



The following documentation is an electronically-submitted vendor response to an advertised solicitation from the *West Virginia Purchasing Bulletin* within the Vendor Self-Service portal at wvOASIS.gov. As part of the State of West Virginia's procurement process, and to maintain the transparency of the bid-opening process, this documentation submitted online is publicly posted by the West Virginia Purchasing Division at WVPurchasing.gov with any other vendor responses to this solicitation submitted to the Purchasing Division in hard copy format.

Header 6

List View

General Information | [Contact](#) | [Default Values](#) | [Discount](#) | [Document Information](#) | [Clarification Request](#)

Procurement Folder: 1387129

Procurement Type: Central Purchase Order

Vendor ID: 000000104464 

Legal Name: L3 TECHNOLOGIES INC

Alias/DBA:

Total Bid: \$475,500.00

Response Date: 03/12/2024 

Response Time: 5:00

Responded By User ID: TruthL3Driver 

First Name: True

Last Name: Fullmer

Email: dpa.contracts@L3Harris.c

Phone: 3853778032

SO Doc Code: CRFQ

SO Dept: 0803


SO Doc ID: DOT2400000076

Published Date: 3/11/24

Close Date: 3/14/24

Close Time: 13:30

Status: Closed

Solicitation Description: ADDENDUM NO_1 Truck Driving Simulators w/
Snowplow (81240108) 

Total of Header Attachments: 6

Total of All Attachments: 6

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	Truck Driving Simulators - Parkersburg location	2.00000	EA	118875.000000	237750.00

Comm Code	Manufacturer	Specification	Model #
25191736			

Commodity Line Comments:

Extended Description:

Truck Driving Simulator w/on-site training & snowplow package
 Qty (2)
 Ship to:
 Eagles Building WVDOH, 627 Lubeck Avenue, Parkersburg WV 26101
 Attn: Aaron Stroud 304-642-5469
 Delivery and install must be prior to June 30, 2024

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
2	Truck Driving Simulators - Buckhannon location	2.00000	EA	118875.000000	237750.00

Comm Code	Manufacturer	Specification	Model #
25191736			

Commodity Line Comments:

Extended Description:

Truck Driving Simulator w/on-site training & snowplow package
 Qty (2)
 Ship to:
 Equipment Training Academy, 83 Brushy Fork Crossing, Buckhannon WV 26201
 Attn: Aaron Stroud 304-642-5469
 Delivery and install must be prior to June 30, 2024

STANDARD CONDITIONS OF SALE ("AGREEMENT")

By agreeing to purchase these selected Goods, Services or other items (collectively the "Products") Buyer agrees and confirms its acceptance of these Conditions of Sale and this Agreement shall govern the terms of said purchase to the exclusion of any other terms and conditions, standard or otherwise, upon which Buyer accepts or purports to accept the quotation including any terms and conditions contained on the applicable Purchase Order. It Is Hereby Agreed as follows:

1. Interpretation:

- 1.1. "Goods" means the goods detailed in the applicable proposal as referenced in Buyer's order including but not limited to simulation training devices, hardware only sales, associated software, repairs and spares.
- 1.2. "Services" means the services detailed in the applicable proposal including but not limited to technical query resolution and the delivery of upgrades to an in-service simulation training device and/or the manufacture, delivery, and installation of new simulation training devices, as referenced in Buyer's order.
- 1.3. "Products" means collectively the Goods, Services and any other items which L3 DPA offers to Buyer on the terms contained herein.
- 1.4. To the extent that L3 DPA provides a proposal referencing this Agreement said proposal takes precedence in the event of an inconsistency between this Agreement and the terms of the proposal.
- 1.5. In this Agreement words importing the singular only also include the plural and vice versa and, where the context requires, words importing persons include firms and corporations.

- 1.6. The use of the term L3 DPA is interpreted to include L3 DPA employees and contracted personnel (including sub-contractors).

2. Orders:

- 2.1. All Orders are subject to acceptance and confirmation of delivery schedule by L3 DPA.
- 2.2. L3 DPA reserves the right to charge cancellation fees on any order which following acceptance pursuant to 2.1 is cancelled by Buyer.
- 2.3. The commencement date for the provision of Services is the date of receipt of the initial payment in cleared funds and not the date that the order is accepted pursuant to clause 2.1.
- 2.4. Buyer may request changes to the order within the general scope of work. L3 DPA will notify Buyer of any adjustment to any dependencies impacted by the requested change and is not obligated to implement any requested changes until Buyer provides written confirmation of its acceptance of said adjustment.

3. Payment and Price:

- 3.1. Unless otherwise agreed in the terms of the contract Buyer shall pay invoices within thirty (30) days from receipt of the relevant invoices by electronic transfer in the invoiced currency. Payments are not subject to any deductions, set off, or discounts for early payment.

Terms & Conditions



3.2. L3 DPA will issue invoices either on achievement of the relevant Service milestones or on dispatch of the Goods.

3.3. All prices are expressed exclusive of VAT, unless otherwise stated.. Buyer will pay VAT if it is applicable. VAT will be invoiced in addition to prices, if VAT is applicable.

3.4. If Buyer fails to make payment on the due date, then, without prejudice to any other right or remedy available, L3 DPA reserves the right to:

3.4.1. withhold or suspend delivery of the Products;

3.4.2. charge Buyer interest on the amount unpaid, at a rate of 8% over the United States Prime Rate, until payment is made in full.

3.5. Prices stated do not include local or state taxes. Buyer is responsible for any and all sales taxes, use taxes, duties, including but not limited to import and export duties, and any other taxes or similar charges levied by any taxing authority, for Products or Services provided under this Proposal/Contract, unless Buyer has a valid tax exemption.

3.6. Buyer further agrees to defend, indemnify and hold L3 DPA harmless from and against the aforesaid taxes, duties, and charges as a result of performance hereunder, and all reasonable legal fees, costs, and expenses incurred in connection therewith.

4. Delivery of Goods:

4.1. Unless otherwise stated Goods will be delivered FCA (L3 DPA).

4.2. L3 DPA will pack and mark the Goods in accordance with industry standard practices given the nature of the Goods. In the event that Buyer requests unique or special packaging and/or marking such request will be considered in accordance with clause 2.4.

4.3. Quoted dispatch or delivery date is L3 DPA's best estimate of the Goods availability date and L3 DPA will in no event be in default for any failure to deliver the Goods on the stated delivery date.

4.4. L3 DPA reserves the right to deliver the Goods early without penalty or incurring any additional charges.

5. Acceptance:

5.1. Buyer shall inspect the Goods immediately on receipt and the goods will be deemed accepted five (5) days from delivery.

5.2. L3 DPA will prior to the commencement of the Services, provide Buyer with a schedule of approved baseline checks for in-service equipment.

6. BFE, Data & Parts:

6.1. Buyer shall deliver Buyer Furnished Equipment (BFE) at no cost to L3 DPA at the times and places agreed by the Parties.

6.2. Unless expressly stated Buyer is responsible for the purchase of all parts and OEM data license fees ("Parts and Data") required to support the Product and such Parts and Data shall be included as BFE.

6.3. Buyer shall ensure that all necessary agreements, authorizations and/or licenses which may be required by the OEM, including but not limited to the relevant manufacturer, to support the supply, delivery, and use of the Product by L3 DPA and Buyer, have been entered into in a timely manner following acceptance of the L3 DPA's proposal.

6.4. For the avoidance of doubt L3 DPA is not liable for any delay caused as a result of Buyer failing to comply with the obligations contained in clause 6.3.

7. Access to Buyer's Premises and Equipment:

7.1. Buyer shall provide timely access to any premises, equipment, staff and/or facilities that may

Terms & Conditions



reasonably be required to support delivery of the Services by L3 DPA.

7.2. If Buyer fails to permit performance of the Services then, without prejudice to any other right or remedy available to L3 DPA, L3 DPA may invoice Buyer for any and all additional costs incurred by L3 DPA as a result of such failure.

8. Force Majeure and Consequences of Force Majeure:

8.1. Force Majeure means and is limited to the circumstances set forth in clause 8.2.1 through 8.2.12. below but only if and to the extent:

8.1.1. Such circumstances are not within the control of L3 DPA, or its subcontractors;

8.1.2. Such circumstance, despite the exercise of reasonable diligence cannot be prevented, avoided or removed by L3 DPA or its subcontractors;

8.1.3. Such event materially adversely affects the ability of the L3 DPA to perform its major obligations under this Agreement;

8.1.4. L3 DPA has taken reasonable precautions, due care of reasonable alternative measures to avoid the effect of such event on its ability to perform its obligations under this Agreement and to mitigate the consequences of such circumstance, and;

8.1.5. Such event is not the direct or indirect result of the failure of L3 DPA or its subcontractors to perform any of their obligations under this Agreement;

8.1.6. L3 DPA has given Buyer a written notice as set forth in clause 25.

8.2. Subject to the clauses 8.1. and 8.3., Force Majeure means any of the following occurrences outside the control of L3 DPA preventing or delaying its timely performance of obligations under this Agreement:

8.2.1. any act of war (whether declared or undeclared), invasion, armed conflict or act of foreign enemy, blockade, embargo, revolution, rebellion, riot,

insurrection, civil commotion, act or campaign of terrorism, or sabotage;

8.2.2. any government acts or omissions;

8.2.3. radioactive contamination or ionizing radiation;

8.2.4. nationwide legal and general strikes affecting the performance of the contractual obligations;

8.2.5. labor or material shortages that could not have been reasonably foreseen;

8.2.6. any Buyer failure, whether through act or omission, to perform any of its obligations under the Contract;

8.2.7. any lightning, earthquake, hurricane, drought, tsunami, monsoon, tempest, flood, storm, cyclone, volcano, mudslide, typhoon, tornado, or other unusually severe weather or act of nature;

8.2.8. fire, explosion or chemical contamination;

8.2.9. epidemic, pandemics, blight, famine, quarantine or plague, including but not limited to COVID-19;

8.2.10. any transportation accidents while transportation of Goods;

8.2.11. suspension of flight operations due to inclement weather while transportation of Goods;

8.2.12. delays of suppliers at any tier arising from unforeseeable causes beyond the control and without the fault or negligence of both L3 DPA and its supplier.

8.3. If L3 DPA is prevented or delayed in the performance of any of its obligations under this Agreement by an occurrence of Force Majeure, then it shall give prompt written notice and, in any event, within thirty (30) days of the occurrence specifying:

8.3.1. The occurrence constituting Force Majeure and the date of the occurrence;

8.3.2. The obligation or obligations the performance of which is thereby prevented or delayed;

Terms & Conditions



8.3.3. The further period for which it is estimated that such prevention or delay will continue;

8.3.4. The reasonable proof of the nature of such delay issued by the relevant Official Authority(ies) confirming the accuracy of the particular contained in such notification;

8.3.5. Precautions taken to avoid the effect of such event and to mitigate the consequences of such circumstance;

8.4. If by reason of Force Majeure the affected Party suffers delay in fulfilling its obligations under this Agreement, it shall be granted a reasonable extension of time.

8.5. By reason of Force Majeure, L3 DPA will not be entitled to claim indemnity and have the right to claim price difference, excepting in the event a replacement source of supply is required due to a Force Majeure event.

8.6. For the avoidance of doubt, Buyer will not be relieved of its obligation to make timely payment to L3DPA under clause 3 hereof by reason of Force Majeure Events.

8.7. In the event that L3 DPA is by virtue of Force Majeure as defined in this clause 8, excused for a continuous period of one hundred and eighty (180) days from performance of its obligations under this Agreement, within that one hundred and eighty (180) day period, if permitted, the Parties shall meet to review the situation with a view to attain means of achieving a resumption of performance but in the absence of any such agreement Buyer may terminate this Agreement as per clause Termination for Default (clause 12).

9. Intellectual Property Rights ("IPR"):

9.1. Buyer agrees that the ownership of all intellectual property rights in the Product remain the

exclusive property of L3 DPA and/or the relevant third-party supplier as applicable.

9.2. Upon acceptance of the Product in accordance with clause 5, L3 DPA grants to Buyer a non-exclusive, non-transferable, license to use the Product for the sole purpose of operating and maintaining the Product and any associated equipment as long as Buyer operates the Product at Buyer's site and complies with the terms and conditions of this Agreement, including the right to:

9.2.1. make one (1) copy only of the software to be used solely for back-up or archiving purposes; and

9.2.2. make copies of any documentation provided as are reasonably necessary for the purpose of providing simulation training to a maximum of three (3) copies.

9.3. Buyer shall not:

9.3.1. copy (other than in accordance with clause 9.2.1 and 9.2.2), modify, export, or derive training material and/or devices from, nor reverse engineer, decompile, disassemble from the or translate nor create derivative works based on the Product; or

9.3.2. use the Product to manufacture or enable the manufacture of any Products and/or of any part, component, system, or element of the Equipment; or

9.3.3. disclose any Confidential Information regarding the Product or any part thereof to any other persons or companies without L3 DPA's prior written approval.

9.3.4. refer to L3 DPA's Products by name or likeness to market Buyer products or services, without express written permission from L3 DPA.

9.4. In the event that an arbitration award or a court decision having the authority of a final conclusive judgement duly concludes that L3 DPA's Product infringes a third party's intellectual property rights then L3 DPA indemnifies, defends, and holds harmless Buyer against all reasonably incurred legal proceedings and costs resulting from such infringement except and to the extent that any such infringement is based upon:

9.4.1. any act or omission of Buyer in its use of the Product; or

Terms & Conditions



9.4.2. the claim relates to a third-party supplier's Product and L3 DPA shall use reasonable efforts to obtain from such third parties the most favorable patent indemnity protection for Buyer hereunder.

9.5. L3 DPA is not responsible for any settlement made by Buyer without L3 DPA's prior written consent.

9.6. Notwithstanding clause 12.2 any breach of this clause 9 by Buyer will be considered a substantial material breach of this Agreement and L3 DPA will be entitled to terminate this Agreement with immediate effect.

10. Warranty and Support:

10.1. Unless otherwise stated in the applicable proposal, Warranty and Support will be provided in accordance with Exhibit B – Intl Full-Service Warranty Contract.

11. Liability & Indemnity:

11.1. Buyer is responsible for and shall defend, indemnify, and hold harmless L3 DPA, its servants, agents, and subcontractors from and against all claims, losses, damages, costs (including reasonable legal costs), expenses, and liabilities of every kind or nature in respect of the personal injury or death of any personnel or third party and/or damage to third party property resulting from any negligent acts or omissions or the willful misconduct of Buyer, its servants, agents or sub-contractors under this Agreement.

11.2. L3 DPA is not liable for any loss, destruction, or damage to Buyer's property, including any property which may be the subject of the order unless and then only to the extent that such loss, destruction, or damage is a direct result of L3 DPA's willful misconduct.

11.3. IN NO EVENT WILL L3 DPA BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, MULTIPLE, OR PUNITIVE DAMAGES OR ANY DAMAGE DEEMED TO BE OF AN INDIRECT OR CONSEQUENTIAL NATURE

ARISING OUT OF OR RELATED TO ITS PERFORMANCE UNDER THIS AGREEMENT, WHETHER BASED UPON BREACH OF CONTRACT, WARRANTY, INDEMNITY, NEGLIGENCE AND WHETHER GROUNDED IN TORT, CONTRACT, OR CIVIL LAW OR OTHER THEORIES OF LIABILITY, INCLUDING STRICT LIABILITY.

11.4. IN NO EVENT WILL THE TOTAL CUMULATIVE LIABILITY OF L3 DPA OR ITS SUBCONTRACTORS OR SUPPLIERS OF ANY TIER FOR THE PERFORMANCE OR BREACH OF THIS AGREEMENT OR ANYTHING DONE IN CONNECTION THEREWITH EXCEED THE PRICE PAYABLE OR THE AMOUNT ACTUALLY PAID FOR BY BUYER FOR THE PRODUCT, WHICHEVER IS LESS.

11.5. In the event that this limitation of liability conflicts with any other provisions of this Agreement, said provision will be regarded as amended to whatever extent is required to make such provisions consistent with this provision.

11.6. Nothing in this clause excludes or limits either Party's liability to each other for death or personal injury; or fraud or fraudulent misrepresentation or any other liability which cannot be excluded or limited at law.

12. Default:

12.1. Either Party may terminate all or a portion of this Agreement for default which is defined as a substantial breach of material obligations by the other Party.

12.2. In the event of termination for default, the Party shall give the other Party fifteen (15) days prior written notice to cure or to commence to cure the alleged breach.

12.3. In addition, either Party may terminate the contract if the other becomes insolvent, makes an assignment for the benefit of creditors, is adjudged bankrupt, or if a receiver is appointed for the whole or any part of its assets.

Terms & Conditions



12.4. L3 DPA is entitled to payment for Products delivered prior to termination including work in progress undertaken.

13. Insurance and Title:

13.1. Both Parties shall obtain and maintain, at their expense, policies of insurance of a coverage and scope sufficient for the purposes of the obligations contained in this Agreement.

13.2. Failure to obtain sufficient insurances is not a defense against recovery of any amounts due by Buyer to L3 DPA for claims under this Agreement.

13.3. Title to the Product, as applicable, will pass to Buyer upon receipt of payment in full of the price.

13.4. Risk of Loss for items will transfer to Buyer on delivery.

14. Confidentiality:

14.1. Each Party shall treat all information ("Confidential Information") belonging to the other Party as confidential and safeguard it accordingly and shall not disclose any Confidential Information belonging to the other Party to any other person without the prior written consent of the other Party, except to such extent as may be necessary for the performance of this Agreement or where disclosure is otherwise expressly permitted by the provisions of this clause 14.

14.2. The provisions of this clause 14 shall not apply to any Confidential Information received by one Party from the other which:

14.2.1. Is or becomes public knowledge (otherwise than by breach of this clause);

14.2.2. was in the possession of the receiving Party, without restriction as to its disclosure, before receiving it from the disclosing Party;

14.2.3. is received from a third party who lawfully acquired it and who is under no obligation restricting its disclosure;

14.2.4. is independently developed without access to the Confidential Information; or

14.2.5. must be disclosed pursuant to a statutory or legal obligation placed upon the Party making the disclosure.

15. Data Protection

15.1. For the purposes of this clause 15 the following phrases are interpreted as:

"Data Laws" mean any data protection legislation which may govern either Party's personal data and any amendment, replacement, or re-enactment thereof, and any statutes or regulations made thereunder.

"Data Subject" means an identified or identifiable natural person.

"Personal Data" means any information relating to a Data Subject received by one party (the Recipient) from or on behalf of the other party (the Discloser) in connection with the performance of the Recipient's obligations under this agreement.

15.2. The Parties acknowledge that in the course of carrying out their obligations in respect of this Agreement they may collect certain Personal Data which is protected by the Data Laws.

15.3. Both Parties shall undertake to only use or store such Personal Data in compliance with its obligations under this Agreement and in accordance with the Data Laws.

15.4. The Parties warrant and represent that:

15.4.1. they shall comply with all Data Laws in connection with the exercise and performance of its rights and obligations under this Agreement;

15.4.2. it has implemented technical and

organizational measures that meet the requirements of the Data Laws.

15.5. In the event that either Party receives a Subject Access Request, as defined in the Data Laws, it shall notify the other Party without undue delay and said other Party shall provide such reasonable assistance to the receiving Party as it may reasonably require to ensure its compliance with the receiving Party's obligations under the Data Laws.

15.6. Buyer shall fully indemnify, defend, and hold harmless, L3 DPA and its affiliates, directors, officers, employees, agents, and representatives from and against any and all claims, actions, suits, demands, damages, liabilities, obligations, losses, settlements, judgments, awards, costs, and expenses (including, without limitation, reasonable attorneys' fees and costs and any costs or expenses incurred to support Subject Access Requests), whether or not involving a third-party claim, which arise out of, relate to, or result from the violation or breach of any of your covenant, representation, warrant, provision or other obligation or duty under this clause 15 or under applicable law, including but not limited to the unlawful or improper processing of the personal data.

16. Export Control:

16.1. Unless otherwise implied by the delivery terms stated in the applicable proposal Buyer is responsible for procuring all necessary import or export licenses required to support delivery of the Goods and is solely responsible for any duties payable in respect of the same.

16.2. Buyer shall fully comply with all applicable import, export or re-export regulations (including, but not limited to, any US Government export control requirements) applicable to the Goods or piece of equipment bound to the Goods, and shall hold harmless and indemnify L3 DPA against any claim, liability, losses, costs, damages, and expenses (including without limitation attorney's fee) of whatsoever nature or kind or amount, based upon or

resulting from any action or claim raised by any third party (including without limitations any entity, whether incorporated or not, state agency, governmental authority) due to a failure by Buyer, or any of its agents, assignees, and/or transferees and/or sub-licensees to comply with any and all export/re-export regulations.

17. Severability:

17.1. The provisions of this Agreement are severable and the invalidity, illegality, or unenforceability of any one or more of its provisions does not affect the validity and enforceability of any other provisions.

17.2. If any provision of this Agreement is declared to be invalid, illegal, or unenforceable the parties agree that the court of competent jurisdiction should substitute a valid and enforceable provision that, to the maximum extent possible in accordance with all applicable law and preserves the legal and economic positions of each party as intended in this Agreement.

18. Anti-Bribery and Corruption:

18.1. In entering this Agreement, each Party warrants that it has not done, and in performing its obligations under this Agreement, it will not do, any act or thing that contravenes the Bribery Act 2010 (UK), US Foreign Corrupt Practices Act, or any other applicable anti-bribery or anti-money laundering laws and/or regulations.

19. Disputes and Law:

19.1. In any dispute arising between L3 DPA and Buyer, the parties shall first use all reasonable endeavors to resolve amicably in the ordinary course of business.

19.2. Nothing prevents the Parties from seeking from any court of the competent jurisdiction an interim order restraining the other Party from doing any act or compelling the other Party to do any act.

19.3. This Agreement is governed by the laws of the State of New York exclusive of its conflict of law

Terms & Conditions



provisions and the parties hereby submit to the exclusive jurisdiction of the State of New York Courts.

20. Waiver:

20.1. The waiver by either Party of any breach of any term of the Agreement will not prevent the subsequent enforcement of that term and will not be deemed a waiver of any subsequent breach.

21. Sole Remedy:

21.1. The Parties agree that the rights and remedies arising by virtue of the operation of this Agreement are the sole and exclusive rights and remedies between the Parties in relation to any of the matters arising under this Agreement or otherwise and no Party is entitled to claim any right or remedy against the other which does not arise by virtue of the operation of this Agreement.

22. Assignment:

22.1. Each Party shall not assign to any third party any or all of its rights and obligations under this Agreement, without prior written consent of the other Party, such consent not to be unreasonably withheld, except and to the extent that L3 DPA reserves the right to refuse consent to any assignment to a direct competitor in the design and manufacture of simulation training devices and/or the provision of simulation training services.

23. No Agency:

23.1. The relationship of the Parties hereunder is one of buyer and seller of the Equipment. No relationship of agency, joint venture, or partnership exists or will be deemed to exist between the Parties in particular, it is expressly understood that Buyer does not have the authority to bind L3 DPA in any way.

24. Third Party Rights:

24.1. A person who is not a Party to the Agreement may not enforce any of its terms under any applicable laws and/or regulations.

25. Notices:

25.1. Any notice or communication given under this Agreement will be given in writing and will be regarded as properly served:

25.1.1. By email – on receipt of a “Received Receipt”;

25.1.2. By post – forty-eight (48) hours after dispatch by Guaranteed Next Day Delivery.

26. Variations:

26.1. No variation to this Agreement will be binding unless agreed in writing between the Parties.

26.2. Notwithstanding clause 25.1, L3 DPA reserves the right to update this Agreement in line with operational requirements.

27. Agreement:

27.1. This Agreement constitutes the entire agreement between the parties with respect to the subject matter hereof and supersedes and merges all prior or contemporaneous proposals, negotiations, understandings, and agreement, whether oral or written, relating to the subject matter hereof.



L3HARRIS™

Date: 3/8/2024

Reference:

Internal Reference Number: L3T-TH-2403

Solicitation: CRFQ DOT2400000076

Subject: CDL Tuck Simulator (81240108)

Supplier:

Supplier Name: L3 Technologies, Inc., **Doing Business as:** D.P. Associates (i.e., L3 DPA)

Address: 2961 W. California Ave, Salt Lake City, UT 84104

POC:

- **Name:** True Fullmer
- **Title:** Associate Program Manager
- **Email:** True.Fullmer@L3Harris.com
- **Phone:** (385) 377-8032

Buyer:

Buyer Name: State of West Virginia, Division of Highways

Address: 1900 Kanawha Blvd E, Bld. 5 Rm-720, Charleston, WV 25305

POC:

- **Name:** John W Estep
- **Title:** Senior Buyer
- **Email:** john.w.estep@wv.gov
- **Phone:** (304) 558-2566

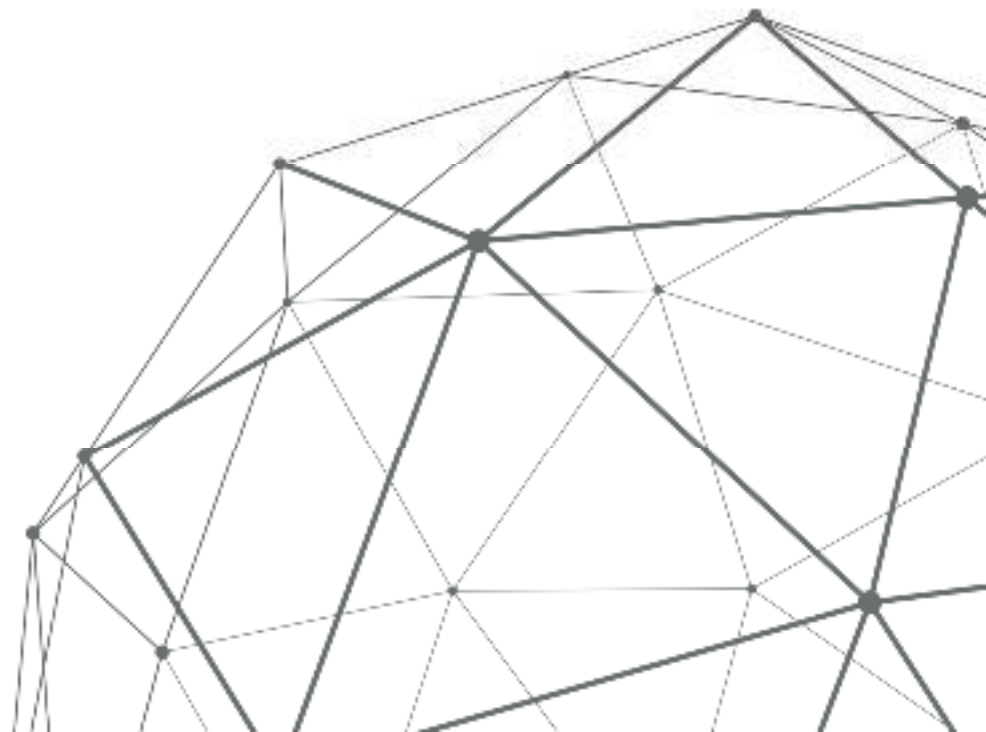


Table of Contents

Statement of Work	-----03
Pricing	-----04
Acceptance of Offer	-----05
Payment Terms	-----08
Exhibit A, Terms and Conditions	-----09

L3HARRIS PROPRIETARY

The data contained in this submission represents in its entirety "proprietary data" of L3 Technologies, Inc., a wholly owned subsidiary of L3Harris Technologies, Inc. This document is to be used solely for the limited purpose for which it is made available. Neither it nor the information contained therein is to be transmitted for any purpose except with the written permission, first obtained, of L3Harris Technologies, Inc.

Statement of Work

L3 DPA, a commercial division of L3Harris Technologies, Inc., is pleased to provide CDL Truck simulators with advanced packages and scenarios. Each operator system can manage up to four TranSim driving simulators. This offer includes one operator system for each location, which provides growth capacity in case additional simulators are desired in the future. The CDL SMART packages provides defensive driving training to help drivers properly scan, measure, anticipate risk, make decisions, and build confidence. The Air Brake Test provides a realistic methodology to test the driver's ability to validate air brakes on the vehicle. This multiple-step brake check tests aspects of the governor cut-in and cut-out pressures, air pressure leakage, warning buzzer, brake valves, and air pressure rebuild rates.

This fixed price proposal offers the following:

- CDL Truck Simulator (TranSim Driving Simulator) w/on-site training & snowplow package, Qty 4 (four)
- Delivery and installation at 2 (two) separate sites
 - o Qty 2 (two) simulators at Parkersburg site
 - o Qty 2 (two) simulators at Buckannon site
- Training at either Parkersburg or Buckannon location

Parkersburg site:

Eagles Building WVDOH, 627 Lubeck Avenue, Parkersburg WV 26101

Buckannon site:

Equipment Training Academy, 83 Brushy Fork Crossing, Buckhannon WV 26201

Highlighted Features Include:

Instructor Operator System (1 per site)

Motion Base

Snow Plow Hardware and controls

Snow Plow Software Package

Skillset Software Package

Air Brake Test Package

CDL SMART Scenario Package

Delivery

Installation

Training

Premium Full Service Warranty (1-year included)

Total price: \$475,500 (\$237,750 each site)

Simulators are manufactured in the USA, in our facility in SLC, UT.

Delivery and installation will be completed within seventy-five (75) days of contract. If contract is executed by April 1, 2024, delivery and installation will be completed no later than June 16, 2024.

Please find details of our offer in the following table.

L3HARRIS PROPRIETARY

Pricing Details:

Units	Description	Part Number	Unit Price	Subtotal	Discount	Price
Training Systems						
2	Instructor Operator System (IOS)	UT09022	\$7,500	\$15,000	20%	\$12,000
4	TranSim Series 8 Driver Training Simulator Fully-shrouded, realistic driver compartment/cabin Powerful image generation processing platform: Intel i7 4.9 GHz processor, super fast NVMe SSD, GeForce RTX 4070 video and graphics Replica Freightliner Cascadia Evolution Dashboard Automotive OEM seat, restraint, steering wheel, pedals, brake controls and transmission controls 360-degree immersive visual system (180-degrees forward + rear-view mirrors, virtual pan, and optional over-the shoulder view), presented on 4K Ultra High-Definition displays Realistic, software-defined instrumentation for each vehicle Operator touch-screen interface for driver scenario and instruction control and unique vehicle interfaces Freightliner OEM transmission control 5.1 Surround Sound with tactile vibration and "rumble" sound transducer Force-feedback pneumatic and hydraulic braking Force-feedback, realistic steering OEM, responsive and realistic clutch and accelerator pedals Advanced Unreal Engine graphics, with industry-best realism and detail Exclusive automotive physics engine with real vehicle and payload behavior >300 commercial vehicle inventory Baseline Urban, Suburban, Rural, Freeway, Skidpad, Mountain, Snow virtual environments Hundreds of simulated impeding conditions, obstacles and malfunctions including fog, snow, rain, wind, ice, glare, intoxication, rail crossing, pedestrians, animals, tire blow-out, brake failure, etc >200 included pedagogically rigorous scenarios L3Harris Scenario-Builder™ software for custom user customization and build-from-scratch curriculum Complete scenario recording and playback with "DVR" functionality Baseline, single-page individual assessment and scoring Learning Management System for full control of lesson plans, scenario presentation and student database. Virtual Environments Expansion Package (1 per IOS) Advanced airport, coal mine, construction site, desert, dirt road, indoor trucking course, mountain forest, oil field, swamp virtual environments and more.	UT09072	\$98,500	\$394,000	20%	\$315,200
Hardware Options						
Unless otherwise noted all hardware purchases after original delivery will require minimum 2-Day Field Services						
4	D-Box Gen3 Motion Base One per simulator.	UT09437	\$18,000	\$72,000	20%	\$57,600
4	Snow Plow Hardware Levers	UT09360	\$13,500	\$54,000	20%	\$43,200
2	Snow Plow Software Package (1 per IOS requires snow plow levers) Snow Plow Standard Scenarios must coincide with simulator delivery Snow Plow Skillset Assessment must coincide with simulator delivery	UT04308	\$5,000	\$10,000	20%	\$8,000
Software Options						
2	Skillset Assessment Software (no cost option, 1 per IOS) Advanced SkillSet™ assessment software with additional metrics, student evaluation and extended reporting continuously monitoring more than 40 driving behavior parameters.	UT04462	\$5,000	\$10,000	100%	\$0
Content Packages						
2	Trucking Vehicles Expansion Package (1 per IOS) Concrete Truck, Generic Car Hauler, Trucking Delivery, Trucking Municipal, Oversize Load Vehicle, Waste Management	UT08675	\$2,500	\$5,000	100%	\$0
2	Air Brake Test Package Air brake test scenarios	UT09813	\$1,500	\$3,000	100%	\$0
2	CDL S.M.A.R.T (10 scenarios) CDL Smart package helps commercial drivers incorporate the L3Harris detensive driving system by teach them to scan, measure, anticipate risk, reach a decision, and trust their decision. Comes with instructor powerpoint.	UT09672	\$3,500	\$7,000	100%	\$0
Services						
1	Standard Installation (included) Installation (one site, coincides with training)	UTINSTALL	\$5,000	\$5,000	100%	\$0
2	Basic Maintenance and Operations Training - On-Site Up to two (2) consecutive days (Coincides with Installation) Up to four (4) people	UTSTRAINING	\$2,500	\$5,000	100%	\$0
1	Train-the-Trainer On-Site Instruction - Additional Day Must be consecutive with 1st week	UTSTRAINING	\$1,500	\$1,500	0%	\$1,500
1	Lifetime Customer Support (Per Simulator) work hours. Software updates included.	UTSWARRANTY	\$2,500	\$2,500	100%	\$0
4	Premium Full-Service Warranty (Per Simulator) First Year Premium Full-Service Warranty included. Includes parts and field service maintenance. Priority shipment. Software updates and remote installation	UTSWARRANTY	\$9,500	\$38,000	0%	\$38,000
1	Shipping & Handling (CONUS for single site only) Packing and shipping costs to continental United States with 2 separate locations in West Virginia	UTSHIPPING	\$5,000	\$5,000	100%	\$0
Total Price						\$475,500

L3HARRIS PROPRIETARY

The data contained in this submission represents in its entirety "proprietary data" of L3 Technologies, Inc., a wholly owned subsidiary of L3Harris Technologies, Inc. This document is to be used solely for the limited purpose for which it is made available. Neither it nor the information contained therein is to be transmitted for any purpose except with the written permission, first obtained, of L3Harris Technologies, Inc.

Acceptance of Offer:

Customer to complete billing and shipping information below:

Billing Contact:**Onsite Contact:****Billing Address:****Onsite Location:****Billing Phone:****Onsite Phone:****Billing Email:****Onsite Email:****Tax Exemption:**

I certify that our organization qualifies for tax exemption. If yes, attach certificate.

Yes No

Signatures**Customer Acceptance:****L3Harris Acceptance:**

Name

Name

Title

Title

Organization

 Organization D.P. Associates a division of L3
Technologies, Inc.

Date

Date

Tax ID No.

Tax ID No. 13-3937436

Signature

Signature

L3HARRIS PROPRIETARY

The data contained in this submission represents in its entirety "proprietary data" of L3 Technologies, Inc., a wholly owned subsidiary of L3Harris Technologies, Inc. This document is to be used solely for the limited purpose for which it is made available. Neither it nor the information contained therein is to be transmitted for any purpose except with the written permission, first obtained, of L3Harris Technologies, Inc.

This proposal is based upon the following assumptions:

1. L3 DPA will complete the following delivery, installation, and training services utilizing customer's simulator, onsite:
 - a. Delivery and training will be provided for up to the following number of consecutive days mutually agreed upon:
 - i. Three (3) days.
2. Advanced Installation Fee
 - a. L3 DPA will provide a site-survey document prior to scheduling the installation. Customer will complete the site survey to identify the installation logistics.
 - b. In the unlikely event that a completed site-survey is not returned by the customer, or if the site-survey does not reflect the facility logistics, see clause 3 in this section, L3 DPA may assess an advanced installation fee at the time of installation.
 - c. A fee will be assessed if installation requires unplanned effort or resources, anticipated to be \$2,000.
3. Facility & Delivery Logistics
 - a. Simulator installation will be completed on the ground level.
 - b. Facility doorways/openings are at least 52" wide and 80" tall.
 - c. Facility has a loading dock or drop-off location that is accessible by a delivery semi-truck.
 - d. Equipment will be delivered by a third-party freight forwarder. The Equipment may arrive in advance of installation & training. Buyer may need to store equipment in interim between delivery and installation & training.
4. L3 DPA will deliver Goods to the location listed in Offer Letter. Any changes to shipping location will need to be mutually agreed between the parties and may incur additional charges assessed to the Buyer. Changes to the shipping address within 30 days of shipping will result in a minimum \$2,000 Shipping Address Change Fee.
5. Training
 - a. Training will be provided for up to four (4) students.
 - b. Basic maintenance & Operation Training (BMO), provided by an L3 DPA certified simulator trainer, includes the following instruction: simulation training, integration of the simulator into a training plan, keyboard controls, scenario loading, using Scenario Builder, vehicle details, and vehicle routing.
6. Lead time for shipment of simulators is seventy-five (75) days.
7. The Warranty and Support coverage shall be provided for the following period:
 - a. 12 months of Full-Service Warranty
8. The Warranty and Support coverage shall commence upon delivery of the Product by the Seller to the Buyer and shall be provided in accordance with Exhibit B – Intl Full-Service Warranty Contract.

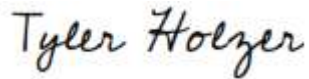
This proposal is based upon the following conditions:

1. Price: All prices are stated in U.S. Dollars (US\$). Price is based on order of quantity(s) and total amounts stated. L3 DPA reserves the right to update pricing if quantity(s) are changed. All items must be ordered at the same time and not on a line-by-line basis.
2. Tax is not included in the calculations seen above.
3. Cancellation of training dates without prior mutual agreement of L3 DPA will be billable at the contracted rate.
4. The pricing in this proposal is provided in accordance with the specific requirements set forth in the request for proposal associated with this effort and is consistent with the L3 DPA estimating system.
5. Terms and Conditions, in case of conflict, L3 DPA's terms and conditions prevail:
 - a. Exhibit A - Intl Terms & Conditions 3Oct2022
6. Data Items: No Data Items are included in this estimate.
7. No Intellectual Property (IP) Right will be associated with this proposal or any contract resulting from this proposal.
8. This proposal is valid for the following amount of time:
 - a. 90 days.
9. No liquidated damages will apply to this proposal.
10. No offsets or Industrial Participation Requirements will apply to this proposal.

11. Acceptance of the Conditions of Sale in Exhibit A represents a binding contract between the Customer and L3 DPA. Upon receipt of this signed agreement from the Customer, an authorized representative of L3 DPA will review, countersign, and return the final agreement to Buyer for reference of contract execution. Any changes to the attached referenced terms must be made in writing and accepted, in writing, by both parties.

Please review this information and forward to the appropriate personnel. Please feel free to contact Mr. Joe Green (at joe.green2@L3Harris.com) or the undersigned if you would like to discuss this information.

Best Regards,



Tyler Holzer
General Manager | Driver Training Systems
L3Harris Technologies, Inc.
M: (801) 580-4651
E: tyler.f.holzer@L3Harris.com

L3HARRIS PROPRIETARY

Payment Terms:

All payments are to be paid to L3 D.P. Associates.
Payments can be made by either: Check or wire transfer:

a. Check payments:

Remittance Address:

L3 TECHNOLOGIES, INC.,
D. P. ASSOCIATES DIVISION
P.O. BOX 732484
DALLAS, TX 75373-2484

Overnight/Courier Address:

JPMORGAN CHASE (TX1-0029)
ATTN: L3 TECHNOLOGIES, INC.,
D. P. ASSOCIATES DIVISION BOX 732484
14800 FRYE ROAD, 2ND FLOOR
FT WORTH, TX 76155

b. Payments may also be wired directly to:

Bank Name: JPMorgan Chase Bank, N.A.

Bank Address: 1 Chase Manhattan Plaza,
New York City, NY 10081, US

ABA (ACH): 071000013

Routing (Domestic Wire): 021000021

Swift (Intl): CHASUS33

Beneficiary: L3 TECHNOLOGIES, INC.,
D.P. ASSOCIATES DIVISION

Account#: 727110454

- c. All payments are to be made in U.S. dollars and without expense to L3 DPA.
- d. Buyer agrees to pay any expenses incurred in collecting any unpaid balance of the purchase price, or in recovering possession of goods including reasonable attorney's fees.
- e. Balance of contract will be paid in full net 30 days from Invoice.

Taxes:

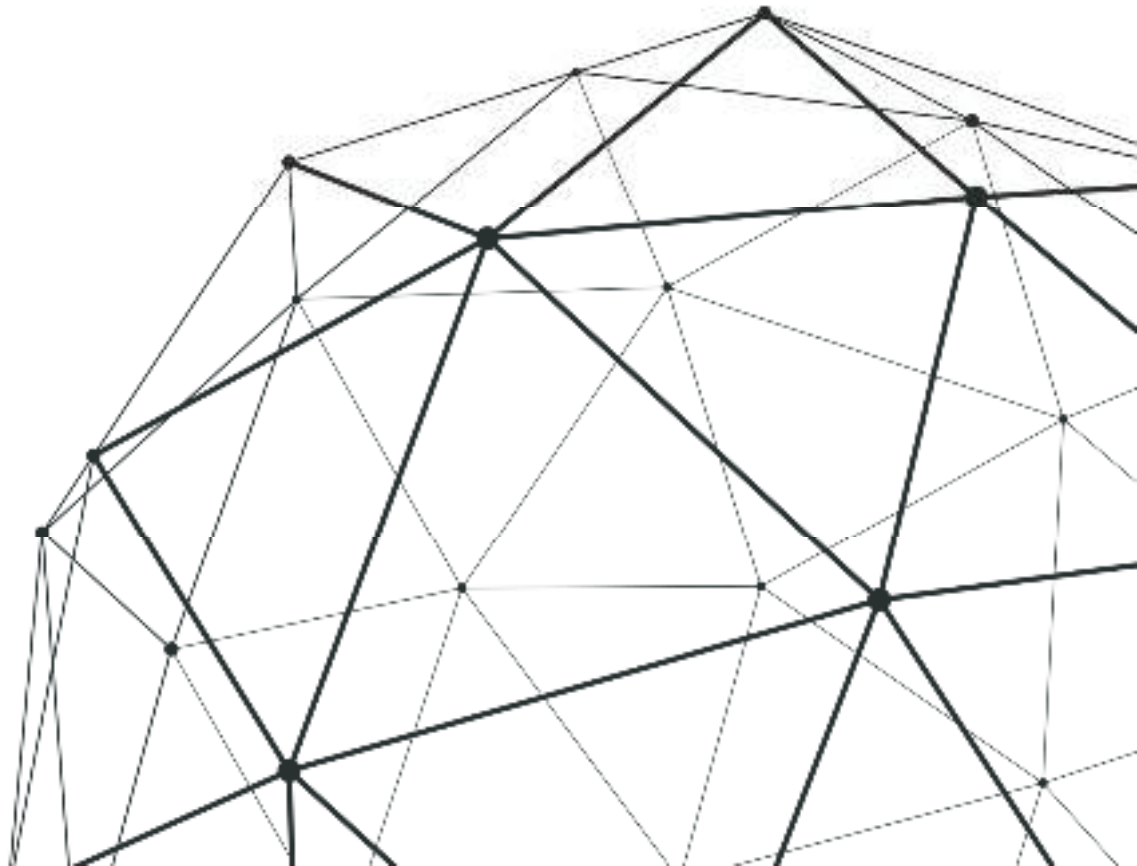
Prices stated do not include local or state taxes. Buyer shall provide a copy of their sales tax-exempt certificate if claiming tax exempt status. If Buyer does not have a valid tax exemption, then Buyer is responsible for all sales taxes, use taxes, duties, and any other taxes or similar charges levied by any taxing authority, for Products or Services provided under this Proposal/Contract. Buyer shall pay to L3 DPA any applicable tax imposed on any part of this transaction and L3 DPA will remit the amount to the appropriate tax authorities. Buyer further agrees to defend, indemnify, and hold L3 DPA harmless from and against the aforesaid taxes, duties, and charges as a result of performance hereunder, and all reasonable legal fees, costs, and expenses incurred in connection therewith.

L3HARRIS PROPRIETARY




Exhibit A

Please look to the separate document for Exhibit A.



VENDOR: L3 Technologies Truck Driving Simulator with Snow Plow package

Item No.	Description:	Model & Part Number Being Bid	Quantity	Unit Price	Item Total Cost
1	TranSim Series 8 Driver Training Simulator with snow plow package	UT09072 UT09437 UT09360	4	\$118,875.00	\$475,500.00
2	Instructor Operator System Support SW Packages (included) *please note that the breakout of pricing details is provided in the L3 Technologies offer letter.	UT09022 UT04308 UT04308 UT04462 UT08675 UT09813 UT09672	2	\$ -	\$0.00
3					
4					
Total Bid Cost					\$475,500.00

Bid Will Be Awarded To The Lowest Overall Bid Total For All Items

Vendor Information	
Company Name:	L3 Technologies, Inc.
Contact Manager:	Tyler Holzer
Address:	2961 California Ave, Ste F, Salt Lake City, UT 84104
Phone:	801.580.4651
Fax:	
E-mail:	Tyler.F.Holzer@L3Harris.com
Signature:	<i>Tyler Holzer</i>



<u>Clause Ref</u>	<u>L3 DPA comment – 11th March 2024</u>	<u>L3 DPA proposed wording</u>
8 (Insurance)	We request the insurance obligations of the State are also captured within this clause, as shown.	Additional wording to be added to the end of the clause: <i>“The State shall obtain and maintain, at its own expense, policies of insurance of a coverage and scope sufficient for the purposes of the obligations contained in this Contract. Failure to obtain sufficient insurance is not a defence against recovery of any amounts due by the State to the Vendor for claims under this Contract.”</i>
14 (Payment in arrears)	Applicable payment terms to be included in the Contract. Applicable payment terms are Net30 upon completion of the relevant payment milestone i.e. delivery, acceptance of the product. Remedy in the event of non-payment by the State to be included.	Additional wording to be added to the end of the clause: <i>“Unless otherwise stated payments shall be due thirty (30) days from the date of the relevant invoice by electronic transfer in the invoiced currency and shall be free of any deductions, set off or discounts for early payment.</i> <i>Invoices shall be issued on achievement of the relevant goods or services payment milestones.</i> <i>If the State fails to make payment on the due date, then, without prejudice to any other right or remedy available to the Vendor, the Vendor reserves the right to:</i> <i>(i) withhold or suspend delivery of the goods or services;</i> <i>(ii) charge the State interest on the amount unpaid, at a rate of 8% over the United States Prime Rate, until payment is made in full.”</i>
16 (Taxes)	Pricing is provided exclusive of VAT and any local or state taxes. If these are applicable, they will be payable by the State.	Existing clause to be deleted and replaced with the following wording: <i>“Taxes. Prices stated do not include local or state taxes. If the State does not have a valid tax exemption, then the</i>



		<i>State shall be responsible for any and all sales taxes, use taxes, duties, including but not limited to import and export duties, and any other taxes or similar charges levied by any taxing authority, for goods or services provided under this Contract.”</i>
18 (Funding)	<p>We note this requirement however, in the event L3 DPA have delivered goods or work is in progress, we would expect to receive payment for such work undertaken up to the date of termination.</p>	<p>Additional wording to be added to the end of the clause:</p> <p><i>“In the event of automatic termination of this Contract in accordance with this clause, the Vendor shall be entitled to payment for goods or services delivered prior to termination, including work in progress undertaken.”</i></p>
19 (Cancellation)	<p>We suggest that in the event it is deemed by the State that materials or workmanship supplied do not conform with the specifications, there is an agreed period within which such defects can be rectified.</p> <p>Again, in the event L3 DPA have delivered goods or work is in progress, we would expect to receive payment for such work undertaken up to the date of termination.</p>	<p>Additional wording to be added to the clause:</p> <p><i>“Following written notice from the State identifying such non-conformities with the specifications, the Vendor shall be given a period of 30 days within which to cure or to commence to cure such non-conformities so that they confirm with the specifications.”</i></p> <p><i>“The Purchasing Division Director may also cancel any purchase or Contract upon 30 days written notice to the Vendor in accordance with West Virginia Code of State Rules XX. In the event of termination of this Contract in accordance with this clause, the Vendor shall be entitled to payment for goods or services delivered prior to termination, including work in progress undertaken.”</i></p>
21 (Applicable Law)	<p>We request that in the event of any dispute arising under the Contract that both parties try to resolve such dispute amicably in the ordinary course of business.</p>	<p>Additional wording to be added to the clause:</p> <p><i>“In any dispute arising between the Vendor and the State, the parties shall first use all reasonable endeavours to resolve amicably in the ordinary course of business. Nothing prevents either party from seeking from any court of the</i></p>



		<i>competent jurisdiction an interim order restraining the other party from doing any act or compelling the other party to do any act.”</i>
23 (Arbitration)	Please advise why such references to arbitration are deleted, void and of no effect.	
27 (Assignment)	We request that this clause is made mutual between both parties.	Existing clause to be deleted and replaced with the following wording: <i>“A party shall not assign to any third party any or all of its rights and obligations under this Contract, without prior written consent of the other party, such consent not to be unreasonably withheld, except and to the extent that the Vendor reserves the right to refuse consent to any assignment to a direct competitor in the design and manufacture of simulation training devices and/or the provision of simulation training services.”</i>
28 (Warranty)	Warranty and Support will be provided in accordance with L3 DPA’s standard Warranty and Support policies, copies of which have been submitted alongside our proposal.	Clause to be updated as follows: <i>“The Vendor expressly warrants that the goods and/or services covered by this Contract will: (a) conform to the specifications, drawings, samples, or other description furnished or specified by the Agency; (b) be merchantable and fit for the purpose intended; and (c) be free from defects in material and workmanship, in accordance with the Vendor’s standard Warranty and Support policies, copies of which are attached hereto in Appendix [Insert].”</i>
30 (Privacy, Security and Confidentiality)	We request that this clause is made mutual between both parties in order to protect the confidential information of the State, as well as L3 DPA.	Existing clause to be deleted and replaced with the following wording: <i>“Each party shall treat all information (“Confidential Information”) belonging to the other party as confidential and safeguard it accordingly and shall not disclose any Confidential Information belonging to the other party to any other</i>



		<p><i>person without the prior written consent of the other party, except to such extent as may be necessary for the performance of this Contract or where disclosure is otherwise expressly permitted by the provisions of this clause XX.</i></p> <p><i>The provisions of this clause XX shall not apply to any Confidential Information received by one party from the other which:</i></p> <ul style="list-style-type: none"><i>(i) Is or becomes public knowledge (otherwise than by breach of this clause);</i><i>(ii) was in the possession of the receiving party, without restriction as to its disclosure, before receiving it from the disclosing party;</i><i>(iii) is received from a third party who lawfully acquired it and who is under no obligation restricting its disclosure;</i><i>(iv) is independently developed without access to the Confidential Information;</i> <p><i>or</i></p> <p><i>(v) must be disclosed pursuant to a statutory or legal obligation placed upon the party making the disclosure.”</i></p>
33 (Antitrust)	Please provide further information regarding this clause and why it is required.	
36 (Indemnification)	We request our standard Liability & Indemnity clauses are included in the Contract, as shown.	<p>Additional clauses to be added to the end of the clause:</p> <p><i>“The Vendor shall not be liable for any loss, destruction or damage to the State’s property, including any property which may be the subject of the order unless and then only to the extent that such loss, destruction or damage is a direct result of the Vendors gross negligence and/or wilful misconduct.</i></p> <p>IN NO EVENT SHALL THE VENDOR BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, MULTIPLE OR PUNITIVE DAMAGES OR ANY DAMAGE DEEMED TO BE OF AN INDIRECT OR</p>



		<p>CONSEQUENTIAL NATURE ARISING OUT OF OR RELATED TO ITS PERFORMANCE UNDER THIS CONTRACT, WHETHER BASED UPON BREACH OF CONTRACT, WARRANTY, INDEMNITY, NEGLIGENCE AND WHETHER GROUNDED IN TORT, CONTRACT OR CIVIL LAW OR OTHER THEORIES OF LIABILITY, INCLUDING STRICT LIABILITY.</p> <p>IN NO EVENT SHALL THE TOTAL CUMULATIVE LIABILITY OF THE VENDOR OR ITS SUBCONTRACTORS OR SUPPLIERS OF ANY TIER FOR THE PERFORMANCE OR BREACH OF THIS CONTRACT OR ANYTHING DONE IN CONNECTION THEREWITH EXCEED THE PRICE PAYABLE OR THE AMOUNT ACTUALLY PAID FOR BY THE STATE FOR THE PRODUCT,WHICHEVER IS LESS.</p> <p><i>In the event that this limitation of liability conflicts with any other provisions of this Contract, said provision shall be regarded as amended to whatever extent is required to make such provisions consistent with this provision.</i></p> <p><i>Nothing in this clause shall exclude or limit either party's liability to each other for death or personal injury; or fraud or fraudulent misrepresentation or any other liability which cannot be excluded or limited at law."</i></p>
Additional clause to be added – Force Majeure	We request our standard Force Majeure clause is included in the Contract, as shown.	Force Majeure: <i>"Neither party shall be liable for nor deemed to be in default on account of delays in performance of any of its obligations under this Contract which are due directly or indirectly to any event or circumstance or combination of events or circumstances that is beyond the reasonable control of the affected party and materially and</i>



		<p><i>adversely affects the performance by such party of all or a part of its obligations under or pursuant to this Contract. ("Force Majeure Event.")</i></p> <p><i>For the avoidance of doubt, the State shall not be relieved of its obligation to make timely payment for milestones achieved prior to the occurrence of a Force Majeure Event due to the Vendor under clause XX hereof by reason of Force Majeure Events.</i></p> <p><i>The affected party shall give the other party timely notice after it becomes aware of any Force Majeure Event, which notice shall, to the extent practicable, specify the length of the delay anticipated and any additional costs, incurred or likely to be incurred, by reason of such Force Majeure Event and the parties shall agree a change order to reflect this delay and/or adjustment to the price.</i></p> <p><i>If a Force Majeure Event continues for a period of one hundred and eighty (180) consecutive days then this Contract shall automatically terminate in accordance with clause XX unless the parties agree otherwise in writing."</i></p>
<p>Additional clause to be added – Intellectual Property Rights (IPR)</p>	<p>We request our standard Intellectual Property clause is included in the Contract, as shown.</p>	<p>Intellectual Property:</p> <p><i>"The State agrees that the ownership of all intellectual property rights in the goods and/or services shall remain the exclusive property of the Vendor and/or the relevant third-party supplier as applicable.</i></p> <p><i>Upon acceptance of the goods and/or services, the Vendor shall grant to the State a non-exclusive, non-transferable, license to use the goods and/or services for the sole purpose of operating and maintaining the goods and/or services and any associated equipment as long as the State</i></p>



		<p><i>operates the goods and/or services at the State's site and complies with the terms and conditions of this Contract, including the right to:</i></p> <ul style="list-style-type: none"><i>(i) make one (1) copy only of the software to be used solely for back-up or archiving purposes; and</i><i>(ii) make copies of any documentation provided as are reasonably necessary for the purpose of providing simulation training to a maximum of three (3) copies.</i> <p><i>The State shall not:</i></p> <ul style="list-style-type: none"><i>(i) copy (other than in accordance with clause XX and XX, modify, export or derive training material and/or devices from, nor reverse engineer, decompile, disassemble from the or translate nor create derivative works based on the goods and/or services; or</i><i>(ii) use the goods and/or services to manufacture or enable the manufacture of any goods and/or services and/or of any part, component, system or element of the equipment; or</i><i>(iii) disclose any Confidential Information regarding the goods and/or services or any part thereof to any other persons or companies without the Vendor's prior written approval.</i> <p><i>In the event that an arbitration award or a court decision having the authority of a final conclusive judgement duly concludes that the Vendors goods and/or services infringes a third party's intellectual property rights then the Vendor shall indemnify, defend, and hold harmless the State against all reasonably incurred legal proceedings and costs resulting from such infringement except and to the extent that any such infringement is based upon:</i></p> <ul style="list-style-type: none"><i>(i) any act or omission of the State in its use of the goods and/or services; or</i>
--	--	---



		<p><i>(ii) the claim relates to a third-party supplier's product and the Vendor shall use reasonable efforts to obtain from such third parties the most favorable patent indemnity protection for the State hereunder.</i></p> <p><i>The Vendor shall not be responsible for any settlement made by the State without the Vendors prior written consent.</i></p> <p><i>Notwithstanding clause XX any breach of this clause XX by the State shall be considered a substantial material breach of this Contract and the Vendor shall be entitled to terminate this Contract with immediate effect."</i></p>
Additional clause to be added - Default	We request our standard Default clause is included in the Contract, as shown.	<p>Default:</p> <p><i>"Either party may terminate all or a portion of this Contract for default which is defined as a substantial breach of material obligations by the other party.</i></p> <p><i>In the event of termination for default, the party shall give the other party fifteen (15) days prior written notice to cure or to commence to cure the alleged breach.</i></p> <p><i>In addition, either party may terminate the Contract if the other becomes insolvent, makes an assignment for the benefit of creditors, is adjudged bankrupt, or if a receiver is appointed for the whole or any part of its assets.</i></p> <p><i>The Vendor shall be entitled to payment for goods or services delivered prior to termination including work in progress undertaken."</i></p>
Additional clause to be added – Title and Risk	We request our standard Title and Risk clause is included in the Contract, as shown.	<p>Title and Risk:</p> <p><i>"Title to the product, as applicable, shall pass to the State upon receipt of payment in full of the price.</i></p>



		<i>Risk of loss for items shall transfer to the State upon delivery.”</i>
Additional clause to be added – Data Protection	We request our standard Data Protection clause is included in the Contract, as shown.	Data Protection: <i>“In the event that either party receives a Subject Access Request, as defined in the Data Laws, it shall notify the other party without undue delay and said other party shall provide such reasonable assistance to the receiving party as it may reasonably require to ensure its compliance with the receiving party’s obligations under the Data Laws.”</i>
Additional clause to be added – Sole Remedy	We request our standard Sole Remedy clause is included in the Contract, as shown.	Sole Remedy: <i>“The parties agree that the rights and remedies arising by virtue of the operation of this Contract are the sole and exclusive rights and remedies between the parties in relation to any of the matters arising under this Contract or otherwise and no party shall be entitled to claim any right or remedy against the other which does not arise by virtue of the operation of this Contract.”</i>



L3HARRIS

DRIVER TRAINING SOLUTIONS

PRODUCT GUIDE

TranSim™ 8 Truck Driving Simulator

Product Features, Technical Specs
& Configuration Options

1	Product Overview	3
2	Standard Features	4
2.1	Product Specifications.....	5
2.2	Driver Compartment.....	6
	▪ Visual System	12
	▪ Audio System.....	14
2.3	Standard Vehicles & Scenarios	15
2.4	Virtual Driving Environments.....	44
2.5	Vehicle Dynamics System	51
2.6	Instructor Operator Station (IOS)	57
	▪ Primary Features	58
	▪ Scenario Builder™	62
	▪ Replay Studio™ After-Action Review	64
	▪ Learning Management System (LMS).....	65
	▪ SkillSet™ Performance Assessment.....	68
	▪ Training Data Security, Storage and Retention	71
3	Product Options	73
3.1	Hardware Options.....	73
	▪ 3DOF Motion Base.....	73
	▪ Student/Instructor Radio Communication System	73
	▪ Rabbit Station.....	Error! Bookmark not defined.
3.2	Software & Vehicle Options.....	75
	▪ Trucking Vehicles Expansion Package	75
	▪ Bus Vehicles Package.....	83
	▪ Snowplow Package.....	86
	▪ Virtual Environments Package.....	87
	▪ International Options	91
3.3	Mobile Training Center	91
3.4	Professional Services	92

1 | PRODUCT OVERVIEW

The L3Harris Driver Training Solutions TranSim™ 8 driving simulator provides effective hands-on, experiential training tool for commercial drivers, offering experience without risks to people or equipment. The state-of-the-art TranSim™ 8 allows you to expose your staff to various challenging and hazard-laden scenarios in a safe, cost effective, and controlled environment. You can record operator reactions and response times, and provide after-action reviews that point out performance improvement areas for each driver. This training approach will improve your driver's critical driving skills, enhance decision making abilities, and increase the safety of your staff and the community you serve.

TranSim™ 8 Driving Simulator provides:

- ▶ A state of the art training experience that promotes a higher transfer of learning and increased retention.
- ▶ An opportunity to standardize your curriculum to ensure consistent, quality training.
- ▶ An adjustable, progressively challenging skill development path to enhance skills, improve defensive driving techniques, and hone decision making skills.
- ▶ An extensive library of customizable scenarios designed to address learning objectives relevant to your training objectives and individual employees.
- ▶ The ability to introduce drivers to challenging situations that target skill development and increase the trainee's situational awareness, self-awareness, and critical thinking skills.
- ▶ Continual reinforcement of curriculum and key training areas by providing the ability for your students to practice and rehearse responses to dangerous situations in a safe, controlled environment.
- ▶ An after-action review (AAR) feature that allows for feedback and reinforcement, which increases the speed and effectiveness of behavior change.



Your TranSim™ 8 will be delivered ready to train, right out of the box, including a high-resolution display system, reconfigurable instrument panel (glass dash), real-world hands-on driver controls, and an Instructor Operator Station (IOS). Additionally, we offer many options to increase training capabilities and value. L3Harris also stands ready to tailor the simulator and/or training curriculum to meet your organizational needs.

2 | STANDARD FEATURES

The modular, configurable, and ergonomic design of the TranSim™ 8 simulator provides a replica of an actual commercial vehicle driving cab. TranSim™ 8 accurately simulates both the vehicle's physical and functional characteristics. It also automatically adjusts its behavior to the size, weight, turning radius, eye-point, and tire and suspension characteristics for each vehicle that it simulates. Standard features include:

Enclosure and frame - Constructed of durable ruggedized steel components for durability, and thick aluminum for reduced weight.

Displays – Three 55” Ultra High Resolution LED LCD wide-aspect ratio monitors with 4K UHD resolution, provide sharp, bright, high-contrast images with a forward-looking 180° field of view. Optional over-the-shoulder accessory screens add expand the field of view to 240°.

Training Environments – A number of realistic and versatile virtual environments are provided to support the effective recreation of real-world conditions. These include urban, suburban, rural, and freeway environments.

Sample Scenarios – An updated set of customizable scenarios that are pedagogically rigorous and vetted are included to provide out-of-the-box training capabilities. A variety of training objectives are included such as scanning, collision avoidance, space and speed management, emergency maneuvering, shifting, backing, and reaction times.

Scenario Builder™ – Custom scenario creation, expansion, and modification can be easily accomplished using Scenario Builder.

Instructor Operator Station (IOS) – The included IOS provides an easy, non-intimidating instructional flow to start the simulator, monitor the training progress, choose scenarios, change scenario conditions, change own cab vehicle, and interact with the driver in real time.

Glass Dash – An LCD virtual dashboard that provides accurate gauges, control indicators, and warning lights. The glass dash automatically changes to mimic the dashboard of the specific own cab vehicle selected.

Transmission – A real-world automatic transmission lever is included for realism, with touch screen control also included for applicable vehicles. A floor-mounted shift lever is available for manual transmission operation.

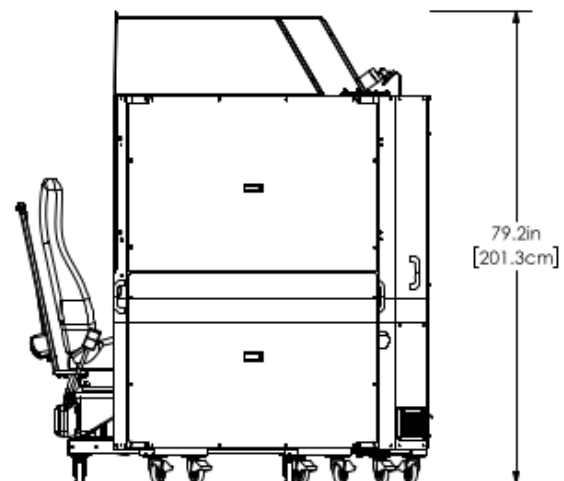
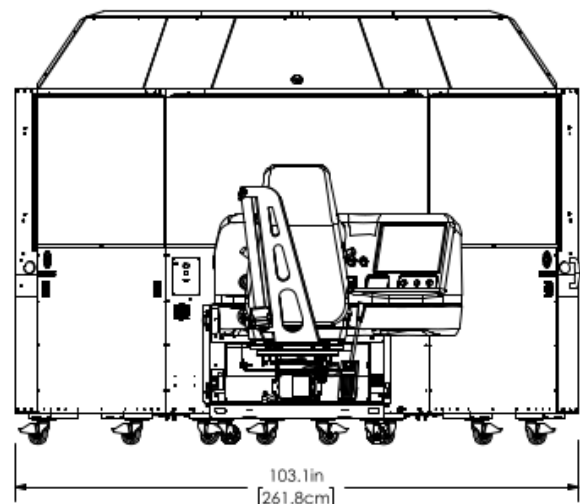
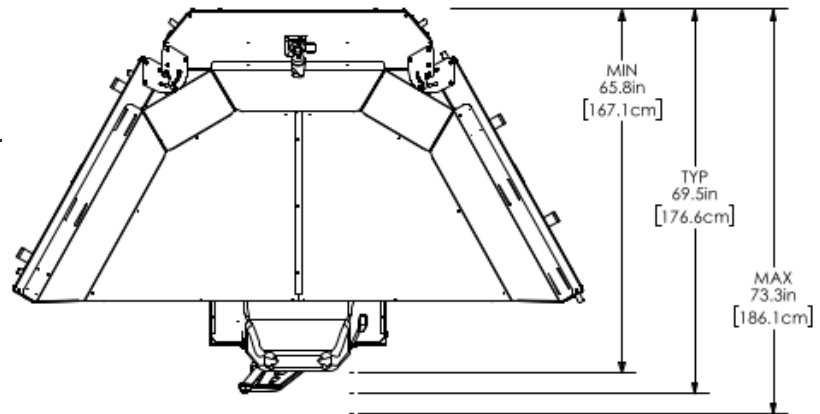
Mirrors – Adjustable virtual left, right, and center rear view mirrors are embedded in the display and adjust automatically to correspond with the vehicle type and model being simulated (own cab). Convex and flat mirrors are simulated in real time to reflect realistic visibility.

Real World Vehicle Components – Drivers are able to focus on training objectives while using real world vehicle components including an adjustable commercial vehicle air seat with 3-point seat belt, accelerator, brake, and clutch pedals, and a force loaded steering column with tilt, auto transmission lever on the column, turn signal lever, and hazard flashers.

Touch screen – Password protectable touch panel allows the instructor and/or student full control from the driving compartment including the ability to load scenarios, modify simulator settings, and adjust vehicle features such as mirror settings.

2.1 Product Specifications

Power	
North America	
Input Volts AC	110-127 VAC~
Line frequency	60Hz
Amperage	15A
International (Configurable As Needed)	
Input Volts AC	220-240 VAC~
Line frequency	50Hz
Amperage	10A
Environment Conditions	
Temperature	50-85° F (10-30° C)
Recommended operating temperature	65-74° F (18-23° C)
Relative humidity	40-65%
Cooling	8,000 Btu/h
Dimensions	
Simulator size	103.1" (261.8 cm) W x 69.5" (176.6 cm) D x 79.2" (201.3 cm) H
Simulator weight	807 lbs (366 kg)
Disassembled clearance	32" wide door
Recommended clearance	Fully-assembled unit will pass through a 72-in (2 m) width double door (without center posts)
Network Communications	
Internet	One high-speed connection required for service



2.2 Driver Compartment

The modular, ergonomic design of the TranSim™ 8 driver compartment has become the standard to which all other driving simulators are compared. The driver compartment is designed to provide safety, comfort, and maximize training effectiveness. TranSim™ 8 accurately simulates the physical and functional characteristics found in existing vehicle cabs. The driver simulator compartment and dashboard replicate the ergonomics of a commercial vehicle with the instruments and equipment located in the same relative position as they are in typical commercial vehicles. Mirrors are placed in the correct locations and are adjustable, and the LCD dashboard and touch panel displays provide accurate renderings of gauges and controls. This ensures a realistic driving experience during training.



SimuCube Steering System

The simulator system features the SimuCube direct drive steering system which is the state of the art steering system in high-end driving simulators around the world. The force-feedback system has a low-inertia, direct-drive motor that connects the steering column directly to the motor shaft with a 25 Nm maximum torque and slew rate up to 8.0 Nm/ms. This allows the driver to experience real-time response from speed, friction, collision, vibration, and road surfaces without the lag imposed by chain or belt drive mechanisms.



The steering force-feedback system uses brushless motor technology and a motor controller designed specifically for driver simulator steering requirements. Along with our proprietary software, the system gives the driver extremely crisp and realistic torque cues through the steering wheel. The steering system can be programmed to emulate the performance of any vehicle, and tuned to match vehicle data and information from subject-matter experts.

The accuracy of the steering system associated with a simulated vehicle is a critically important element of the driver training experience. The steering system is comprised of the same physical components that are used in an actual truck. Features include a modern Freightliner Cascadia steering wheel fastened to an adjustable column offering tilt and ‘telescope’-style adjustments. This will allow student operators to make the adjustments necessary to establish a correct and ergonomic driving position before proceeding with the assigned training episode.

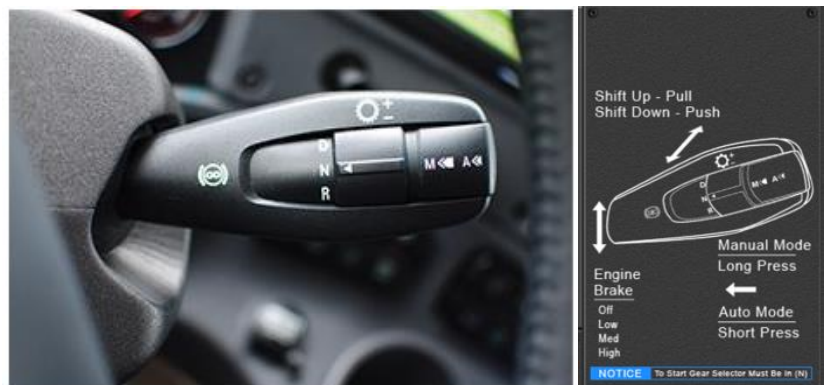
Any lag in system response to steering adjustments being applied at the wheel by the Student will be perceived as an inaccurate steering response. This is a real concern as a delayed steering response will cause the Student to make unnecessary input (adjustments) to make up for the lag in feedback being conveyed by the steering response. Lag not only has a negative impact on the training activity and but can also promote simulator discomfort.

Even a slight lag can be enough to cause steering abnormalities that make the simulated vehicle difficult to control. A steering system that lacks precision and accuracy may result in over-steer (or “see-sawing”) on the part of the student operator seeking to exert precise control over their simulated vehicle. Such struggles can make it difficult to control the simulated vehicle and may lead to difficulties during acclimation to the simulated environment.

Our steering system was designed to eliminate lag altogether by providing an immediate response to applied driver inputs offering a high degree of precision and control that cannot be matched by other systems. The SimuCube steering system generates an accurate turning radius and provides appropriate feedback cues to indicate the correct steering response. In addition, feedback can be generated to indicate steering axle problems, tire concerns, and a response to curb strikes, speed bumps, railroad tracks, and other obstacles that can impede the wheels and impact steering.

Automatic Transmission

An automatic transmission is included standard with the TranSim Series 8 and is located on the column. This is the OEM transmission component from the Freightliner Cascadia Evolution and similarly represents the control found in many commercial vehicles, accurately replicating the feel and behavior of today’s commercial vehicles. The use of real world components provides positive training value and improved immersion for the student.



The transmission responds appropriately based on the student's operation of the lever, allowing them to select either auto or manual mode, as well as operate the engine brake.

Manual Transmission

An industry standard, OEM Eaton floor-mounted commercial vehicle shift lever, including a range selector and splitter control, is available for manual transmission operation during training. The simulator's manual transmission is a gimbal transmission, which provides the shifting lever with an optimal range of motion and accuracy.

The TranSim™ 8 manual transmission replicates 4 to 18 speed transmission and is designed specifically for use in training with the goals of increasing realism, reliability, versatility, and reducing maintenance. It provides fully accurate behavior and is perfect for the effective and realistic training of shifting techniques such as progressive shifting. Drivers are provided accurate shifting response, as well as realistic cues through sound and shifter behavior, such as grinding simulation, to reinforce proper techniques.



Foot Controls

The foot controls integrate real OEM components for the accelerator pedal (or throttle), brake pedal, and clutch. Components are sourced from preferred suppliers to match those in use throughout the trucking industry. The angular positions of each pedal will be sensed using long-life potentiometers to determine the degree at which the student has applied pressure as input to the brake and/or throttle (accelerator). These inputs will be indicated in real-time and conveyed to the student as an expression of vehicle performance.

Any inputs (applied by the Student) to the brake or throttle will also be conveyed (in real-time) at the IOS. Such presentation at the console will promote the observation of proper practices during the training activity. Thus, the Instructor will be able to determine if the student has lifted their right foot from the accelerator as part of their response to an adverse condition. In fact, the Instructor will be able to determine if the Student is simply covering the brake (zero angular deflection) or whether they have actually applied the brakes. This information becomes a helpful component of the feedback loop.

Glass Dash

Our Glass Dash offers a scalable and versatile instrument cluster (IC) component that provides greater flexibility for the presentation of gauges, indicators, switches, and controls. The glass dash expands the utility of the cab and reduces the potential for component-level failures.



A configurable cab will enable instructor to present variations within the equipment layout of the driver's compartment that may exist between different vehicle types, different makes and model trucks, and/or to address those changes that occur within the dash layout between model years. Model options can be added to the simulator whenever they are needed to reflect new arrivals to a fleet and to accommodate any special training considerations that may emerge in response to new equipment that might be added within the driver's area to assist the bus operator.

Switching from one instrument cluster configuration to another layout is a simple process of loading a different vehicle. Once the instructor selects the vehicle to drive, an appropriate layout of controls will be displayed and activated within the cab for use by the student throughout the exercise. The digital instrumentation is fully functional, looks and operates like the real thing, and can be modified beyond initial presets with minimal effort.

The photo-realistic, fully-functional, and accurately positioned dash instrumentation is automatically displayed on panels integrated into the dashboard. The computer-generated instrumentation is fully functional, looks, and operates like the real thing.

- ▶ Instrumentation size and shape is based on actual truck measurements and specifications.
- ▶ Glass Dash (LCD panel) provides the full instrumentation, including speedometer, tachometer fuel, temperature, and oil gauges.
- ▶ The appropriate dash is automatically loaded to match the vehicle selected for training.

- The standard Truck Vehicle library comes complete with multiple vehicle types and dash configurations.
- Our Development Services team can also create custom vehicles and the corresponding dashboards to replicate additional/new vehicles, allowing for fleet customization as needed.

The benefit of this design is that the virtual dashboard requires substantially less maintenance than fixed layouts (that rely on physical gauges, indicators, switches, and controls). The use of digital instrument clusters eliminates the potential for component-level failures that could disrupt the scheduled training activities. Glass dashes offer benefits beyond flexibility by increasing the reliability and availability of the proposed simulator.

Touchscreen

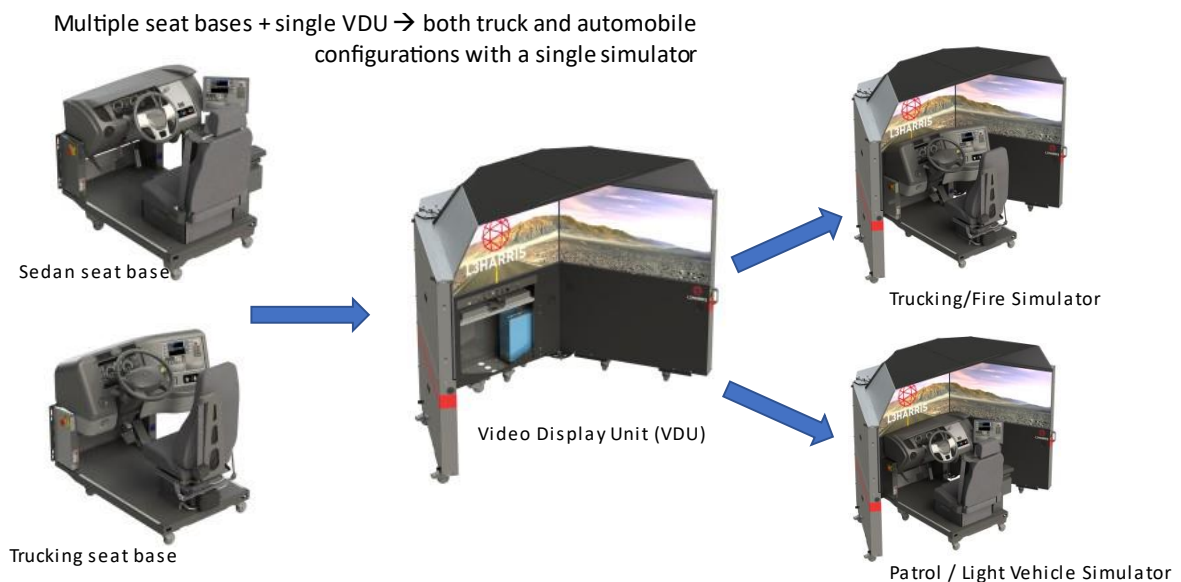
The touchscreen console, conveniently located to the driver’s right, serves as the human-machine interface (HMI) between student and simulator. The touch screen allows the instructor or the driver to easily control the basic functions of the simulator such as starting/stopping/pausing scenarios, adjusting mirrors, enabling headlights, adjusting simulator volume, or changing gears on automatic vehicles. The student is also provided with information on the transmission type corresponding with the currently loaded vehicle.

- Lesson Plan mode provides a filtered list of scenarios preprogrammed by the instructor using the built-in LMS lesson plan editor.
- MDC offers an on-screen communication display that can send and receive text instructions from the instructor at the IOS. This is ideal for simulating dispatch instructions.
- System settings allows quick access to common controls for the simulator
- Bottom tray is a virtual panel designed to load mirror controls, overhead view, map and custom lights or switches unique to a specific vehicle loaded.



OmniSim™ Modular Design

Scalable, Versatile Design - The L3Harris 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.

Visual System

The visual system is designed to generate the highest-fidelity graphics for driving simulation applications. This is required to ensure sharp and clear visual images that improve driver comfort by reducing eyestrain and providing a truly immersive and realistic driving experience. This includes the ability to identify street signs and coordinates, recognize changing road conditions, and scan for potential hazards, all at realistic viewing distances.



High-resolution Graphics Powered by the Unreal Engine.

Displays

The display system comes standard with three 55" 4K LED LCD wide-aspect ratio (16x9) monitors. Each monitor receives our SimView graphics generated at 1920x1080 per channel and up samples to a 4K resolution to provide ultra-sharp, dynamic color range, optimal brightness and contrast, and distortion free images. The commercial, off-the-shelf displays provide fast refresh rates of 120hz, greatly reducing the motion blur and stuttering associated with slower displays. Systems installed with the over-the-shoulder view option have two additional 27" displays with 1920x1080 resolution displaying the activity of the driver's blind spots in real time. The native resolution of the display eliminates artifacts such as image stretch or shrink. The monitors are at a consistent radius from the driver's eye-point, thereby mitigating eye fatigue issues associated with systems where the focal distance is variable. Exterior left and right mirrors and a center interior mirror, where appropriate, are simulated with images that update in real time providing the proper and realistic visibility conditions and behaviors.

The field of view (FOV) provided allows for a 180° radius from nominal seat position. Optional over-the-shoulder accessory screens add as much as 60° of field of view in each direction for a physical total of 300°, and a virtual of view of 360° with mirrors and pan functions engaged. The aspect ratio and diagonal size of the three displays provides an ample field of view (FOV) while minimizing artificial blind spots. This FOV allows the driver to safely train to clear an intersection for example, and the vertical FOV is as large as or larger than a typical windshield and window area.

Feature	Description
Number of Channels	3
Aspect Ratio	16 x 9
Eye Distance to Screen	38-46 inches (adjustable with seat position)
Horizontal Field of View	180° at 42-inch eye point, plus 60° each direction with over-the-shoulder option
Vertical Field of View	33°
Scene Edge Matching	3 side-by-side monitors (2 seams)
Seam Width	Approximately ½ an inch
Rear View Mirrors	Adjustable driver's side, center, and right side insets. Side insets can include both standard and convex mirrors. Center insets may be interior or exterior rear views, depending on the vehicle.

Image Generation (IG)

Standard, commercial off-the-shelf PC's with optimal fast-core graphics processing units (GPUs) allow us to generate the real-time imagery that makes the simulator an effective training tool, while reducing costs and maintenance drastically. The following table summarizes the features of the image generator provided standard with the TranSim.

Feature	Description
Image Generation	Intel i7-12700F processing and GeForce RTX 4070 video processing
Update (Refresh) Rate	Rendered at 60 fps and displayed at 120 fps
Resolution	1920 x 1080, displayed in 4K 4096x2160 pixel resolution
Texture	Photo-realistic, best-in-class Unreal Engine 5.2 graphics engine
Time of Day	Fully adjustable, including sky models for dusk, and realistic nighttime sky
Illumination	Headlights, taillights, directional light, EVO lights, emergency vehicle lights left and right alley lights, overhead takedown lights (based on vehicle type)
Weather Effects	Multiple levels of fog, rain, snow, ice, and sun glare
Transparency	Yes
Color	32 bit

Our team has designed and developed our visual system in-house. In-house development allows us to respond quickly to our Clients' needs and to optimize our solutions specifically for effective driving simulation and training. This approach also allows us to be able to customize our solutions for virtually any requirement. Our use of standard, off-the-shelf components and our modular design allows us to keep current with technological advances and improve the level of performance we can provide, while keeping costs low.

Audio System

A six channel 5.1 surround-sound system, including a sub-audio tactile transducer, accurately produce sounds and audio cues to provide a realistic audio and tactile experience for the driver. These features generate vehicle sounds and tactile vibrations that are critical to the training process. They allow the student to identify and recognize important cues and responses to environmental conditions. Sounds are computer generated from recordings of actual in-cab sounds. These audio signals are played back to the driver in real time at the actual decibel levels experienced in a real vehicle. The audio and tactile sound system features include:

Audio

- Engine audio source synthesis (specific to each scenario vehicle)
- Tires and chassis digital audio replay
- Tire sounds and squeal dependent on road surface
- Wind in relation to speed and vehicle aerodynamics model
- Miscellaneous environmental sounds such as sirens and traffic
- 3D directional sounds such as passing automobiles and trucks
- Dynamic sounds that can be associated with any scenario object
- Static sounds with fixed spatial position
- Horn sounds, specific to scenario vehicle class
- Other sounds can be associated with the position of any scenario vehicle
- Traffic, sirens, and other miscellaneous environmental sounds

Tactile Feedback & Vibration

Tactile sound transducer attached to the seat to partially simulate engine and road vibrations
Steering wheel feel providing natural tactile stimuli amplitude correlated with tire-and-roadway interaction and engine operation, and fully synchronous and complementary with audio signals

2.3 Standard Vehicles & Scenarios



Trucking Scenarios

Provided with every TranSim™ 8 is a library of customizable training scenarios designed to provide out-of-the-box training capabilities and enhance the skills of both experienced CDL drivers and entry-level drivers. TranSim™ 8 comes with over 70 pre-installed scenarios that cover a wide variety of objectives in a broad range of settings including:

- City, rural, highway, and mountainous driving
- Reaction to various traffic hazards and weather/road conditions
- Demonstration of skills in speed and space management, shifting, and braking
- Ability to pass at the appropriate times, to yield right of way, and perform situational analysis to anticipate potential hazards and avoid them
- Ability to negotiate speed and avoid collisions

Automatic Transmission Vehicles

A large number of vehicle types and configurations are included with the purchase of a TranSim™. The library automatic transmission vehicles includes several different tractor / trailer / drive train combinations and dashboard configurations. Transmissions also include a variety of speeds. Each vehicle comes with a dashboard configuration that accurately reflects the cab make and model.



FREIGHTLINER CLASSIC CONFIGURATIONS

Engine	Transmission	Trailer
Detroit 515	Eaton UltraShift 10	Flat bed, empty, 48'
Detroit 515	Eaton UltraShift 10	Flat bed, half full, 48'
Detroit 515	Eaton UltraShift 10	Flat bed, full, 48'
500 HP Diesel	10 speed auto	Flat bed, empty, 48'
500 HP Diesel	10 speed auto	Flat bed, half full, 48'
500 HP Diesel	10 speed auto	Flat bed, full, 48'
500 HP DIESEL	10 speed auto	Bobtail
Mack 427	10 speed auto	Bobtail
Mack 427	10 speed auto	53' Box
445 HP Diesel	10 speed auto	48' Box
500 hp engine	10 speed auto	Tanker, Empty, 48'
500 hp engine	10 speed auto	Tanker, Half Full, 48'
500 hp engine	10 speed auto	Tanker, Full, 48'
500 hp engine	10 speed auto	Chemical Tanker, Empty
500 hp engine	10 speed auto	Chemical Tanker, Half
500 hp engine	10 speed auto	Chemical Tanker, Full
500 hp engine	10 speed auto	Propane Tanker, Empty
500 hp engine	10 speed auto	Propane Tanker, Half
500 hp engine	10 speed auto	Propane Tanker, Full
500 hp engine	10 speed auto	Lowboy Oversized Load
450 hp engine	12 speed auto	53' Box



FREIGHTLINER CASCADIA CONFIGURATIONS

Engine	Transmission	Trailer
515 HP	Eaton UltraShift 10	Flat bed, empty, 48'
515 HP	Eaton UltraShift 10	Flat bed, half full, 48'
515 HP	Eaton UltraShift 10	Flat bed, full, 48'
515 HP	Eaton UltraShift 10	Glass Trailer
450 HP	Meritor 12 speed	Box Trailer, 53'
450 HP	Meritor 12 speed	Split axle flat bed, Empty, 48'
450 HP	Meritor 12 speed	Split axle flat bed, Loaded, 48'
450 HP	Meritor 12 speed	Food tanker, Empty, 48'
450 HP	Meritor 12 speed	Food tanker, Half, 48'
450 HP	Meritor 12 speed	Food tanker, Full, 48'



FREIGHTLINER ARGOSY CONFIGURATIONS

Engine	Transmission	Axle	Trailer
450 HP	18 Spd Auto Trans	3 AXLE	Double Box
550 HP	18 Spd Auto Trans	3 AXLE	Triple Box
550 HP	18 Spd Auto Trans	3 AXLE	Flat bed, empty/half/full 48'
550 HP	18 Spd Auto Trans	3 AXLE	Tanker, Empty/Half/Full, 48'



**FREIGHTLINER FL112
CONFIGURATIONS**

Engine	Transmission	Axle	Trailer
350 HP	13 Speed Auto	3 AXLE	Rigid Body



**ISUZU FVY 1400
CONFIGURATIONS**

Engine	Transmission	Axle	Trailer
Isuzu Sitec 275 hp	6 Speed Auto	3 AXLE	Rigid Body



**ISUZU FRR 550
CONFIGURATIONS**

Engine	Transmission	Axle	Trailer
190 hp	8 Speed Auto	3 AXLE	Rigid Body



**ISUZU NPR 250
CONFIGURATIONS**

Engine	Transmission	Axle	Trailer
150 hp	6 Speed Auto	3 AXLE	Rigid Body



**STERLING LT9500
CONFIGURATIONS**

Engine	Transmission	Axle	Trailer
350 hp	18 Spd Auto	3 AXLE	12m Box



**VOLVO FH12
CONFIGURATIONS**

Engine	Transmission	Axle	Trailer
350 hp	14 Spd Auto Trans	3 AXLE	12m box



**VOLVO CONVENTIONAL
CONFIGURATIONS**

Engine	Transmission	Trailer
Volvo 425	10 speed auto	53' Box
Volvo 425	10 speed auto	28' Box
Volvo 425	10 speed auto	Bobtail
D-13	12 speed auto	48' Box
D-13	12 speed auto	53' Box
D-13	12 speed auto	48' Flat bed



VOLVO DAYCAB CONVENTIONAL CONFIGURATIONS

Engine	Transmission	Trailer
Detroit 515	Eaton UltraShift 10	53' Belly dump
Detroit 515	Eaton UltraShift 10	53' Double belly dump



SCANIA R580 CONFIGURATIONS

Engine	Transmission	Axle	Trailer
580 hp	14 Spd Auto Trans w/clutch	3 AXLE	Flatbed w/Container



INTERNATIONAL 4400 RIGID PROPANE TANKER CONFIGURATIONS

Engine	Transmission	Axle	Trailer
300 hp	6 Spd Auto Trans	2 AXLE	None



INTERNATIONAL 4400 RIGID OIL TANKER CONFIGURATIONS

Engine	Transmission	Axle	Trailer
300 hp	6 Spd Auto Trans	2 AXLE	None

Trailer Configurations for Automatic Transmission Vehicles



Box Trailer: 53', 48', 40' and 28' version included



Flat Trailer: half full



Flat Trailer: empty



Flat Trailer: full



Split Axle Flat Trailer: empty



Split Axle Flat Trailer: full



10.95 Meter Trailer



12.3 Meter Trailer



6-Meter Dog Trailer



Flatbed with Container



Tanker Trailer: full, half, and empty



Propane Trailer



Chemical Trailer



Lowboy Trailer, Oversized Load



5th Wheel



Belly Dump Trailer (53', 40', 28')

Glass Dash Configurations for Automatic Transmission Vehicles



Freightliner Cascadia



Volvo



Kenworth T680



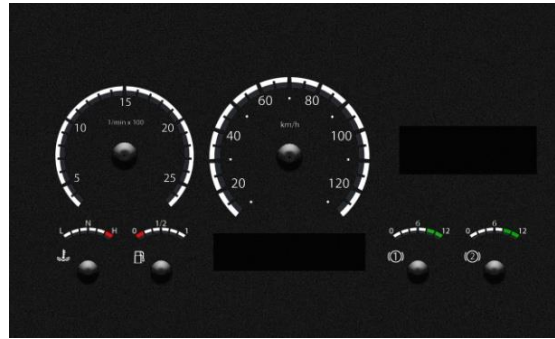
Freightliner Argosy



Volvo FH12



Freightliner FL112



Scania R580



Sterling

Manual Transmission Vehicles

A large number of vehicle types and configurations are included with the purchase of a TranSim™. The library of manual transmission vehicles includes several different tractor / trailer / drive train combinations and dashboard configurations. Engine types include Cummins, Caterpillar, and Detroit. Transmission types include 9, 10, 13 and 18-speeds. Each vehicle comes with a dashboard configuration that accurately reflects the cab make and model.



FREIGHTLINER CLASSIC CONFIGURATIONS

Engine	Transmission	Axle	Trailer
Cummins 390	Fuller 9 manual	3.55	53' Box Trailer
Cummins 390	Fuller 9 manual	3.55	48' Box Trailer
Cummins 390	Fuller 9 manual	3.55	Bobtail
Cummins 390	Fuller 7 manual	3.55	28' Pup Trailer
Cummins 390	Fuller 7 manual	3.55	Bobtail
Cummins 380	Fuller Super 10 manual	3.7	53' Trailer
Cummins 380	Fuller Super 10 manual	3.7	Bobtail
Cummins 390	PowerShift 6 manual	3.55	28' Pup Trailer
Cummins 390	PowerShift 6 manual	3.55	Bobtail
Cummins 410	Fuller Super 10 manual	3.7	Bobtail
Cummins 410	Fuller 13 manual	3.7	Bobtail
Cummins 410	Fuller Super 10 manual	3.7	53' Trailer
Cummins 410	Fuller 13 manual	3.7	53' Trailer
Cummins 435	Fuller 10 manual	3.55	53' Trailer
Cummins 435	Fuller 10 manual	3.55	48' Trailer
Cummins 435	Fuller 10 manual	3.55	Bobtail
Cummins 435	Fuller 7 manual	3.55	28' Pup Trailer
Cummins 435	Fuller 7 manual	3.55	Bobtail
Cummins 435	PowerShift 6 manual	3.55	28' Pup Trailer
Cummins 435	PowerShift 6 manual	3.55	Bobtail



**FREIGHTLINER
CLASSIC CONFIGURATIONS**

Engine	Transmission	Axle	Trailer
Cummins 460	Fuller 13 manual	3.55	Bobtail
Cummins 460	Fuller 13 manual	3.55	48' Trailer
Caterpillar 500	Fuller Super 10 manual	3.55	48' Trailer
Caterpillar 500	Fuller Super 10 manual	3.55	Bobtail
Caterpillar 500	Fuller 13 manual	3.55	53' Trailer
Caterpillar 500	Fuller 13 manual	3.55	48' Trailer
Caterpillar 500	Fuller 13 manual	3.55	Bobtail
Caterpillar 390	Fuller 9 manual	3.55	48' Trailer
Caterpillar 390	Fuller 9 manual	3.55	Bobtail
Detroit 430	Fuller 9 manual	3.55	Bobtail
Detroit 430	Fuller 9 manual	3.55	48' Trailer
Detroit 430	Fuller 9 manual	3.55	48' Tanker Trailer, empty
Detroit 430	Fuller 9 manual	3.55	48' Tanker Trailer, half full
Detroit 430	Fuller 9 manual	3.55	48' Tanker Trailer, full
Detroit 430	Fuller 10 manual	3.55	48' Tanker Trailer, empty
Detroit 430	Fuller 10 manual	3.55	48' Tanker Trailer, half full
Detroit 430	Fuller 10 manual	3.55	48' Tanker Trailer, full
Detroit 430	Fuller 13 manual	3.55	48' Tanker Trailer, empty
Detroit 430	Fuller 13 manual	3.55	48' Tanker Trailer, half full
Detroit 430	Fuller 13 manual	3.55	48' Tanker Trailer, full
Detroit 430	Fuller 18 manual	3.55	48' Tanker Trailer, empty
Detroit 430	Fuller 18 manual	3.55	48' Tanker Trailer, half full
Detroit 430	Fuller 18 manual	3.55	48' Tanker Trailer, full
Detroit 430	Fuller 10 manual	2.64	Bobtail
Detroit 430	Fuller 10 manual	2.64	53' Trailer
Detroit 430	Fuller 10 manual	2.64	48' Trailer
Detroit 430	Fuller 10 manual	3.08	Bobtail



**FREIGHTLINER
CLASSIC CONFIGURATIONS**

Engine	Transmission	Axle	Trailer
Detroit 430	Fuller 10 manual	3.08	48' Trailer
Detroit 470	Fuller 18 manual	4.3	Bobtail
Detroit 470	Fuller 18 manual	4.3	53' Trailer
Detroit 470	Fuller 13 manual	3.55	53' Trailer
Detroit 470	Fuller 13 manual	3.55	48' Trailer
Detroit 470	Fuller 13 manual	3.55	Bobtail
Detroit 430	Fuller RTX 10 manual	3.55	53' Trailer
Detroit 430	Fuller RTX 10 manual	3.55	48' Trailer
Detroit 430	Fuller RTX 10 manual	3.55	Bobtail
390 HP Diesel	Fuller 9 manual	3.36	Flatbed trailer, empty
390 HP Diesel	Fuller 9 manual	3.36	Flatbed trailer, half or full
Mack 400	Fuller 13 manual	3.55	Bobtail
Mack 400	Fuller 13 manual	3.55	53' Trailer
Mack 400	Fuller 13 manual	3.55	48' Trailer
Mack 400	Fuller 9 manual	3.55	53' Trailer
Mack 400	Fuller 9 manual	3.55	48' Trailer
Mack 400	Fuller 9 manual	3.55	Bobtail
MaxxForce 13	Fuller 10 manual	3.42	53' Box Trailer
Detroit 430	Fuller 9 manual	3.55	Chemical Tanker, empty
Detroit 430	Fuller 9 manual	3.55	Chemical Tanker, half or full
Detroit 430	Fuller 9 manual	3.55	Propane Tanker, empty
Detroit 430	Fuller 9 manual	3.55	Propane Tanker, half or full
Detroit 430	Fuller 9 manual	3.55	Lowboy Oversized Load
Detroit 430	Fuller 13 manual	3.55	Chemical Tanker, empty
Detroit 430	Fuller 13 manual	3.55	Chemical Tanker, half or full
Detroit 430	Fuller 13 manual	3.55	Propane Tanker, empty
Detroit 430	Fuller 13 manual	3.55	Propane Tanker, half or full



**FREIGHTLINER
CLASSIC CONFIGURATIONS**

Engine	Transmission	Axle	Trailer
Detroit 430	Fuller 13 manual	3.55	Lowboy Oversized Load
DD-15 455	Fuller 10 manual	2.64	Chemical Tanker, empty
DD-15 455	Fuller 10 manual	2.64	Chemical Tanker, half or full
DD-15 455	Fuller 10 manual	2.64	Propane Tanker, empty
DD-15 455	Fuller 10 manual	2.64	Propane Tanker, half or full
DD-15 455	Fuller 10 manual	2.64	Lowboy Oversized Load
DD-15 455	Fuller 18 manual	3.55	Chemical Tanker, empty
DD-15 455	Fuller 18 manual	3.55	Chemical Tanker, half or full
DD-15 455	Fuller 18 manual	3.55	Propane Tanker, empty
DD-15 455	Fuller 18 manual	3.55	Propane Tanker, half or full
DD-15 455	Fuller 18 manual	3.55	Lowboy Oversized Load



**FREIGHTLINER CASCADIA
CONFIGURATIONS**

Engine	Transmission	Axle	Trailer
Detroit Diesel 15-455	Fuller 10 manual	2.53	53' Box Trailer
Detroit Diesel 15-455	Fuller 10 manual	2.64	53' Box Trailer
Detroit Diesel 15-455	Fuller 18 manual	3.55	53' Box Trailer



**VOLVO
CONFIGURATIONS**

Engine	Transmission	Axle	Trailer
Volvo 425	Fuller 13 manual	3.55	Bobtail
Volvo 425	Fuller 13 manual	3.70	53' box
Volvo 425	Fuller 13 manual	3.70	Bobtail
Volvo 425	Fuller 13 manual	3.55	53' box
Volvo 400	Fuller 10 manual	4.33	53' box
Volvo 400	Fuller 10 manual	4.33	Tanker, half full
Volvo 465	Fuller 18 manual	3.91	53' box
Volvo 500	Fuller 13 manual	3.55	53' box



**VOLVO
CONFIGURATIONS**

Engine	Transmission	Axle	Trailer
Volvo 500	Fuller 18 manual	4.88	28' double boxes
Volvo 500	Fuller 18 manual	4.88	40' double boxes



**KENWORTH T800
CONFIGURATIONS**

Engine	Transmission	Axle	Trailer
Cat 490	Fuller 10 manual	3.08	53' Trailer
Cat 490	Fuller 10 manual	3.08	48' Trailer
DT 430	Fuller 13 manual	3.55	48' Tanker Trailer, empty
DT 430	Fuller 13 manual	3.55	48' Tanker Trailer, half full
DT 430	Fuller 13 manual	3.55	48' Tanker Trailer, full



**FREIGHTLINER FL112
CONFIGURATIONS**

Engine	Transmission	Axle	Trailer
350 HP	13 Speed Manual	2 AXLE	



**FREIGHTLINER ARGOSY
CONFIGURATIONS**

Engine	Transmission	Axle	Trailer
	18 Spd Manual Trans	3 AXLE	Triples
	18 Spd Manual Trans	3 AXLE	Doubles



**ISUZU FVY 1400
CONFIGURATIONS**

Engine	Transmission	Axle	Trailer
Isuzu Sitec 275 hp	13 speed Manual	2 AXLE	



**ISUZU FRR 550
CONFIGURATIONS**

Engine	Transmission	Axle	Trailer
190 hp	6 Speed Synchro	2 AXLE	



**ISUZU GIGA
CONFIGURATIONS**

Engine	Transmission	Axle	Trailer
425 hp	18 Speed Synchronmesh	3 AXLE	12m



**ISUZU NPR 250
CONFIGURATIONS**

Engine	Transmission	Axle	Trailer
150 hp	6 Speed Synchro	2 AXLE	



STERLING LT9500 CONFIGURATIONS

Engine	Transmission	Axle	Trailer
350 hp	18 Spd Eaton	3 AXLE	12m
350 hp	13 Spd Eaton	3 AXLE	12m



VOLVO FH12 CONFIGURATIONS

Engine	Transmission	Axle	Trailer
445 hp	14 Spd Synchro	3 AXLE	2 Trailer
445 hp	14 Spd Synchro	3 AXLE	1 Trailer



MACK FLEETLINER CONFIGURATIONS

Engine	Transmission	Axle	Trailer
400 hp	18 Speed	3 AXLE	1 Trailer



**KENWORTH K108
CONFIGURATIONS**

Engine	Transmission	Axle	Trailer
450 hp	18 Speed	3-AXLE	Trailer



**KENWORTH T404 RIGID
CONFIGURATIONS**

Engine	Transmission	Axle	Trailer
450 hp	18 Speed	3-AXLE	1 Trailer



**KENWORTH T608
CONFIGURATIONS**

Engine	Transmission	Axle	Trailer
450 hp	18 Speed	3-AXLE	Trailer



KENWORTH T800 SLEEPER CONFIGURATIONS

Engine	Transmission	Axle	Trailer
MX13 455	Fuller 18 Manual	3.42	2 Containers, full
MX13 455	Fuller 18 Manual	3.42	2 Containers, empty
MX13 455	Fuller 18 Manual	3.42	2 Soft Sides, full
MX13 455	Fuller 18 Manual	3.42	2 Soft Sides, empty
MX13 455	Fuller 18 Manual	3.42	2 Tankers, full
MX13 455	Fuller 18 Manual	3.42	2 Tankers, empty



HINO 500 DUMP TRUCK WITH EMPTY & LOADED

Engine	Transmission	Axle	Trailer
270 HP	9 Speed Synchro Manual	2-AXLE	



SCANIA R580 CONFIGURATIONS

Engine	Transmission	Axle	Trailer
450 hp	18 Speed	3 AXLE	Trailer



GENERIC DUMP TRUCK CONFIGURATIONS

Engine	Transmission	Axle	Trailer
460 hp	9 Speed	2 AXLE	



TRANSIT BUS CONFIGURATION

Engine	Transmission	Axle	Trailer
280 hp	10 Speed	2 AXLE	



NAVISTAR INTERNATIONAL PROSTAR CONFIGURATION

Engine	Transmission	Axle	Trailer
MaxxForce 13 450 hp	10 Speed	3 AXLE	53' Box



NAVISTAR INTERNATIONAL PROSTAR, 2015 CONFIGURATIONS

Engine	Transmission	Axle	Trailer
MX13 455	Fuller 18 Manual	3.42	2 Containers, full
MX13 455	Fuller 18 Manual	3.42	2 Containers, empty
MX13 455	Fuller 18 Manual	3.42	2 Soft Sides, full
MX13 455	Fuller 18 Manual	3.42	2 Soft Sides, empty
MX13 455	Fuller 18 Manual	3.42	2 Tankers, full
MX13 455	Fuller 18 Manual	3.42	2 Tankers, empty

Trailer Configurations for Manual Transmission Vehicles



Box Trailer: 53', 48', 40' and 28' version included



Flat Trailer: half full



Flat Trailer: empty



Flat Trailer: full



10.95 Meter Trailer



12.3 Meter Trailer



6-Meter Dog Trailer



Flatbed with Container



Tanker Trailer: full, half, and empty



Propane Trailer



Chemical Trailer



Lowboy, Oversized Load



40' Soft Sided Box Trailer



40' Shipping Container on Flat Bed



Belly Dump Trailer (53', 40', 28')

Glass Dash Configurations for Manual Transmission Vehicles



Freightliner Cascadia



Volvo



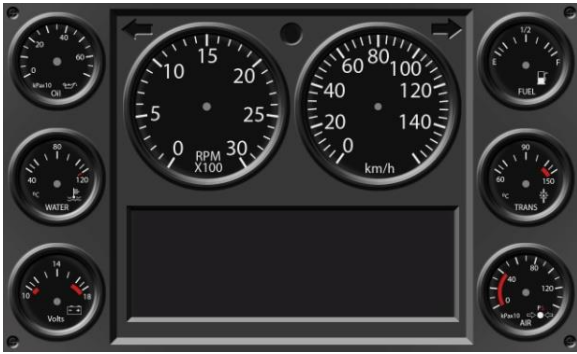
Navistar International ProStar



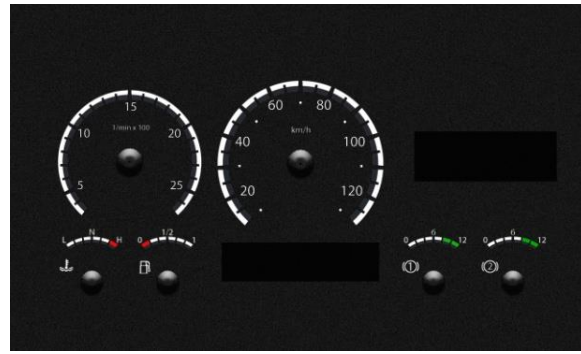
Freightliner Argosy



Isuzu 1400 & NPR



Freightliner FL112



Scania R580



Sterling



Volvo FH12



Isuzu Giga



Kenworth T608



Hino 500

2.4 Virtual Driving Environments

A number of realistic and versatile virtual environments are provided to support the effective recreation of real-world conditions. The virtual environments that come standard with TranSim™ 8 include rural, freeway, city, suburban, business, industrial, and residential areas, all including objects and features representative of those areas. The road networks have paved and unpaved roads that range from simple trails to four-lane freeways. Divided freeways include mountain areas, runaway ramps, on-off ramps, and rest areas.

Roads and highways in the virtual world are designed in accordance with standard highway specifications for grade, width, curvature, and overpass height. Traffic control signals and highway markings are consistent with standard street and highway markings. Road types are appropriate to each environment, and are consistent with real-world conditions.

Roads include expressways, multi-lane highways (interstate), high-speed entrance/exit ramps, cloverleaf and trumpet intersections, over/under passes, elevated/below grade highways, foot bridges over the roadway, ascending/ descending gradients with switchbacks, mixed surface types (concrete/gravel/asphalt), speed-bumps and dips. Major country road surfaces are uniform and smooth with little or no shoulder. Some country roads are made up of either gravel or dirt surfaces with accompanying changes in traction.



Suburban / Downtown Zone

Typical suburban downtown cultural features are provided in this environment, including: office buildings, hospitals, stores, banks, restaurants, fire stations, loading docks, bridges, multi-lane roads, street junctions, functional stoplights, road signs, traffic control signs, typical vegetation, multi-lane streets, construction zones, dead-end roads, and narrow streets.



Suburban / Residential Zone

Typical features provided are hospitals, single-family homes, schools, apartment complexes, fire stations (drive through capable), strip-malls, restaurants (fast food w/drive through), banks, functional stoplights, road signs, traffic control signs, typical vegetation, driveways and sidewalks. Multiple roadways (two lane, four lane), intersection types, buildings etc., provide an excellent place to practice a wide array of driving maneuvers.

The Suburban/Residential/Downtown area also includes these features:

- walk / don't walk indicators with 'stale green'
- speed signs
- open areas
- fire station
- warehouse for backing
- parking meters
- school with school zones
- canyon area
- narrow single-lane bridge.



Rural/Country

This environment incorporates numerous hills and winding two-lane roads. Limited visibility and sudden curves enhance training in speed and vehicle control. There are straight sections with limited foliage as well as winding sections that contain blind curves. Features include: branching Y-type roads, single-track bridges, rail-road tracks/crossings, open multi-lane interstate highways, blind intersections, and small, roadside villages.



Urban City Area

A moderately-urban area containing dead-end alleyways, graffiti covered buildings, parking garages, sharp turns, a bridge, tunnel, and high rise buildings. This driving environment allows continuous driving across multiple types of city environments.



Freeway

The freeway driving area includes more than 23 miles of two- and three-lane roads with overpasses, on-ramps, off-ramps, canyons, truck runaway lanes, six-percent grades, a rest area, and all of the appropriate signage.



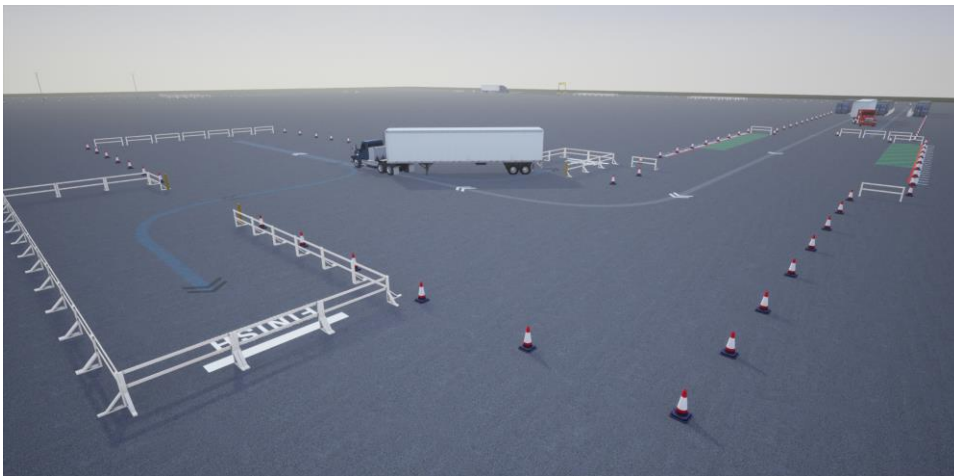
Mountain Pass

This driving environment has 14 miles of winding mountain roads and several miles of forest trails. There are steep drop-offs, bridges, switchback curves and tunnels. The mountain environment is useful for training on windy, narrow, snowy, and slippery roads. It is an environment representing Wolf Creek Pass in Colorado.



Skid Pad

Skid Pad is a simple, flat asphalt environment, with a large puddle in the center of it. This environment includes markings and cones, and allows drivers to practice simple emergency maneuvers and avoidance.



Trucking Course:

The Trucking “Rodeo Course” is a comprehensive skills test environment based on the ATA Standards. Challenges include: 90° Left Turn, Front Line Stop, Serpentine, Lateral Parking, 90 degree Right Turn, Diminishing Clearance, Scale Stop, Offset Alley, Fuel Dump, Pull Thru, Back Thru, Pull Thru Alley, Rear Line Stop, Parallel park, and Alley Dock, or Bull Pen Dock (Instructors Choice).

Virtual Environment Features

The following features are available in the standard environments:

- > Alleyways
- > Hidden oncoming traffic
- > Roads with gravel surfaces
- > Animated smoke and fire
- > Hilly roads
- > One-way streets
- > Appropriate signage
- > Large parking lots
- > Roads w/uneven (partially paved) surfaces
- > Blind intersections
- > Roundabouts
- > Neighborhoods
- > Steep grades and inclines
- > Operational traffic lights
- > Crosswalks
- > Street signs
- > Police station
- > Farms
- > Shopping areas
- > Railroad tracks
- > Gas stations
- > Residential properties
- > Road workers with active stop/slow signs
- > Flashing arrow boards for construction zones
- > Wide variety of fixed/moving objects
- > Bike Lanes
- > People / Pedestrians in various activities
- > Caution signs
- > Multiple lane roads
- > School zone
- > Civic centers
- > Narrow roads
- > Small roadside villages
- > Commercial properties
- > Narrow, single lane bridges
- > Speed limit signs
- > Construction vehicles
- > Speed-bumps and dips
- > Construction zone
- > Parks
- > Cul-de-sacs
- > Railroad crossings
- > Stop signs
- > Winding lanes
- > Wooded area
- > Roads with overhead pedestrian crosswalks
- > Construction zone barriers, cones, etc.
- > Branching "Y" roads with appropriate signage
- > Warehouse with loading dock
- > Large connected parking lots for backing.

Commercial Vehicle Environment Features

The following features have been developed based upon the needs of those operating in the commercial vehicle industry:

- Accurate representation of side rearview mirrors
- Parabolics for curved mirrors
- Correct size and position relative to driver
- Accurate road markings
- Animated animals with walking motion
- Construction vehicles
- Construction worker with active stop/slow sign
- Dark night scenes with limited visibility
- Flashing arrow board for construction zones
- Large moving vehicles in scenarios with trailers
- Narrow single lane bridge
- Overhead traffic lights
- Roads with gravel surfaces
- Roads with hills and valleys
- Roads with overhead pedestrian crosswalk
- High detailed road surfaces
- Steep inclines and declines
- Roads with uneven (partially paved) driving surfaces
- Potholes of various sizes that can be randomly placed in the road
- Multiple billboards that can be modified with customer specific images
- Vehicles with doors that open (not all vehicles have this feature)
- Bus loading zones with left and right entry
- Full control of traffic light timing (control timing for red, yellow and green light states)
- Walking pedestrian models of men, women, teens, and children
- Large set of scripting commands to control scenario vehicles, pedestrians, animals, environment, audio, etc.
- Railroad crossing with flashing cross-bucks, animated crossing arm and active train

2.5 Vehicle Dynamics System

The L3Harris Multi-Chassis Dynamics (MDYN) system used in the TranSim™ 8 is based on 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 system, engine, transmission, drive train, and chassis is modeled.

The advanced physics model includes a 21 data point model representing tires, suspension, vehicle chassis, steering and power train. This level of sophistication matches that in engineering applications and enables our use of vehicle manufacturer and other OEM data.

Vehicle Dynamics Modes Simulated

TranSim™ 8 operates across a wide range of performance modes consisting of several vehicle and environmental factors according to vehicle manufacturers' specifications.

- **Normal Operation:** The default vehicle dynamics setting is normal operation.
- **Vehicle Motion:** Vehicle suspension and motion are accurately simulated using vehicle manufacturer's data. Visual cues are provided to the student by the displayed vehicle moving and responding in concert with the vehicle's steering, acceleration and braking factors.
- **Speed:** Acceleration and speed are accurately simulated based on the precise vehicle models incorporating actual vehicle engine and other drive train specifications.
- **Environment Surface/Conditions:** Environment surface conditions change appropriately with rain, snow, and ice.
- **Transmission Selection:** Transmissions, both manual and automatic, are modeled in each vehicle's dynamics model according to the manufacturer specifications.

TranSim™ 8 provides vehicle dynamics models that are modular and adjustable representations of actual vehicles' subsystems. The tire patch model provides interaction with the road surface to simulate actual skids, tire envelopment over objects, and road hazards. The accurate tire-and-road model interacts with dynamic forces on the simulated vehicle to allow a full spectrum of tire reactions, so the driver feels a variety of forces and sensations as the wheels interact with surface variations and objects.

Vehicle Subsystems

Simulated vehicle subsystems are an integral part of the vehicle model. The modeled subsystems include:

- power/drive train (engine, transmission, axles)
- braking system
- suspension system
- tire system
- chassis system
- control inputs (throttle, brake, clutch, steering, gear selection)
- disturbance inputs (wind, terrain, collisions)
- instrument panel outputs (vehicle speed, engine speed, warning lights, etc.)
- on-screen displays of vehicle speed and compass
- animated windshield wipers controlled by in-cab wiper control switch

All subsystems use sound automotive engineering principles and simulate real vehicle counterparts.

Anti-Lock Braking Systems (ABS)

We've designed nearly all of our vehicle models to operate in the simulated environment in a manner consistent with the use of an ABS system. ABS function also provides simulated braking feedback forces on the pedal, providing the student driver with realistic tactile feedback in keeping with real vehicle behavior. Braking efficiency is also realistic and in accordance with road conditions. The ABS function can be configured, before or during the simulation, from the Instructor Operator Station or via scripted scenario input. The instructor may select rear-wheel ABS, all-wheel ABS (for vehicles so equipped), no ABS, or choose to return the vehicle to its default setting.

Collision Detection

TranSim™ 8 detects all collisions between the student vehicle and objects in the scene. Collisions are detected and responded to immediately upon contact. Relevant information about the collision is reported to the host computer. Collisions of varying speed or size are treated with appropriately varying severity, with corresponding differences in the visual and dynamic feedback. The instructor has control over whether or not collisions halt the scenario or damage the student vehicle.

Advanced Driver Assist Systems (ADAS) Features

The TranSim™ 8 comes standard with some of the latest advanced driver assist systems and vehicle safety features including simulated warnings and controls, some common to most vehicles, and some specific to individual vehicle models or types. These may include:

> Cruise Control / Adaptive Cruise Control

The physical Cruise Control buttons on the left side of the steering wheel are active, allowing the driver to enable/disable, set, resume, accelerate and decelerate using the real buttons instead of the previous touch screen based buttons.

Adaptive Cruise Control (ACC) is enabled by default, and can be enabled/disabled and manipulated using virtual controls provided on the touch screen. This feature provides feedback to the driver when they are getting too close behind another vehicle, and will take control of the accelerator and/or brake as needed to reduce speed and prevent a collision. Standard Cruise Control must also be active for the Adaptive feature to work.

> Descent Control

On applicable vehicles, such as semi-tractor trailer rigs, the Descent Control system uses a combination of Cruise Control, engine braking, and the service brakes, as needed, to control the vehicle's road speed during a descent to prevent a runaway situation.

> Collision / Following Distance Warning System

On applicable vehicles, proximity to vehicles in front is monitored, with warning and emergency levels of dashboard indication, blinking, and audible alarm depending on how close the driver gets and whether they are getting closer or farther away from said vehicle.

> Gear Lockout Requiring Brake Pedal Application

On applicable automatic vehicles, the service brake must be applied in order to shift the transmission out of neutral and into any forward or reverse gear.

> Hill Start Aid

This feature holds the service brake ON for three seconds after the driver removes his foot from the pedal when on a grade, allowing them the time to apply the accelerator before the vehicle rolls unintentionally. If the driver doesn't apply either the brake or the accelerator within that three seconds, a beep sounds, notifying the driver that the brake is being automatically released.

> Creep Mode

This feature allows applicable automatic vehicles to be placed in a "Crawl Speed" mode by quickly depressing and releasing the accelerator pedal. While in Creep Mode, the speed can be increased or

decreased between 1 and 3 miles per hour by using the Manual Mode gear shift paddle operation on the shifter stalk.

➤ **Automatic Manual Transmission (AMT) Mode**

On applicable automatic vehicles, the transmission can be placed in Auto or Manual Mode using the appropriate button the shifter stalk. During Manual Mode, the gear can be changed up or down using the Manual Mode gear shift paddle operation on the shifter stalk.

➤ **Starting Gear Selection**

On applicable automatic vehicles, the shifter stalk can be used to select the desired gear that the vehicle should start out in each time it is moved from a stop.

➤ **Engine Overspeed Warning**

On applicable vehicles and dashboards, the engine speed (RPM) is monitored, and when it exceeds prescribed levels, a yellow or red warning indicator is displayed on the dashboard, and in the worst case, engine damage occurs.

➤ **Diesel Exhaust Fluid Level Indication and Low Level Behavior**

On applicable vehicles, the DEF level is displayed on the dashboard. If it falls below prescribed levels, a low level warning light appears, the DEF indicator blinks, and engine output and top vehicle speed are both derated.

➤ **Dashboard and Warning Indications**

In addition to the standard instrumentation and indicators found on most dashboards, select L3Harris dashboards may have the following, depending on vehicle model and configuration.

- Most dashboards include indicators for Cruise Control Enabled, Cruise Control Set, and Adaptive Cruise Enabled
- Current gear number.
- Indication of whether the vehicle transmission is in Automatic or Manual mode.
- Up and down suggested shift arrow prompt for staying in an appropriate gear for the current road speed.
- DEF Status
- Collision warning
- Engine Overspeed indicator

Road Modeling

Roads are high-resolution, 3D surface models with curbs, gutters, soft edges, variations in surface texture and content, and assorted hazards. Some have super elevation for banking around curves. Some road surfaces are designed to the U.S. Standards for Highways or The American Association of State Highway Traffic Office. Available road surfaces include:

- Asphalt
- Sand
- Ice
- Cement
- Dirt
- Snow (now enhanced)
- Gravel
- Mud
- Pot Holes

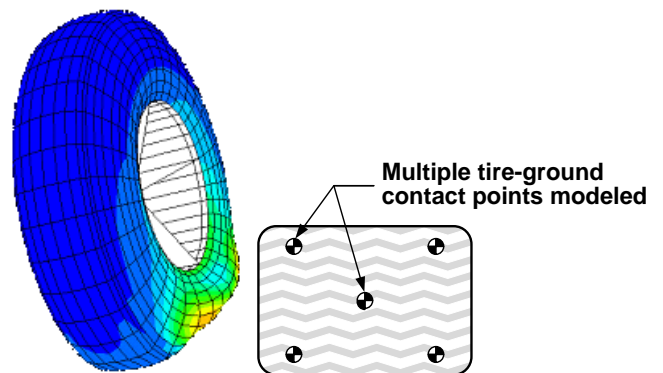
In addition to 3D road-surface models, we sample the critical interface between tire and road at a rate of around 960 Hz. This is essential to capture accurate vehicle position, road feel, and vehicle control. At this rate, the distance we measure between tire-and-road samples is 1.7 cm at 60 km/h. For comparison, if a simulator sampled its tire-and-road interface at 60 Hz, the distance between tire-and-road samples would be 27.7 cm. Sampling at lower frequency does not provide high-fidelity modeling of vehicle control.

Our proprietary 3D road surface model, which is far superior to our competitors' polygon-based road surfaces, interacts with the vehicle's dynamics and tire models. As no road in the real world is completely flat, our unique technology can accurately simulate uneven and crowned road surfaces for a more realistic training experience.

Tire Modeling

Accurate capture of vehicle behavior is dependent on a high-fidelity tire model. Our model captures the tire behavior from stopped to high speeds and from nominal driving to complete loss of traction on all kinds of road surfaces. The model captures all of the standard Society of Automotive Engineers performance measures for ride and handling simulations, including:

- normal forces and vertical displacement
- lateral slip, slip angle, and normal force
- longitudinal force, rolling slip, and normal force
- composite vector limits on total reaction force and normal force.



Most simulation models use only a single point to represent the patch of the tire that contacts the road. Our superior tire model uses up to five sample points to fully capture the interaction of tires with the road. Automobile and tire manufacturers supplied the high fidelity data on tire forces for our model, which lets drivers feel the effects of tire impacts through our direct-drive SimuCube steering system.

Basic Mode

Provided standard with the TranSim™ 8 is the ability to operate the simulator in Basic Mode. This provides entry level driver training shifting skills, progressive shifting techniques, and basic fuel management training.

Basic Mode Vehicle Dynamics

The basic mode offers an extensive array of simulated engines, transmissions, axle ratios, and tire sizes. Users can choose from more than:

- 240 engine types
- 140 transmissions
- 33 axle ratios
- 300 tire sizes

Engine types include: Cummins, Caterpillar, Detroit Diesel, Volvo, Ford, and Mack

Non-synchronized transmissions include 9 speeds, 10 speeds, 13 speeds and 18 speeds. An RPM / Road Speed table is also provided for each vehicle combination to demonstrate shifting and fuel management techniques.

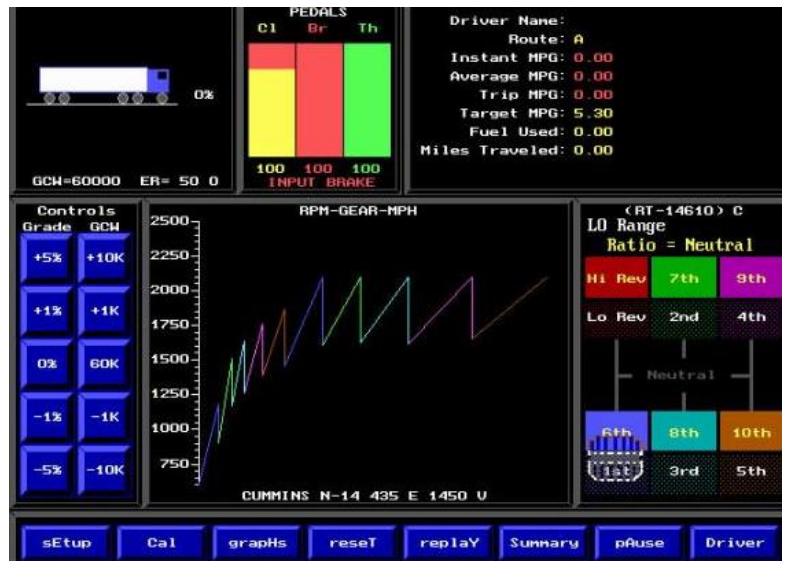
Basic Mode Vehicle Characteristics and Driving Conditions

The load carried by the vehicle can be varied from 35,000 to 200,000 pounds GVW. In addition, the grade of the road driven can be adjusted for uphill and downhill environments.

Basic Mode Driver Information Screen

The information presented on the screen in front of the driver is pictured above. This screen provides the driver with useful learning cues including:

- RPM shift point curve
- Fuel mileage
- Shifting pattern for selected transmission
- Vehicle load and road grade
- Percent clutch, brake, and accelerator pedal application
- Clutch brake applied.



2.6 Instructor Operator Station (IOS)

The purchase of a TranSim™ 8 simulator includes a user friendly Instructor Operator Station (IOS). The instructor's computer skill level need only be sufficient to operate a word processor or similar type of program. A Windows™ format Graphical User Interface (GUI) on the instructor's computer screen provides an easy, non-intimidating instructional flow to start the simulator, choose scenarios, change scenario conditions, change vehicles, and interact with the driver in real time during training.



The instructor station includes multiple display areas and icon control buttons. A single screen provides all the functions required for one instructor to control all the training and simulator control functions for up to four simulators. The operator uses an ordinary mouse and keyboard to select and activate functions. The operator can control and manipulate individual vehicles in the driving scenario while the scenario is running. From the instructor station, for example, a car can be made to drive aggressively or stop quickly in front of the driver when the instructor commands it to happen.

The IOS allows the operator to select the vehicle type and dynamics to be driven by the student, (owncab). For example, a tractor with a 53-foot trailer can be selected then driven by one student while another student drives a tractor with a 48-foot trailer. Each simulated vehicle's feel and performance will approximate that vehicle's size, weight, turning radius, tire and suspension characteristics, etc.

Primary Features

- An easy-to-use, menu-driven GUI
- Graphical Toolbars
- Large simulation environment viewport
- 3D Displays updated in real time showing status and activity

Real-Time Feedback

While the student is driving in the simulator, the Replay Control software records and reports violations, warnings, and other events as they occur. A recording file can be saved, and replay can be started at a point just prior to any violation. A scroll bar allows the instructor to move quickly to any point in the recording. From the IOS, the instructor has complete control and visibility of the training experience.

The student's drive can be recorded and played back. This is a great training tool that can help the driver see his proximity to other vehicles or objects during the replay. When a trainee hits an object, the scenario can continue or stop, depending on how the instructor sets up the scenario at the IOS.

Vehicle Control

The instructor can control scenario vehicles within a scenario from the IOS. The behaviors of the scenario vehicles that can be controlled include:

- Speed
- Forward/reverse direction
- Obedience to rules of road (stop, yield, etc.)
- Driver drunkenness
- Aggressiveness

Scenario Control

From the IOS, the instructor can control traffic in the scenario in a number of ways. Traffic can be pre-set, so that vehicles will behave autonomously according to the preset rules of the road or the parameters chosen by the scenario creator. In addition, the instructor can, during the scenario, trigger events and/or take control of any vehicle. Events can be triggered manually, or they can be set to be triggered by dependencies during the scenario by the scenario creator. For example, after a certain amount of time has elapsed, once a certain speed has been reached, once the driver enters a certain zone, etc.

- The following are examples of elements that the IOS brings under the control of the instructor:
- The simulator can create day, dusk or dawn, and night conditions. Each setting enables a new sky model to provide the appropriate visual effect.
- The instructor can control weather effects and road conditions in real time or can script them into scenarios using the Scenario Builder scenario creation tool. The instructor can modify environmental conditions in real time. Environmental conditions include rain, snow, ice, fog, and wind. Each of them is configurable from very light to very heavy.
- The instructor can control the vehicles in a scenario (see above).
- The instructor can monitor the following functions for each simulator running (up to 4 from a single IOS) using the SimTile Panel.

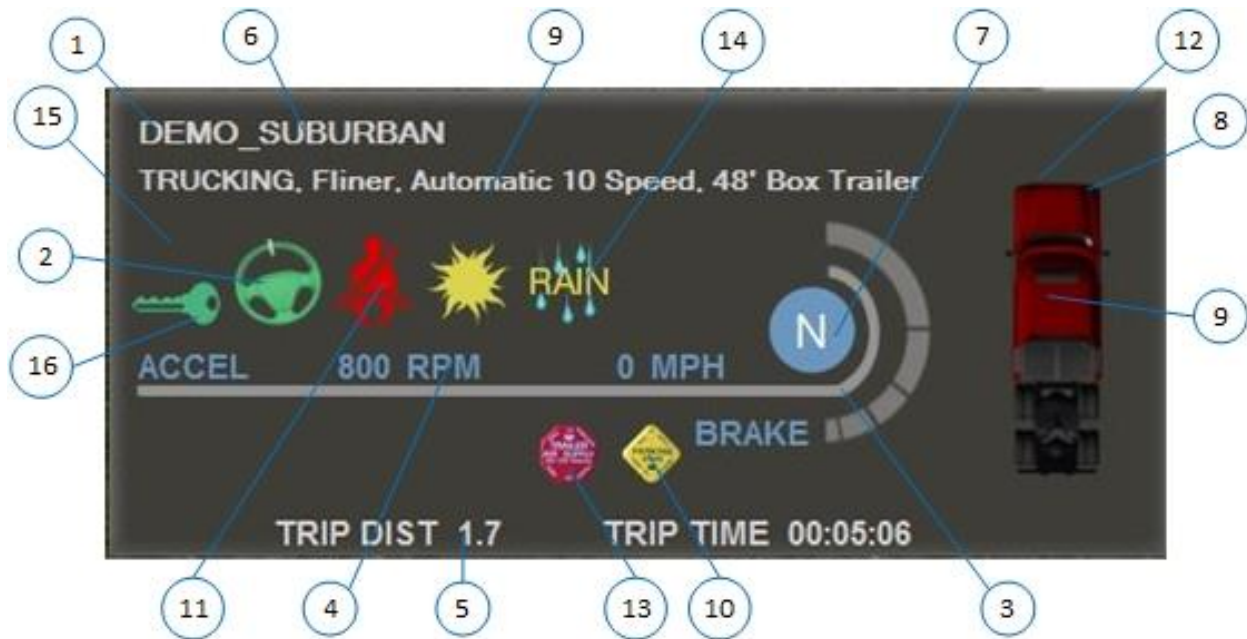
Multi-Sim Networking

TranSim™ 8 is designed to function either as a stand-alone unit, or as part of a network of simulators. Up to four simulators can be controlled by a single IOS. This allows multiple students to interact with each other in the same scenario, providing opportunities for group training.



SimTile Panel

The SimTile panel collects and provides information and indicators that let the instructor view the driver input and vehicle status for a given simulator in real time.



- | | |
|-----------------------------------|-----------------------|
| 1. Scenario and vehicle names | 9. Owncab model |
| 2. Steering wheel position | 10. Parking brake |
| 3. Brake, accelerator, and clutch | 11. Seat belt |
| 4. Speedometer and tachometer | 12. Headlights |
| 5. Time and trip distance | 13. Trailer air brake |
| 6. Host computer status | 14. Scenario status |
| 7. Transmission status | 15. Horn |
| 8. Turn signals | 16. Ignition |

Vehicle Malfunctions

These failures and conditions can be pre-programmed in a driving scenario, or selected by the instructor in real time during a training exercise. Driver performance in response to malfunctions and emergency conditions can be recorded, some automatically and others manually under instructor control. Not all malfunctions are available on all systems since failures are mapped to the vehicle type.

- **Blowout Tires:** blow out left tire, blow out right tire, restore left tire, restore right tire
- **Failing Brakes:** fail brakes, restore
- **Smoking Brakes:** left, right, restore
- **Engine Temp:** overheat, restore
- **Engine Failure:** fail, restore
- **Oil Pressure:** fail, restore
- **Failure of Headlights:** left, right, both, restore
- **Low Fuel:** low, restore
- **Engine Faulty:** faulty, restore
- **Fail Headlights:** left, right, both, restore
- **Locked Brakes:** front left, front right, rear left, rear right, trailer left, trailer right, restore
- **Wait to Start Lamp:** on, off
- **Maintenance Lamp:** on, off
- **General Warning lamp:** on, off
- **Stop Alert Lamp:** on, off
- **High Exhaust Temp Lamp:** on, off
- **DPF Status Lamp:** on, off
- **Malfunction Lamp:** on, off
- **Transmission Temp:** high, restore
- **DEF Level:** empty, low, 25%, 50%, 75% FULL

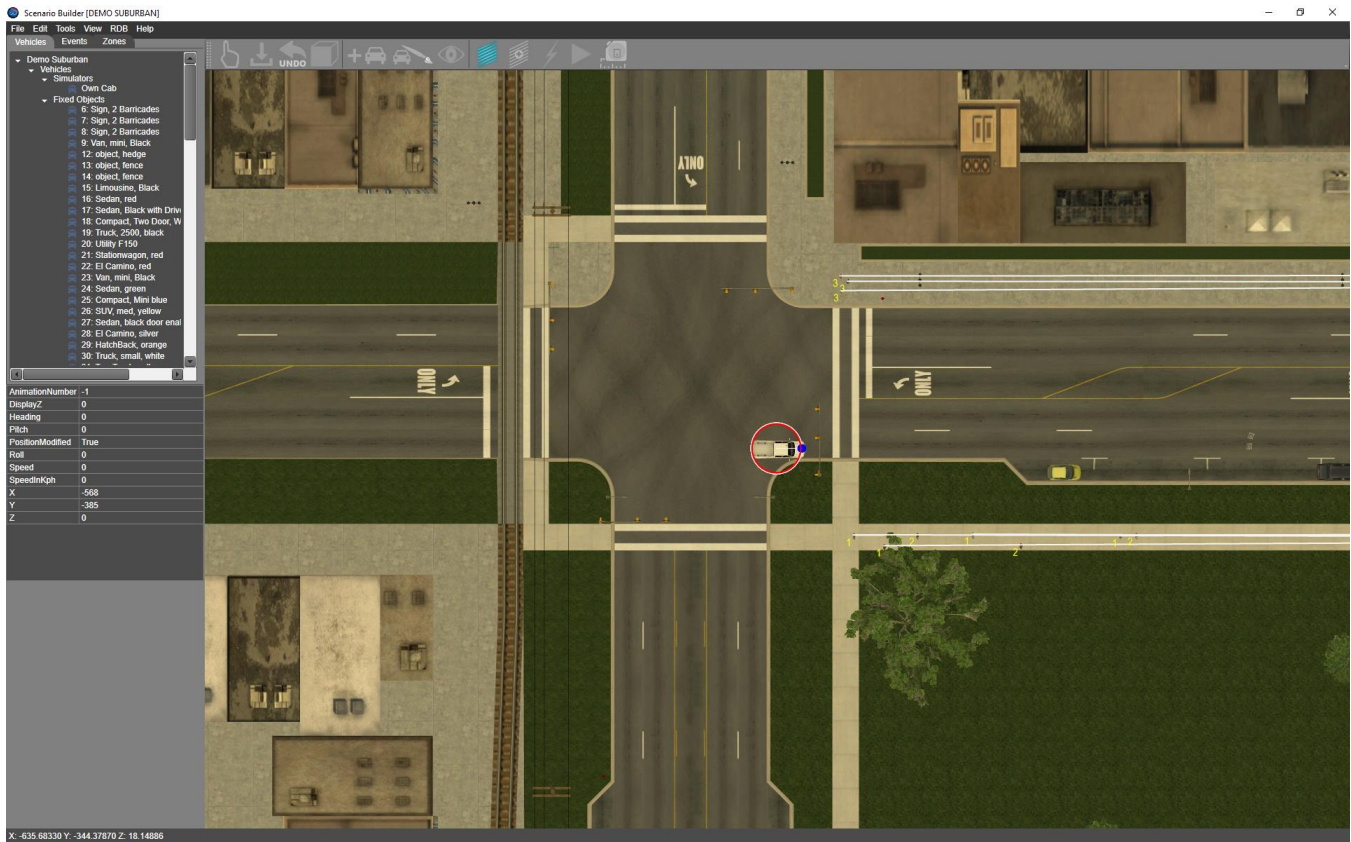
Weather Effects and Variable Road Conditions

The simulator provides a full range of weather controls of varying intensity. Weather effects/road conditions can be controlled in real-time by the Instructor or scripted into scenarios. Environmental conditions can be modified in real-time and include the following options:

- **Rain:** Selections are Very Light Rain, Light Rain, Medium Rain, and Heavy Rain.
- **Snow:** Selections are Very Light Snow, Light Snow, Medium Snow, and Heavy Snow.
- **Ice:** Selections are No Ice or Ice Levels 1 through 5.
- **Fog:** Selections are Very Light Fog, Light Fog, Medium Fog, and Heavy Fog.
- **Wind:** The operator uses the wind-active Enable/Disable buttons to enable or disable wind at any time. Wind in the simulation is comprised of three parts: Wind speed (MPH) and Heading (the direction in degrees), and Gusts (speed/frequency, number of gusts per second).
- **Sun Glare:** A sun glare effect appears on the center channel (screen) when facing east in the morning, and west in the evening.
- **Time of Day:** The simulator provides a full range of day, dusk, and night capabilities.

Scenario Builder™

Scenario Builder is a software package that provides a simple, user-friendly interface that will facilitate the creation of scripted or pre-defined training scenarios. Scenario Builder was designed to enable training teams to develop accurate roadway conditions needed to fulfill specific training objectives.



Scenario Builder offers a windows-based interface with menus that enable users to direct the placement and behavior of each traffic element that will be presented as part of the pre-defined training exercise. In addition to vehicles, Scenario Builder supports dynamic pedestrians and the placement of objects such as road barricades, traffic cones, traffic signs, and other common objects that may appear near, alongside, and also on roadways. A library of static objects is available that can be used to further enrich the virtual driving environment with the desired hazards, obstructions, and conditions needed to promote the immediate learning objective.

Scenario Builder™ will enable instructor to:

- ▶ Build customized scenarios in less than thirty minutes.
- ▶ Use preloaded or existing scenarios as a base for new scenarios without the need to rescript the entire scenario.

- Build scenarios for accident remediation, employment pre-screening for new drivers and targeted training for existing drivers.
- Easily and affordably create training content for classroom presentations.
- Add new challenges to accommodate any trainer experience level.
- Present variation-on-theme to promote complexity within a training progression.
- View scenarios from any angle, including top-down view for vehicle positioning.
- Control the sequence and timing of event triggering.
- Create scenarios on a separate PC and transfer the information to the simulator with a flash drive.
- Compatible with any standard desktop or notebook PC with 3D graphics capability.

Scenario Builder will enable the instructor to determine vehicle characteristics such as vehicle type, rate of speed, directional bearing, and other attributes. The interface will be used to define the behaviors, decisions, and interactions that will occur between the scripted vehicles, pedestrians, and student-operated vehicle. The route each vehicle and dynamic pedestrian will travel is under the expressed control of the instructor. All aspects of the scenario can be determined by the instructor to ensure that the desired intent of the prescribed training will be met.

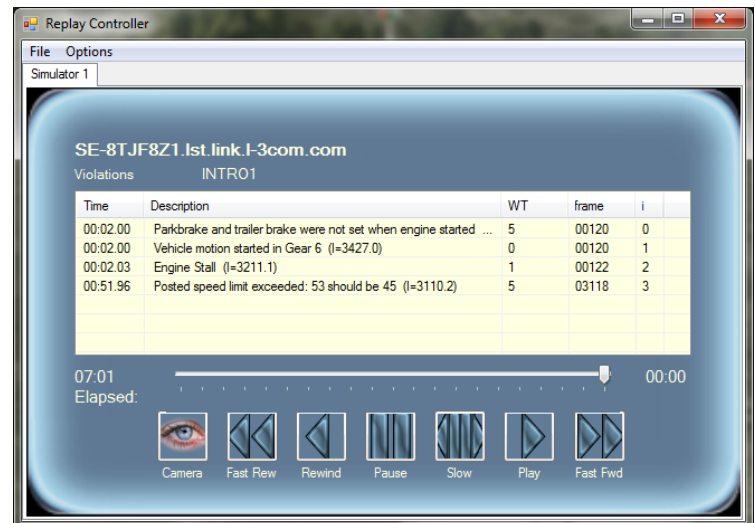
Scripted scenarios are an important component of a standardized training program in that each scenario is repeatable and will convey a consistent delivery of the prescribed lesson for each participant.

Scenarios can be modified so that changes can be made and saved to create variations that will keep the content fresh and challenging from one year to the next. Scenarios will remain stored at the instructor station. Libraries can be built quickly by modifying existing scenarios to create new lessons.

Replay Studio™ After-Action Review

The instructor station can record training scenarios so that they can be replayed. Replay can be viewed from multiple eyepoints, including those of the driver, a third person, and multiple bird's-eye views.

The playback of any recording recreates all of the original training exercise cues, including audio, visual, vehicle states and video of the student/operator while driving. After playback of an exercise, the instructor can reload the same scenario, or load a new exercise. Student scoring records can be displayed and printed as part of the replay. The replay control window shows violations, provides a slider bar to quickly move to any point in the scenario, and allows the instructor to change viewing (camera) angle, while providing complete control over the replay.



The instructor can activate the replay mode at any time during the scenario. The instructor can pause or freeze the scenario during the training session and resume training from the point where the scenario was frozen. When the scenario is frozen, the instructor can play it back using the replay mode, exit the scenario, and provide student performance analysis. The instructor can also click on a scoring violation or event to go directly to that point in the replay or use the slider control to quickly move through the replay.

Replay Tools and Features

- **Violations display** lets you select a violation (or other event) in the list box to move to a point in the replay five seconds prior to the selected event. Replay lead time can be modified to zero seconds with the **Options** button on the Replay tool.
- **Slider Bar** rapidly moves the scenario to any point in the recording.
- **Camera** steps the replay eye point through different positions relative to the owncab.
- **Fast Rew** quickly rewinds the scenario.
- **Rewind** rewinds the scenario at normal speed.
- **Pause** pauses the scenario.
- **Slow** runs the scenario at slow speed.
- **Play** plays the scenario at normal speed.
- **Fast Fwd** quickly forwards the scenario.

In-Cab Camera Displays

An integrated camera records the student's position, facial expressions, and hand reactions. This video feed is used to provide training feedback. In addition, the camera shows a live image at the Instructor Operator Station for observation. During low-light situations, the camera will automatically switch to black-and-white, infrared mode to maintain a high-contrast, crisp image of the driver.

The video feed can also be recorded for after-action review (AAR). Video is played back during AAR in complete synchronization with the out-the-window view of the recorded driving actions. This 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. The instructor can also click on a scoring violation to go directly to that point in the replay.

The video replay is automatically synchronized with the simulator graphics and audio.

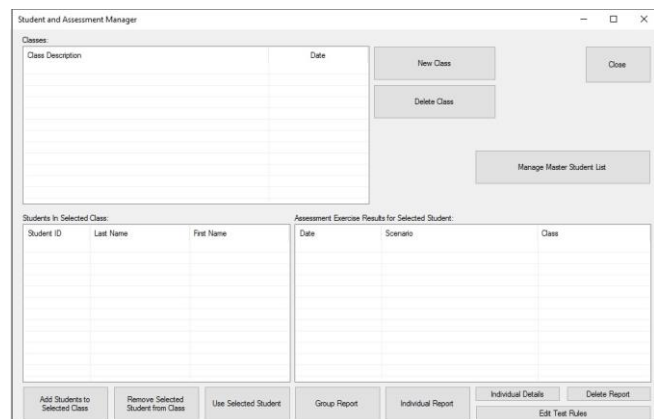
Learning Management System (LMS)

The Lesson Management System (LMS) allows the instructor to create, manage and load lessons, lesson plans, organize classes and students, and back up the student database.

Student and Assessment Manager

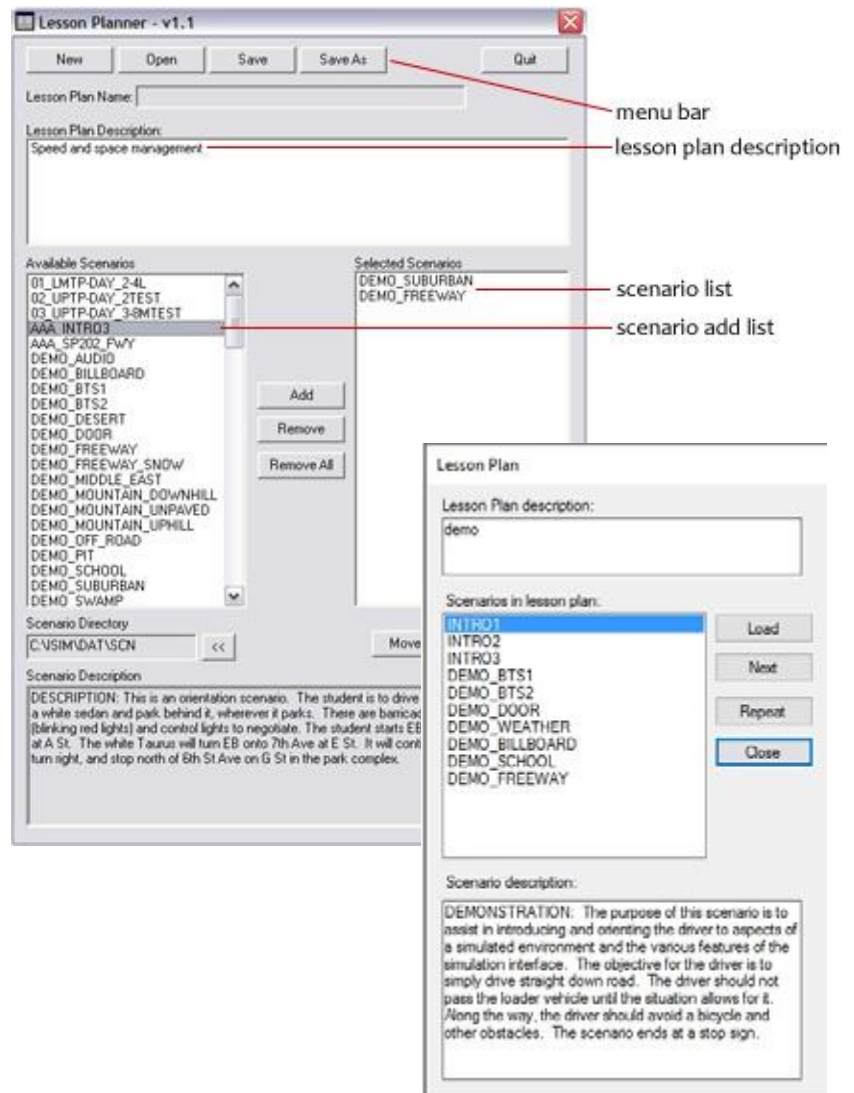
The Student Manager allows the instructor to:

- Create and manage training classes.
- Create and manage the student database.
- Assign students to training classes.
- Delete Class – removes the class from the list of classes and the LMS database.



Lesson Plan Editor

The lesson plan editor provides a menu-driven interface for the creation or modification of lesson plans. The Lesson Planner allows the instructor to create new lesson plans or modify existing lesson plans for use in a training session. Instructor can easily add and remove scenarios that are part of the curriculum package and learning objectives for the lesson plan.



Assessments Viewer

Access a centralized list of all assessments created and stored on the system for easy access. The Assessment Viewer also gives instructor access to the test parameter settings for the loaded assessment

Backup Database

The backup utility allows the student and lesson records to be backed up to a file locally on the instructor station or it can be offloaded to an external device.

Basic Scoring Report

The simulator software can automatically collect scoring data from a scenario. After a student’s simulated drive, the software generates a report indicating the individual strengths and weaknesses of each driver.











The instructor can use this report to determine which drivers are most in need of training and which areas of training would be most beneficial to them.

- After data has been generated, it can be copied, archived to other locations, or purged.
- These reports offer limited editing, allowing test parameters to be enabled/disabled and violation point values to be adjusted.
- The tests include collisions, speeding, following too close, hard braking, and other factors that influence driver performance.
- Scenarios and performance data can be managed in clusters, such as lesson plans, date and location of training, and the student’s organizational unit.

Basic Scoring Data Captured

The following general information is captured for each student exercise, at a minimum:

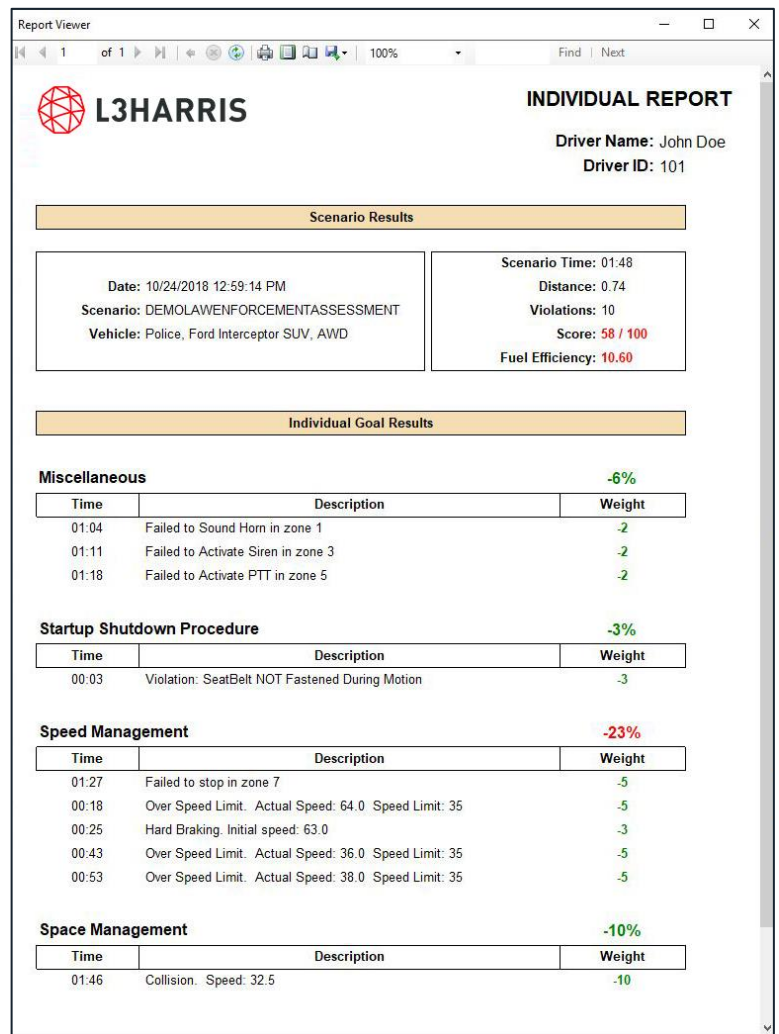
- Driver ID
- Date and time
- Owncab vehicle model
- Exercise name
- Length of drive: distance and time
- Number of violations
- Number of warnings

SIMULATOR DRIVE REPORT	
Scenario Info	
Item Name	Value
Overall	
Scenario Name	INTRO1
Driver Id	111
Driver Name	John Doe
Exercise ID	EXID_43_111_INTRO1
Date	06/25/14
Time of Day	14:38:59
Vehicle Model	CM390F9TLR
Trip Distance	0.84 Miles
MPG	3.92
Test File Name	C:\ISIM\DAT\DPS\DPSTruckingTests.xml
Number Of Tests Defined	12
Scenario Length	1:27
Total Violations	6
Total Warnings	1
Total Deductions	36
Minimum Passing Score	0 / 100
Actual Score	64 / 100
Event Summary	
Description	Importance
Startup Procedure (2 Violations, 0 Warnings)	
Park brake was not set when engine started [-5]	
(Information: Vehicle motion started in First Gear (2))	
Motion started when brake air pressure was low [-5]	
Description	Importance
Speed Management (3 Violations, 1 Warning)	
Over Speed Limit (2) [-10]	
Engine Stall (Warning) [-1]	
Hard Braking [-5]	
Description	Importance
Space Management (1 Violation, 0 Warnings)	
Collision [-10]	
Event Detail / Notes	
Time	Description
0:13	Parkbrake and trailer brake were not set when engine started
0:13	Vehicle motion started in First Gear (2)
0:13	Motion started when brake air pressure was low
0:45	Posted speed limit exceeded: 53 should be 45
1:05	Maximum Speed Limit Exceeded 67 should be 65
1:06	Cab collided with a structure (100038) , Speed: 68 Mph
1:16	Hard braking; Initial speed = 70.40 MPH
1:19	Engine Stall
ScoringSummary.xml rev. February 4, 2014	
Copyright 2014 L-3 Communications	

SkillSet™ Performance Assessment

SkillSet™ Performance Assessment software is an automated, objective-based driving assessment system. Through proper assessment and training, drivers can improve their decision-making process and become skilled at recognizing and managing risk. The SkillSet™ Performance assessment offers:

- Instantly replay, review, and discuss a driver’s performance.
- Clearly define criteria to facilitate standardized, objective-based assessments.
- Consistent, tangible results across multiple instructors
- Tailor training to improve individual aptitude or group certification.
- Optimize training time - Instructors spend more time instructing and less time capturing results.
- Group reports facilitate evaluation of individuals, relative to the group.
- Easily and accurately capture and document training data.



Report Viewer
 1 of 1 | 100% | Find | Next

L3HARRIS **INDIVIDUAL REPORT**
 Driver Name: John Doe
 Driver ID: 101

Scenario Results

Date: 10/24/2018 12:59:14 PM	Scenario Time: 01:48
Scenario: DEMOLAWENFORCEMENTASSESSMENT	Distance: 0.74
Vehicle: Police, Ford Interceptor SUV, AWD	Violations: 10
	Score: 58 / 100
	Fuel Efficiency: 10.60

Individual Goal Results

Miscellaneous -6%

Time	Description	Weight
01:04	Failed to Sound Horn in zone 1	-2
01:11	Failed to Activate Siren in zone 3	-2
01:18	Failed to Activate PTT in zone 5	-2

Startup Shutdown Procedure -3%

Time	Description	Weight
00:03	Violation: SeatBelt NOT Fastened During Motion	-3

Speed Management -23%

Time	Description	Weight
01:27	Failed to stop in zone 7	-5
00:18	Over Speed Limit. Actual Speed: 64.0 Speed Limit: 35	-5
00:25	Hard Braking. Initial speed: 63.0	-3
00:43	Over Speed Limit. Actual Speed: 36.0 Speed Limit: 35	-5
00:53	Over Speed Limit. Actual Speed: 38.0 Speed Limit: 35	-5

Space Management -10%

Time	Description	Weight
01:46	Collision. Speed: 32.5	-10

Skillset™ helps the instructor identify the strengths and weaknesses of individual drivers and hone in on areas requiring the most need for improvement. The results of the Skillset™ assessment can also be viewed individually or as a group and can identify skills that require further training. Students are evaluated on how effectively they have mastered handling of their vehicle, scanning and hazard detection, and compound tasks like radio commentary with dispatch or other officers.

Scoring Criteria Always Being Monitored:

- > Following distance (includes audible and visual warnings)
- > Collisions
- > Speeding
- > Hard braking
- > Failed to use hazards while in reverse
- > Failed to fasten seat belt
- > Improper acceleration
- > Steering input while stopped (scrubbing the tires)
- > Rolled over
- > Vehicle moving prior to engine start
- > Excessive speed in reverse
- > Park brake not set prior to engine start

Compound Test Items

A Compound Test item is a group of test items, perhaps better referred to as a Learning Objective. The purpose of compound test items is to organize test results in terms of various general skills the student is expected to acquire. The available compound test items for the basic commercial vehicle tests include, among others:

Startup / Shutdown Procedures	Speed Management	Space Management
<ul style="list-style-type: none"> > Brakes released prior to start of motion > Vehicle rolling in neutral > Engine start <ul style="list-style-type: none"> ■ Not in Neutral gear ■ Park brakes not set > Engine stop > Park brakes not set > Motion start <ul style="list-style-type: none"> ■ Engine not running ■ Park brake or trailer brake set (Exception: tug test with trailer brake set) ■ Footbrake not applied ■ Air pressure too low > Seat belt not fastened > Initial gear selection 	<ul style="list-style-type: none"> > Speed limit violations > Engine stall > Vehicle rolling at any time (e.g. in Neutral or with clutch depressed) > Riding brake 	<ul style="list-style-type: none"> > Following distance violations > Improper lane position > Collision > Hard braking

A **Generic** category is also available which allows miscellaneous test items to be created by the user, embedded in the scenario script. Any condition that can be detected in an exercise can be recorded as a test event, scored, etc.

The Individual Report

The Skillset™ Assessment produces an “Individual Report”. All important information is summarized on a single page. This single-page report format is intended for use by the instructor and student, and is available immediately at the conclusion of a simulation exercise. This report is user friendly, easy to understand, and can be viewed, printed, and archived on the IOS computer. This report addresses the following user needs:

- Indication that the student completed the exercise successfully, OR
- Clearly indicate skills which have not been mastered by the student, and need additional work
- Reward the student for successful completion of a test by providing a single page format which is printable and easily understood by teacher and student

All of the parameters of the Individual Report have reasonable default values. Those parameters likely to be modified frequently are editable by end-users, by means of one or more user-friendly tools.

The Group Report

The Skillset™ Assessment also produces a “Group Report”, which shows the combined performance outcomes for all individual reports which have been viewed within a specific class.

Real Time Reporting

While the student is driving in the simulator, the Replay Control software reports violations, warnings, and other events as they occur. A recording file can be saved, and replay can be started at a point just prior to any violation. A scroll bar allows the instructor to move quickly to any point in the recording.

Modification of Test Parameters

All of the parameters used in student testing have reasonable default values, but are also modifiable by L3Harris. Some of the parameters most likely to be modified frequently are exposed in data files that are editable by end-users.

Report Generation

Reports are generated by a process of filtering all captured data, and presenting results in a user-friendly form. For basic student reporting, reports are available in a single page “bubble” report format, as seen in the figure above.

Training Data Security, Storage and Retention

Type of data tracked and required by the system:

- No student or training data is technically required by the system in order to operate.
- **LMS:** If the customer wishes to utilize the Lesson Management System (LMS) it allows the instructor to create, manage and load lessons, lesson plans, organize scenarios, organize classes and students, and back up the student database.
- **Scenario Builder:** If the instructor wishes to add, edit, or create new training scenarios using Scenario Builder than those scenarios are stored and managed by the customer as they see fit.
- **Assessments Reports:** a centralized list of all assessments are created and stored on the system for easy access. The Assessment Viewer also gives instructor access to the test parameter settings for the loaded assessment. The parameters are typically preloaded, but if the customer wishes to make any changes to the weighted scores or rules than they become custom data that the customer can backup.

Training Data Type: Training data typically entered in to LMS includes the following variables:

- Create and manage training classes (date, location)
- Create and manage the student database
- Assign students to training classes
- Driver ID
- Date and time
- Owncab vehicle model
- Exercise name
- Length of drive: distance and time
- Number of violations
- Number of warnings
- Data for individual scenarios includes locations, time stamps, scores, and violations based on the environment, conditions and criteria for each scenario

Type of data retained:

- Purpose of the retained data: There are no requirements for data retention. It is up to the customer to decide to retain or purge training data after each class or training session.

- Retention period: Not restricted. Can be managed and set according to customer's IT or HR retention policies. Depending on the number of students, frequency of classes, and the retention policy for training records training recording files can take up hard drive space over time. Although not required, it is recommended that the simulator system be provided a large enough external network area storage (NAS), mapped network drive, or local hard drive backup capability that is available on the customer's network and abides by the customer's IT policies.
- Storage location: All simulator training data is stored locally on the simulator system hard drives.
- Data Retrieval Method: All data is accessible locally on the IOS station so it is readily available with minimal need for additional integration or retrieval methods.

3 | PRODUCT OPTIONS

L3Harris offers a number of options, including hardware and software options, curriculum, training, customization, and mobile solutions, to enhance and extend the performance and capabilities of your TranSim™ 8 driving simulator. Please contact your L3Harris representative with any pricing or configuration questions.

3.1 Hardware Options

3DOF Motion Base

The 3DOF full motion system, consists of a set of 4 electronic motion actuators installed onto the base of the driving compartment. This system provides accurate and realistic per-wheel motion from the scenario including bumps, road surface vibrations, acceleration and deceleration, engine vibrations, and vehicle motion cues. Motion is provided for the entire seat base (seat, steering wheel, transmission, pedals, dash, etc.) not just the seat. This provides a much more realistic range of motion than a typical “rumble seat” and creates a much more immersive simulated environment as well as a better over-all training experience.



- 120Hz update frequency
- 4 independently-controlled motion actuators
- 1000lb capacity
- Available for both stand-alone or trailer-mounted simulators

Student/Instructor Radio Communication System

L3Harris offers an optional single-channel two-way radio system with instructor headset and student mic system that allows the instructor to act as dispatch and communicate instructions to the student during training scenarios. The student has access to a magnetic mic clip that can be mounted to the dash to communicate back to the instructor their location or other information. A custom software app runs on the IOS to manage the radio system and allows the instructor to switch communications between simulators if it is setup for a multi-simulator

networked configuration. Voice communications are recorded as part of the ReplayStudio recording file for after action review.

Over-the-Shoulder View

The Series 8 series simulators can optionally include two additional monitors mounted to the sides of the video display unit. These monitors are 27" HD displays that show an additional 60° degree field of view in each direction for a full field of view up to 300°. Student operators are able to look over their left and right shoulders, in a genuine physical motion, and assess the status of traffic and obstacles in their respective blind spots.



Instructor-operated Vehicle

The instructor vehicle (formerly known as “Rabbit Station”) is an instructor-controlled decoy vehicle station, operated from the instructor operator station. The instructor vehicle provides the trainer with the ability to control (in real time) objects in the scene. The instructor can take control of any moving entity in the scene including vehicle, animal, pedestrian, etc. The instructor vehicle operator is able to see and interact with any trainee who is driving the scenario-controlled-vehicle. The steering wheel and accelerator pedal control forward speed and steering. Top-level radar display of the instructor vehicle is used for navigational and interaction purposes.



Instructor Vehicle Controls

3.2 Software & Vehicle Options

Numerous options are available to increase the capabilities of your simulator beyond its standard feature set. These options have been designed to provide specific sets of capabilities and meet the needs of specific requirements. Software options are sold on a per-IOs basis to reduce costs for those using multiple simulators.

Trucking Vehicles Expansion Package

The Trucking Vehicles Expansion Package significantly increases both the number and types of drivable vehicles and related scenarios for use on your TranSim™ 8 simulator. These additional vehicles are categorized into their relevant types below.

Ready-Mix Concrete Trucks with Scenarios

Two own-cabs (front discharge and rear discharge cement mixer trucks), vehicle dynamics data, a custom Glass Dash, and three scenarios. Scenarios occur in the suburban driving environment and allow the student to demonstrate speed and space management, react to various traffic hazards, and anticipate and avoid potential hazards through situational analysis.



- Concrete Truck Front Discharge, 335 HP, 6-speed automatic transmission



- Concrete Truck Rear Discharge, 440 HP, 6-speed automatic transmission
- Concrete Truck Rear Discharge, 400 HP, 9-speed manual transmission

Automotive Transport Hauler

Three different ownfabs with appropriate glass dashes, each able to be driven empty or loaded. The student experiences the unique driving challenges involved with hauling cars.



- > Peterbilt, Cat 475 13-speed, manual transmission, Boydston trailer, empty/full



- > Peterbilt, Cat 430 10-speed, manual transmission, Cottrell trailer, empty/full
- > Sterling, Cat 430 10-speed, manual transmission, Cotrell trailer, empty/full



Municipal Vehicles

Includes common municipal and utility types of vehicles and configurations.



- > Chevy Silverado Utility, 300 HP, 4 speed automatic transmission



- Ford F450 Bucket Truck, 300 HP, 5 speed automatic transmission



- Peterbilt Bucket Truck, 450 HP, 6 speed automatic transmission



- Freightliner Derrick Truck, 450 HP, 6 speed automatic transmission



- Utility Pole Trailer, pulled by Freightliner Derrick Truck



- > 'Ditch Witch' Trailer, pulled by Chevy Silverado Utility truck



- > Freightliner Line Truck, 450 HP, 6 speed automatic transmission



- > SWAT Command Vehicle, 300 HP diesel engine, 6 speed automatic transmission



- > Dump Truck, 10 Wheel, 500 HP diesel engine, 6 speed automatic transmission, 3 axles
- > Dump Truck, 6 Wheel, 460 HP diesel engine, 9 speed manual transmission, 3 axles
- > Dump Truck, 6 Wheel, 500 HP diesel engine, 6 speed automatic transmission, 3 axles



- Fire Truck, Red, 500 HP diesel engine, 10 speed automatic transmission



- Fire Truck, Yellow, 500 HP diesel engine, 10 speed automatic transmission



- SWAT Support Vehicle, 300 HP engine, 5 speed automatic transmission



- SWAT Step Van, 4 speed automatic transmission

Oversized Load Vehicle with Scenarios

This package includes 2 vehicles, each pulling a lowboy trailer with an oversized construction object on it. It also includes 2 freeway scenarios to help train drivers in oversize load situations with upcoming exits, reckless vehicles, low bridges, etc.



- Freightliner, Cummins 390, Fuller 9
- Freightliner, 10 speed automatic transmission



- Lowboy Oversized Trailer

Solid Waste Vehicle

Includes a garbage truck with specialized dashboard and allows the student to practice safe trash collecting techniques, including; daily hazard awareness, like backing up, cul-de-sac collection, pedestrian and bicycle traffic. Reduced visibility due to weather and environmental conditions, and speed and space management, including crossing traffic, yielding, passing, and merging.



- Garbage Truck, 500 HP diesel engine, 10 speed automatic transmission, 3 axles

Delivery Fleet Vehicles

Three delivery own-cabs, including moving van, step van, and delivery tractor and trailer(s). One, two, or three trailers can be towed.



- Chevy Express Utility Van, 285 HP, 6 speed automatic transmission



- Ford Transport Van, 136 HP, 4 speed automatic transmission



- Freight Vehicle, 445 HP diesel, 10 speed automatic, 2 axles, 0, 1, 2, or 3 trailer pups
- Freight Vehicle, 430 HP diesel, 9 speed manual, 4 axles, 2 Freight 28' trailers
- Freight Vehicle, 500 HP diesel, 10 speed manual, 5 axles, 3 28' trailer pups
- Freight Vehicle, 390 HP diesel, 7 or 9 speed manual, 2/3 axles, 0 or 1 28' trailer pup
- Freight Vehicle, Cummins 390 HP, Fuller 7 or 9 speed manual, 2/4 axles, 0 or 1 28' trailer pup



- Step Van, 5 speed manual transmission
- Step Van, 4 speed automatic transmission



- Moving truck, 235 HP, automatic transmission



- F250 Superduty pickup, 300 HP V8

Bus Vehicles Package

The Bus Vehicles package consists of 10 own-cabs, including a city transit bus, a school bus, a shuttle bus, and a motor coach. The Transit Bus includes a manual-transmission (10-speed) bus intended for a simulator with a manual transmission. Also includes ten additional scenarios. Scenarios include environments such as freeways, suburban environments, with situations for training backing, passing and lane changing, space management, turns and intersections, and dealing with bad weather.



- Motor Coach, 455 HP, 10 speed manual



- Articulated Bus, 400 HP, 6 speed auto



- Transit Bus, 300 HP, 6 speed auto



- School Bus, 300 HP, 6 speed auto



- School Bus – Flat End, 300 HP, 6 speed auto



- Grey Bus, 300 HP, 6 speed auto



- Bluebird Type C School Bus, 300 HP, 6 speed auto



- Gillig 40' Low Floor Transit Bus, 325 HP, 4 speed auto



- New Flyer Transit Bus, 300 HP, 6 speed auto



- ▶ Shuttle Bus, 300 HP, 6 speed auto

Snowplow Package

Snowplow Vehicles & Scenarios

The optional Snowplow software package for TranSim™ 8 includes training scenarios and vehicle combinations. This package is available with or without a set of hardware levers (see below). Includes introductory, intermediate, and advanced scenarios in either a snowy freeway or mountain-driving environment. The snow is visually cleared from the road by the snowplow, allowing the driver to check his progress. Two separate drivers can drive the advanced scenarios at the same time in separate simulators for coordination and communications training between the lead- and following-driver. The vehicle combinations provided by the Snowplow package include versions with front and right blades, front and left blades, wingblades, towplow, and automatic and manual versions of each.



Virtual Snowplow Controls

In the absence of the optional physical snowplow levers, a set of virtual controls on the touch screen can be used to accomplish the same tasks.

- > Left, Center, and Right buttons control the angle of the front plow
- > Front Up/Down controls the front plows up and down position
- > Wing Up/Down controls the wing plow (left or right depending on vehicle)
- > Spreader On/Off controls the salt spreader
- > Blast when pressed stays in for 10 seconds for the blast effect



Skillset Assessment for Snowplow

Included with the Snowplow software package is assessment software that provides an additional scenario, and allows for the collection of advanced scoring data for all snowplow scenarios. This data includes speed limits, following distance, startup/shutdown procedures, speed management, space management, etc. Users can score each drive, save scores, and print reports.

Snowplow Hardware Controls

A set of joystick levers can be purchased in addition to the snowplow software. The joysticks are mounted on the right side of the simulator, are programmed to work with the snow plow software package, allowing raising and lowering of all blades, panning of the front blade, and activation of the sand spreader.



Virtual Environments Package

The Virtual Environments software package provides a number of additional driving environments as well as some additional scenarios and drivable vehicles.

Desert Environment

The desert environment covers a 9km x 7km area of flat terrain, subtle elevation changes, and limited vegetation. Students practice driving on paved roads, unpaved roads, dirt roads, and open areas free of roads or trails.



Dirt Road Environment

This package provides four dirt road scenarios that incorporate woods, steep grade changes, and narrow areas. Note that it is not intended for off-road driving.



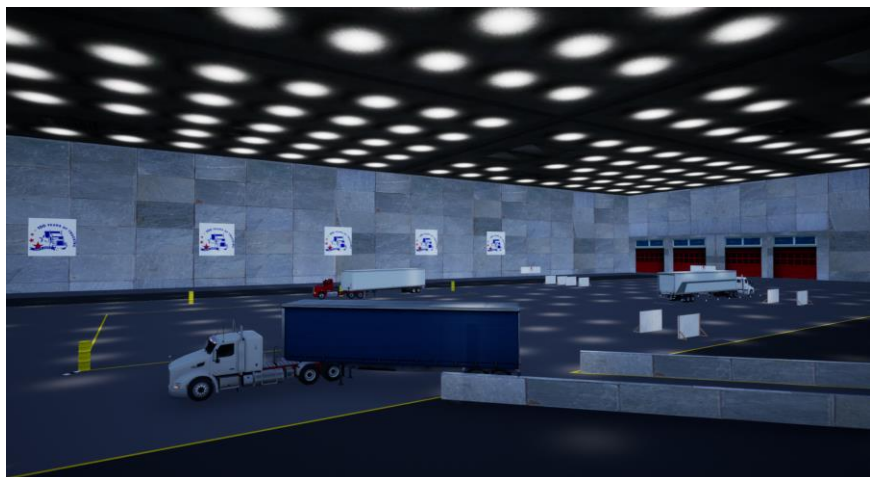
Airport Environment

The airport environment includes a generic airport with runways, taxiways, a terminal, and gates. Also included are baggage tugs and cart scenario vehicles, as well as 3 scenarios.



Indoor Trucking Course

This course teaches students how to manage driving a semi-tractor / trailer in small areas. The scenarios include lessons on subjects such as 'completing a 9-point turn' and 'backing up in very tight spaces'. This package includes a cone course.



Swamp Environment

The swamp environment offers numerous challenging driving situations, including driving on dirt roads or muddy roads, maneuvering through standing water and washed out areas, manipulating road debris like logs and trenches, and managing narrow bridges.



Mountain Forest

This mountain forest environment provides over 30km of smooth, washboard and rough dirt roads. It also includes three two-lane bridges.



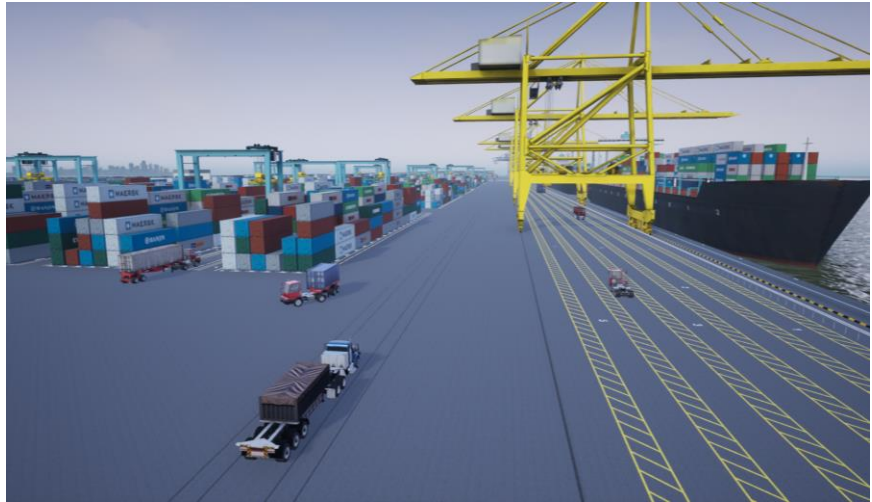
Oil Field

The oil field environment provides multiple oil field operations in various stages of development, connected by a network of dirt roads. Several oil industry related placeable objects are also provided.



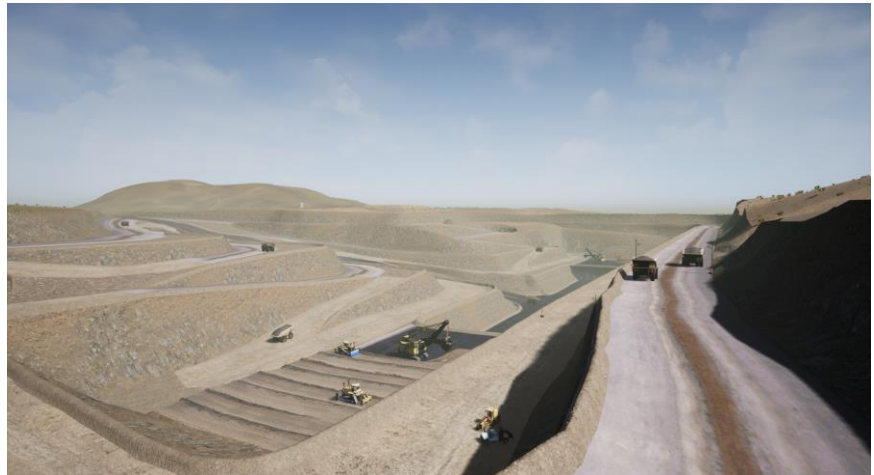
Maritime Container Port

The port environment provides multiple container cranes in a container port setting. Drivable yard trucks are included, as well as placeable container stacks, etc.



Coal Mine

The coal mine environment provide an operations center and two active pits, with roads that connect them all and allow terraced access into the pits.



International Options

Options are also available to enable the International use of your simulator. Contact L3Harris for more information about these options.

- **Metric:** Converts all road signs in all databases to Canadian metric signs. It also changes the dashboards of all own-cabs, making KPH the default. This is intended only for vehicles in which the driver's seat is on the left.
- **Right Hand Drive (RHD) Option:** Provides a selection of the existing environments and scenarios setup for driving on the left hand side of the road, with the driver on the right hand side of the vehicle.
- **Spanish Software Option:** A Spanish language translation of much of the software, as well as an additional driving environment is provided.
- **Arabic Software Option:** An Arabic language translation of much of the software.
- **Power Adapter Options:** various power converters and adapter options are available to accommodate international power requirements.
- **Middle East Environment:** Provides an environment with a distinct Middle Eastern look and feel with signs and roadways that are specific to the region.

3.3 Mobile Training Center

As an alternative to a fixed site, you may wish to have the capability to easily move your simulator(s) to other locations to manage the challenges of training 'surges', events, or geographically diverse driver populations. We can put your simulator(s) in a fully-equipped trailer, creating a mobile training center. We offer both 24 and 42 foot trailers to allow you to deliver training capacity anywhere you may need it. *Truck not included.



3.4 Professional Services

In addition to the product options listed above, our services team can help develop a custom content or customize your TranSim™ 8 in a variety of ways. We can develop customized training topics and curriculum, environments, help you develop scenarios, or create custom vehicles.

Vehicle Development Services

While your simulator comes with a large variety of vehicle types and configurations, our team can also develop vehicles exactly like those you use, including custom logos or graphics. This allows you to customize your simulator to portray the exact vehicles you use every day. Services including modelling, texturing, rigging, testing and validating vehicle dynamics data.

Consultation Services

Our consultation and development services include initial training needs analysis, the design and development of custom curriculum solutions that are based on specific learning objectives, delivery of training by qualified and experienced instructors, and comprehensive evaluation of driver skills and knowledge. We can also assist customers in measuring the performance of their drivers and ensure that return on investment is realized on all training efforts.

Training Services

In addition to custom training engagements, we also offer standard pre-defined training service packages for various types of training needs. These include Entry-Level & Onboarding Driver training, Post-Incident Safety Training, Safety Refresher Training, and Basic & Advanced Snowfighting. Our training services team will come to your site with everything needed to provide effective training including a mobile or fixed site classroom, simulators, curriculum, courseware, and experienced instructors. This cost-effective approach to training allows you to get the training you need, when you need it, without having to manage it yourself. Contact us for more information.



FAST. FORWARD.

TranSim™ Product Guide

© 2024 L3Harris Technologies, Inc. | 2024.02

This material consists of L3 Technologies, Inc. general capabilities information that does not contain controlled technical data as defined within the International Traffic in Arms (ITAR) Part 120.10 or Export Administration Regulations (EAR) Part 734.7-11. Data, including specifications, contained within this document are summary in nature and subject to change at any time without notice at the discretion of L3 Technologies, Inc. Call for latest revision. All brand names and product names referenced are trademarks, registered trademarks, or trade names of their respective holders.

