It enables building and running models with a host and remote computer. SimCreator can run on both Windows and Linux environments.

Each complete RDS product comes bundled with Altia Design, which allows for the creation and integration of user interface components such as virtual dashed and touchscreen center stacks.
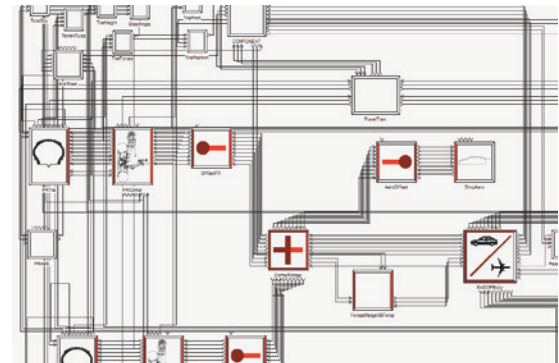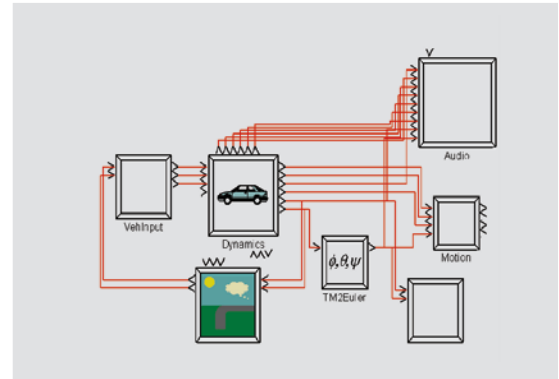
SimVehicle
High-fidelity, Multibody, Real-Time Vehicle Dynamics Model

SimVehicle is delivered with all Realtime Technologies' simulators. It contains a pre-built 4-wheeled, high-fidelity, real-time vehicle dynamic model. The included Vehicle Dynamics Editor GUI makes it easy to edit vehicle data files or to create new vehicle models. SimVehicle can be used for operator-in-the-loop or hardware-in-the-loop simulators. SimVehicle models all four corners of the vehicle, coupled with a 6-DOF body component. A powertrain model calculates the torque at the wheels, based on the brake pedal, gear, and accelerator pedal inputs. Each vehicle corner incorporates 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.

Fusion
Image Generator

FUSION is the latest image generator developed by Realtime Technologies. It features dynamics time-of-day, dynamic weather, and support for OpenFlight models. FUSION comes packaged with over 350 vehicles, animals, and pedestrians, as well as over 425 static objects. With such a wide variety of content, you will be sure to find what you need.

SimCreator DX

SimCreator DX is the next-generation user interface that allows you to create your own rapid and advanced scenario authoring, as well as advanced experimental control ability.
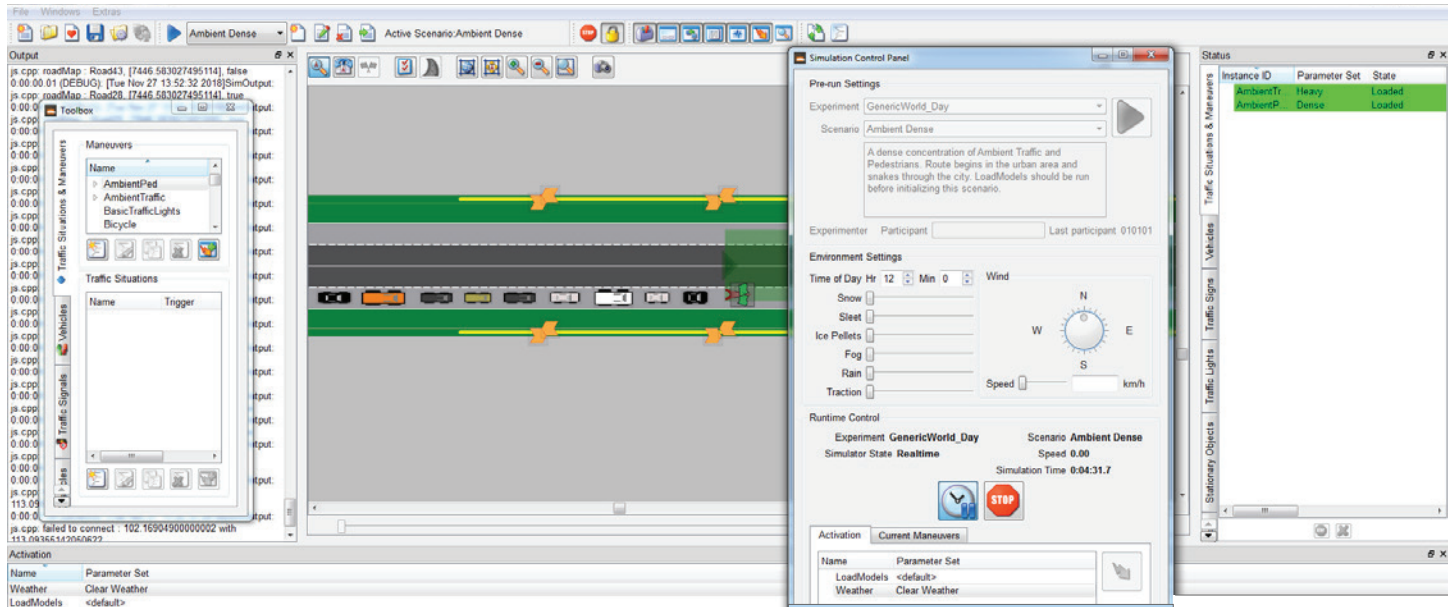
Advanced Scenario Generation

SimCreator DX is the latest generation of Realtime Technologies' scenario authoring and development software founded upon SimVista. This new graphical user interface allows researchers to develop scenarios with pre-defined configurable behaviors called maneuvers rapidly.

SimCreator DX provides various user permissions to facilitate both development and experimentation mode. Using SimCreator DX's scenario control panel, the researcher can select their experiment and run the scenarios
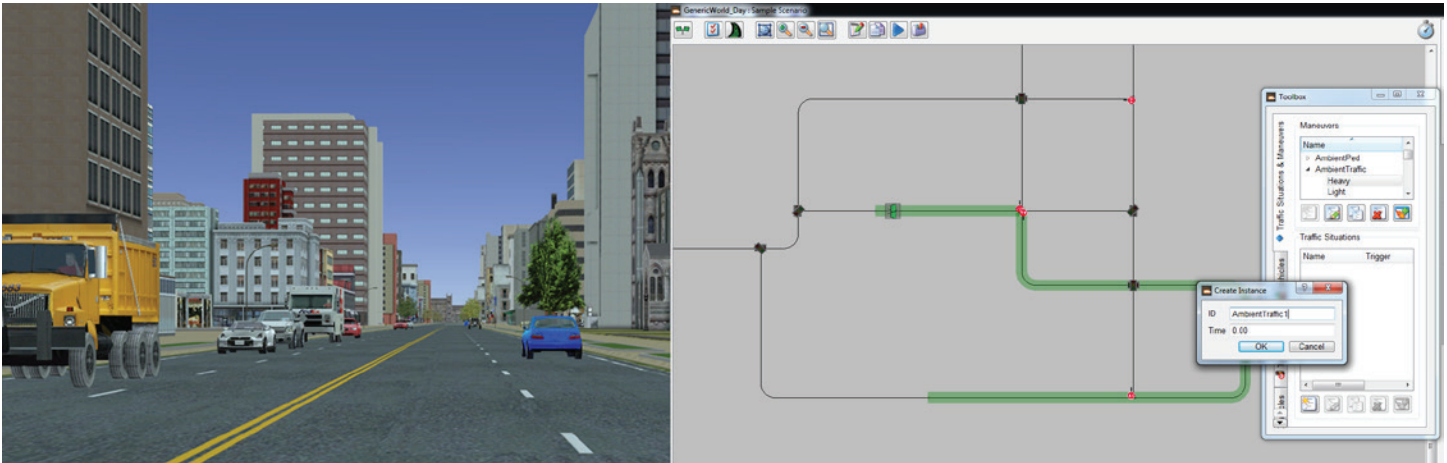
SIMCREATOR DX

## SimVista
Database Development Tool

SimVista is a tile-based database authoring tool with various geo-typical tiles that can be placed (drag and drop) to create rural, suburban, freeway, and city driving scenarios. Tile-based terrain tiles are from a library developed by Realtime Technologies that allows you to build your road network from standard tile blocks. After the road network is built, you can then add additional models into the world to create cultural features such as trees and vehicles. Once your road network and cultural features are placed, you can then add scenario behavior elements using SimCreator DX. SimVista is also delivered with a pre-built database called Generic World that includes freeway, rural, and suburban environments.
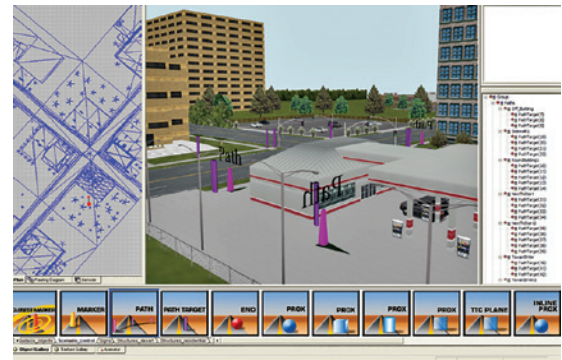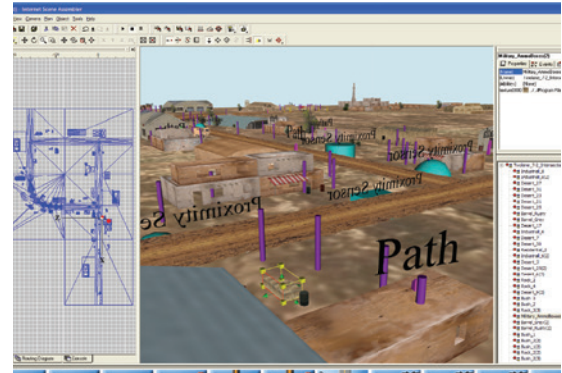
Maneuver Designer
Programmable Maneuver Generation

Maneuver Designer provides researchers with the power to program their own maneuvers in addition to the ones supplied with the SimCreator DX products. Maneuver Designer provides context help when programming, much like the features in a Microsoft Visual Studio environment. It also does some light error checking. With over 350 JavaScript scenario commands available, the possibilities are nearly endless for maneuver and scenario generation. There is a WYSIWYG interface for creating documentation so that other users can understand the intent of the maneuver.
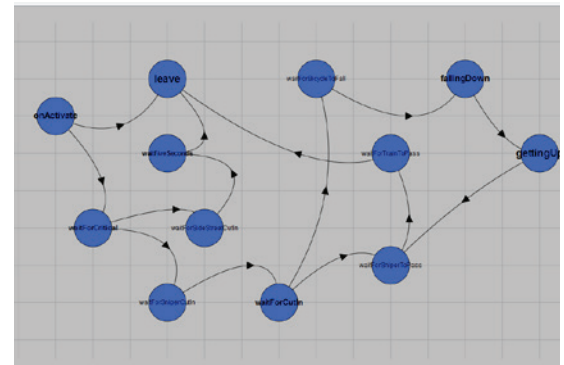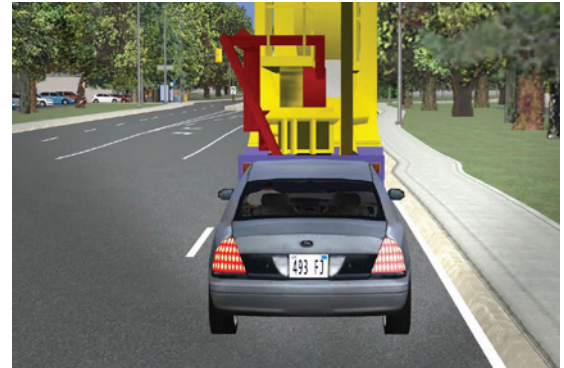
SimDriver
Autonomous Vehicle Control Solution

SimDriver is a transfer-of-vehicle-control solution used for the evaluation of human interaction with automated vehicles in both city and freeway driving environments. SimDriver enhances the understanding of this relationship, which will be vital to ensuring safe autonomous vehicles.

SimDriver can offer data that shows why drivers become distracted and how to re-engage into the task of driving smoothly. SimDriver's ability to run code through the simulator is a considerably more cost-effective and safer alternative than an expensive prototype.

SimObserver Pro
Video Capture and After Action Review System

SimObserver Pro v 4.0 comes in two options. The first option is a four-camera combination using a hardware multiplexer into one 1920×1080 (HD) video output encoded using h.264 format. The second option is a four HD camera combination using software into one 3840 x 2160 (UHD) video output encoded using h.265.

Two options available

	Full HD	Ultra HD
Video Output	1920 X 1080	3840 X 2160
HD Capture Streams	1	4
Encoding	h.264 format	h.265 format
Multiplexed	Hardware	Software
File size reduction from MPEG-2	50%	70%

TRAINING

Training can occur either at Realtime Technologies' site in Ann Arbor, Michigan, or at the customer site within the lower 48 states. Realtime Technologies will provide up to 5 training laptops during the training session. For optimal training, the number of trainees should be limited to 3-5 people.

If additional training is desired, it can be purchased at a later date. For example, if there is lab turn-over with researchers, training may be required for the new research staff.

3 day training covers the following topics:

• Basic simulator operation and "Quick-Start Guide"
• SimVista database world building
  - Basics and what is needed
  - Best design practices
• SimCreator mechanics
  - Understanding components
  - Understanding your data
• Altia Design basics within the context of SimCreator
• SimCreator DX scenario generation
  - Experiments and scenarios
  - Routes and maneuvers
  - Paths and waypoints
  - Using Maneuver Designer and JavaScript

WARRANTY/SUPPORT

SIMULATORS

The simulators provided by Realtime Technologies will come with a one-year limited hardware warranty. This warranty is limited to normal use and does not include expendables such as projector bulbs or damage caused by the customer personnel or contractors not associated with Realtime. This warranty is provided by the factory and involves free repair or replacement of parts when they are shipped to the factory.

SOFTWARE

Realtime Technologies provides software support services for all software provided and maintained by Realtime Technologies. Products include, but are not limited to, SimCreator, SimVehicle, SimVista, SimObserver Pro, SimCreator DX, Maneuver Designer, Data Distillery, SimDriver and Core Driving Simulator.

Software support services are available for purchase after the first year. Included in the software support services contract are unlimited email and phone support for software-related issues.
Phone Support Line: 248.548.4876 available from 8 am to 5 pm Monday-Friday.
Email Support: support@simcreator.com

WHY REALTIME TECHNOLOGIES

Numbers – With over 180 personnel, confidence comes from knowing that the answer resides in-house.

Innovation – An innovative culture focused on research and development.

History – Blending a hard-working mentality with the advancements in technology.

Integration – Bridge the state-of-the-art, with the art of the possible.

Knowledge – With multiple markets, we create a depth and breadth of knowledge that is unsurpassed.

Support – Unmatched customer support to troubleshoot, diagnose, and answer your questions.

Partnership – The type of relationship we forge with our customers.

JOIN THE RESEARCH

SHARE-LEARN-CONNECT

REALTIME TECHNOLOGIES SPECIALIZES IN MULTIBODY VEHICLE DYNAMICS, AND GRAPHICAL HUMAN FACTORS SIMULATION AND MODELING. WE OFFER SIMULATION SOFTWARE APPLICATIONS, CONSULTING SERVICES, CUSTOM ENGINEERING SOLUTIONS, AND SOFTWARE/HARDWARE DEVELOPMENT.

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