



Commercial Training & Prototyping Simulator (CTAPS)

Visual Specifications

- Five 85” LEDs providing 215° forward FOV
- Two 50” LEDs providing rear FOV
- OEM side view mirrors providing real parallax
- Embedded convex mirrors
- Up to 4k image quality

Vehicle Configurations

- Power unit models
 - 3-axle sleeper cab
 - 3-axle day cab
 - 3-axle straight truck
- Trailer models
 - Van - 40’, 48’, & 53’ lengths
 - Tanker – 45’ length
 - Doubles – 28’ trailers
- Trailer configurations
 - Programable weight and load distribution
 - Programable center of gravity
 - Programable surge, slosh, & density
- Transmission options
 - Automatic
 - Non-synchronized double clutching
 - Eaton Fuller 9 & 13 speed
 - Meritor 10 speed
- Programable horsepower and torque curves
- Three stage engine brake

Driver Performance

- A VTTI Data Acquisition System is networked to the simulator to collect performance measures in real time and allow the playback of data synced with video
- Multiple camera views: face, over-the-shoulder, foot, forward, driver’s side, and passenger side
- SmartEye Pro 3-camera eye tracking system installed and synced with VTTI Data Acquisition System

Cab Features

- Automated Driving System (ADS) enabled
- Automated Driver Assistance Systems (ADAS) fully integrated
- Seat transducer providing realistic vibration and road feel
- D-BOX motion base with heave, pitch, and roll
- Freightliner steering wheel with functioning buttons and horn
- Force feedback steering with variable resistance based on road speed and road surface type
- Virtual glass dash providing unlimited gauge and telltale configurations
- Fully functioning gauges, warning lights, and indicator lights
- OEM accelerator, brake, and clutch pedals
- OEM manual transmission shifter with range selector and splitter switch
- OEM automatic transmission gear selector buttons
- OEM parking and trailer brakes knobs
- Suite of typical rocker and momentary switches commonly found in Class 8 trucks
- Ability to add tablet (e.g., dispatching device, etc.) and other features as needed

Remote Operator Station and Rabbit

- Ability to remotely operate the simulator with basic commands (e.g., proceed, change lanes, stop, etc.) while ADS is engaged
- Provides three camera views similar to what the driver would see: forward, rearward down the driver’s side and passenger’s side of the truck/trailer
- Rabbit also provides ability to move around the environment for different viewpoints or drive a second vehicle within the scenario utilizing a video game steering wheel and pedals

Scenarios

- Free drive and customizable driving scenarios
 - Ability to drive anywhere on or off road
- Driving worlds
 - Linear Land provides never ending straight highway
 - Generic World provides an oval basic 4-lane divided highway with one interchange
 - Safety City is the most dynamic
 - Large stretches of 4 and 6-lane divided highways with multiple interchange configurations, curves, upgrades, and downgrades
 - Rural two-lane roads with mountains, valleys, sharp curves, etc.
 - Urban city and suburban neighborhood areas with programmable traffic lights
- Programmable weather including rain, snow, and fog as well as time of day

Interactive Vehicles

- Ambient traffic
 - Interactive traffic within world
 - Set density level and specify roads
 - Normal to aggressive
- Scripted vehicles
 - Ability to program specific vehicle routes and actions (e.g., running a stop sign, etc.)
- Vehicle library
 - Cars
 - Straight trucks & tractor-trailers
 - Variety of police & emergency vehicles
 - Programmable wig-wag lights and sirens
 - Motorcycles, bicycles, pedestrians, animals
- Ability to create work zones, crash scenarios, weigh stations, fires, and more
- Programmable vehicle failures such as front tire blowout, air pressure loss, low DEF, etc.

Customizable Options Upon Request

- Construction of geographically-relevant driving worlds
- Vehicle models can be developed to match OEM models
 - Buses, straight trucks, on-road and off-road tractors, trailers
- Virtual dash may be reconfigured for different layouts
- Additional vehicle dynamics can be programmed to match specific needs including:
 - Engine and transmission models, gear ratios, axle ratios, tire models, suspension, rolling resistance, etc.
- Additional equipment malfunctions maybe programmed
- Customized scenario design to meet specific needs



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