

A black and white photograph showing the interior of a driving simulator. A large, comfortable-looking seat is on the left. In the center, there is a steering wheel, a dashboard with a digital display, and a laptop computer mounted on a stand. The simulator is set up in a room with a large window that provides a view of a simulated city street with buildings and a car in the distance.

Essential Components to a Best-in-Class Driving Simulation System

When researching and evaluating a driving simulation system you want to make sure you choose the right investment. Many simulator products in the marketplace all offer similar features and capabilities. So how can you tell what is unique? There are seven essential components that you should consider when evaluating a best-in-class driving simulation system.



1 OmniSim™ Modular Cab Design

- **Scalable, Versatile Design** - The L3 interactive driving simulator platform is designed with scalability and versatility in mind. We understand that customers have unique requirements and demands. Those requirements and demands may change over time. Our products take this into account by offering customers our exclusive OmniSim™ feature. OmniSim™ allows customers to train different types of drivers in different vehicle cabs using one visual display system. It is designed to minimize costs and maximize training optimization.
- **Reconfigurable System** - OmniSim™ design supports reconfiguration using slide-in driver compartment cabs. This unique modular reconfiguration capability allows the customer to purchase a simulator with one type of vehicle seat base (seat, steering wheel, pedals and dash) such as a commercial trucking vehicle, and add a different vehicle's seat base such as a sedan or light vehicle in the future. In just a couple of minutes, you can unplug one seat base, and swap in another, using the same visual display system. This provides the capability of several types of simulators, with minimal investment. In the future, you could simply add a different seat base to your system and train drivers for fleet vehicles, sedans, or other light vehicle types.

2 Advanced Visual Graphics Engine

- Only the L3 driving simulator utilizes the Microsoft Havok™ graphics engine that provides cutting edge graphics and visual effects to provide the most immersive driving simulation experience available. This is the same graphics engine that has been used for Halo, Dark Souls, Destiny, Call of Duty and other top of the line gaming titles to present unprecedented realism to the user. Top of the line graphics with our best-in-class vehicle dynamics and virtual environment gives you the most immersive experience possible.
- **Best-in-class, real-time imagery** - accurately simulates the movement of the vehicle through a virtual environment. Offers the fastest, most robust collision detection and physical simulation technology available, which has become the gold standard within the simulation and gaming industry. L3's visual graphics engine is fully customizable, including time-of-day, weather conditions, night-time environments with accurate illumination, headlights, taillights, traffic control signals, fog, rain, and snow.
- **Realistic Mirrors** – Realistic, accurate vehicle mirrors for virtual left, right, convex, and center rear view mirrors are embedded in the display based on the vehicle type and are fully adjustable to correspond to the adjustable seat based on real-world positioning. Additionally, full control of the actual view from the mirrors is available to the user to modify and tune as required with no need for customer support.



- **Autonomous Traffic** – Our graphics engine has a built in AI for traffic density that can be altered and customized to add additional vehicles to any of the standard or user-generated scenarios. The result is customized training with user-definable traffic density as dictated by the training objectives. Unlike other solutions, L3's approach provides ability to mix scripted and autonomous traffic, without interfering with the script objectives.
- **Photorealistic Characters** - The TranSim™ pedestrians have physics-based, photorealistic quality and animation—walking, running etc. Others have pedestrians that move, but are not realistic. Photorealistic graphics provide a truly immersive experience that triggers the student's emotions, including the adrenaline producing response necessary for stress induced decision based training.

3 Vehicle Dynamics Engine

- **High-fidelity Vehicle Dynamics** – High fidelity vehicle dynamics simulate vehicle performance, including tire interactions, power train, braking systems, suspension, throttle, steering, transmission, environmental conditions (wind, rain, snow, ice). The TranSim™ has a **realistic 21 DOF vehicle model**. Others use simplistic generic vehicle models where handling is not as realistic.
- **Sophisticated automotive engineering concepts** and are driven by both measured physical characteristics and manufacturer specifications. The resulting vehicle behavior model has been validated against published proving ground results and vetted with industry experts. Our vehicle dynamics models are comprehensive enough to represent real vehicle behavior. Each tire, wheel, suspension point, steering wheel, engine, transmission, drive train, and chassis is modeled.
- **Advanced physics model** - includes 21 degrees of freedom representing tires, suspension, vehicle chassis, steering and power train. This level of sophistication matches that in engineering applications and enables our unfiltered use of vehicle manufacturer and other OEM data.

4 Turn-Key Training Content Library

- **Robust training content library** - *Includes dozens of training scenarios ready for training on day 1. These scenarios cover a broad range of training objectives including orientation, emergency maneuvers, backing, close quarters maneuvering, and adverse conditions. These training scenarios are fully editable and customizable using L3's Scenario Builder Tool, which also allows for the creation of new scenarios, providing the most flexible and scalable training experience possible.*
- **Trucking Vehicle Library** - The TranSim™ offers numerous automatic and manual transmission vehicles and trailer configurations with their dashboards built into the system along with the associated vehicle



dynamics. Models available include many of the most common OEMs such as FreightLiner, Volvo, and International.

5 ReplayStudio™

- **Driver Camera** - The TranSim™ includes a color camera mounted above and facing the driver. The camera's field of view encompasses the driver's face and hands. During low-light situations, the camera will automatically switch to black-and-white mode and illuminate the scene with infrared lighting to maintain a high-contrast crisp image of the driver.
- **In-Cab Camera Displays** - The views of the in-cab cameras are displayed in real time at the instructor station, with up to four live video feeds shown in split-screen mode. The images are displayed on the instructor station's display, and on the center simulator display. The display can be configured to show only the student, or the student with the replay in picture-in-picture mode. This allows a unique ability to review and correct driver decisions and behavior within the context of the actual training environment.
- **MultiView** - The TranSim™ has six replay views, which other manufacturers do not offer. Replay and after-action review is an important part of the remediation process. Best driving practices cannot be properly trained without multiple replay views.
- **After Action Review** – L3's industry leading After-Action Review (AAR) allows the instructor to review the actions taken during the scenario as the driver experienced it as well as review the video of the driver's face and hands. AAR playback can also be paused and indexed forward and backward in time, as well as viewed from multiple angles.

6 Scenario Builder™

- **Develop your own dynamic training scenarios** – In addition to the robust library of training scenarios that are delivered with the simulator, our proprietary L3 Scenario Builder™ provides the ability to create dynamic training scenarios in large and relevant visual databases. Our simulator ships standard with a variety of 7 drivable databases including suburban, urban, rural, with options for up to 10 more. You can use Scenario Builder™ to develop rich, user tailored content by adding scriptable scenario vehicles. The L3 simulator provides approximately 500 different vehicle types and configurations that can be used in scenarios to create realistic training environments.



7 Unmatched Simulator Expertise

- **Best-in-Class Simulation Expertise** – L3 Link is a global leader in delivering cost-effective simulation and training solutions to commercial and government personnel since 1929. You have access to the expertise of staff and accessibility of resources used to develop some of the world's most advanced flight simulators including WWII army simulators, Nasa Apollo Missions, F-16s, F-22s, F/A-18s, Predators, Boeing 747, Airbus 380, and more.
- **Resource Capabilities** – L3 facilities continue to deliver unmatched access to engineering resources. On-staff driving simulation experts and immediate access to over 500 engineering personnel specialized in every possible realm of simulation for flight, ground and maritime environments. We are the only driver simulation company with expertise in custom scenario generation, virtual environment development and building to mission critical requirements.
- **Simulation design experts** - Software expertise in real-time simulation, communication systems, vehicle propulsion, and physics/dynamics modeling. Virtual environment specialists on-staff capable of creating customer specific simulation features. Customer specific vehicles, modeled in appearance and performance, both for vehicles used in training and those the trainee interacts with. Virtual world generation and tailoring to match customer requirements, to include locations and cultural features.
- **Ondemand Engineering Team** - include access to a large engineering staff including systems, electrical, and mechanical engineers. Additionally, complete access design-to-spec or build-to-print, prototyping, production, and refurbishment capabilities.
- **Global Services Team** - Graphic art and design production personnel capable of development teams to customize vehicles and environments. Laser scanning and in-house precision machining for vehicle dashboard and cab replication. Global field service, installation, and technical support teams.