



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](http://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](http://WVPurchasing.gov) with any other vendor responses to this solicitation submitted to the Purchasing Division in hard copy format.

Header 4

List View

- General Information
- Contact
- Default Values
- Discount
- Document Information
- Clarification Request

Procurement Folder: 1387129

Procurement Type: Central Purchase Order

Vendor ID: VS0000013499

Legal Name: ADVANCED TRAINING SYSTEMS LLC

Alias/DBA:

Total Bid: \$360,066.00

Response Date: 03/13/2024

Response Time: 21:51

Responded By User ID: atshudson

First Name: Rebecca

Last Name: Hudson

Email: bhudson@atstrainingsyste

Phone: 7275604846

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: 4

Total of All Attachments: 4



Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	Truck Driving Simulators - Parkersburg location	2.00000	EA	90016.500000	180033.00

Comm Code	Manufacturer	Specification	Model #
25191736			

**Commodity Line Comments:** Technical Specifications Attached  
ATS is the manufacturer of the simulators

**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	90016.500000	180033.00

Comm Code	Manufacturer	Specification	Model #
25191736			

**Commodity Line Comments:** Technical Specifications Attached  
ATS is the manufacturer of the simulators

**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



**"Proudly Made in the USA"**

March 13th, 2024

ATTN: Department of Administration, Purchasing Division  
2019 Washington Street East  
Charleston, WV 25305-0130  
Fax: 304-558-3970

**Re: CRFQ 0803 DOT2400000076 - WVDOH REQUEST FOR QUOTATION: TRUCK DRIVING SIMULATOR WITH SNOWPLOW PACKAGE**

To Whom it May Concern,

Advanced Training Systems LLC ("ATS") is pleased to submit its response to the referenced CRFQ to provide four (4) Truck Driving simulators with Snowplow Package, the **FleetMaster-PRIME**. We have read all bid documents, links, addendums, and attachments and are prepared to perform, in accordance, if awarded the contract. The ATS **FleetMaster-PRIME™** simulator exceeds the required specifications listed in the 'Request for Quotation' document. As reflected in the attachments to the Response, the price includes our Two (2) year full-service warranty featuring 100% warranty on hardware and software including full support and remote-connection, driver evaluation software, and ATS' patented software, hardware and courseware.

We have included the technical specifications for the **FleetMaster-PRIME™** and your pricing summary, as well as a Summary of ATS Patents, various ATS-customer references, and a copy of the ATS Full-Service Maintenance and Warranty Agreement for 2-years. The patented technology and hardware provided by ATS is making a difference in the training of commercial driver students, re-training experienced drivers, and research in and among the training and research community. The patented self-paced, adaptive training method, as well as the 'patented glass-dash' dashboard touchscreen (**US Patent 8,894415 B2 - only available via ATS**) is only available through ATS, whereby a student is engaged and trained by the Digital Instructor™ contained within the simulator. The Digital Instructor™ trains, evaluates, corrects poor performance and re-evaluates the student driver. Further, our patented, haptic devices such as OnQ™ Motion-system (See video link <https://vimeo.com/224595847>) and effort to include OEM components greatly diminish Simulation Associated Sickness (SAS) typically associated with simulation. ATS has taken the time and made the commitment to ensure the best quality in its systems for the training communities and transportation industry by significant testing and acquiring patents on its products.

ATS appreciates the opportunity to provide a response to **CRFQ 0803 DOT2400000076** and we are hopeful we will be able to work with you in a partnership fashion, as we have with many other public and private training institutions, thank you for the opportunity.

Sincerely,

A handwritten signature in blue ink that reads "Rebecca W. Hudson".

Rebecca W. Hudson  
Vice President

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9800 4<sup>th</sup> Street North, Ste 204 St Petersburg, FL 33702  
2438 Cades Way, Vista, CA 98081  
800.870.5782



Department of Administration  
 Purchasing Division  
 2019 Washington Street East  
 Post Office Box 50130  
 Charleston, WV 25305-0130

State of West Virginia  
 Centralized Request for Quote  
 Educational

<b>Proc Folder:</b> 1387129			<b>Reason for Modification:</b>
<b>Doc Description:</b> Truck Driving Simulators w/Snow Plow (81240108)			
<b>Proc Type:</b> Central Purchase Order			
<b>Date Issued</b>	<b>Solicitation Closes</b>	<b>Solicitation No</b>	<b>Version</b>
2024-03-04	2024-03-14 13:30	CRFQ 0803 DOT2400000076	1

**BID RECEIVING LOCATION**

BID CLERK  
 DEPARTMENT OF ADMINISTRATION  
 PURCHASING DIVISION  
 2019 WASHINGTON ST E  
 CHARLESTON WV 25305  
 US

**VENDOR**

**Vendor Customer Code:** VS0000013499  
**Vendor Name :** Advanced Training Systems LLC  
**Address :** Suite 204  
**Street :** 9800 4th Street North  
**City :** St Petersburg  
**State :** Florida **Country :** USA **Zip :** 33792  
**Principal Contact :** Rebecca W Hudson  
**Vendor Contact Phone:** 727 560 4846 **Extension:**

**FOR INFORMATION CONTACT THE BUYER**  
 John W Estep  
 304-558-2566  
 john.w.estep@wv.gov

**Vendor Signature X** *Rebecca W Hudson* **FEIN#** 26-3546229 **DATE** 3/13/24

All offers subject to all terms and conditions contained in this solicitation

## **GENERAL TERMS AND CONDITIONS:**

**1. CONTRACTUAL AGREEMENT:** Issuance of an Award Document signed by the Purchasing Division Director, or his designee, and approved as to form by the Attorney General's office constitutes acceptance by the State of this Contract made by and between the State of West Virginia and the Vendor. Vendor's signature on its bid, or on the Contract if the Contract is not the result of a bid solicitation, signifies Vendor's agreement to be bound by and accept the terms and conditions contained in this Contract.

**2. DEFINITIONS:** As used in this Solicitation/Contract, the following terms shall have the meanings attributed to them below. Additional definitions may be found in the specifications included with this Solicitation/Contract.

**2.1. "Agency" or "Agencies"** means the agency, board, commission, or other entity of the State of West Virginia that is identified on the first page of the Solicitation or any other public entity seeking to procure goods or services under this Contract.

**2.2. "Bid" or "Proposal"** means the vendors submitted response to this solicitation.

**2.3. "Contract"** means the binding agreement that is entered into between the State and the Vendor to provide the goods or services requested in the Solicitation.

**2.4. "Director"** means the Director of the West Virginia Department of Administration, Purchasing Division.

**2.5. "Purchasing Division"** means the West Virginia Department of Administration, Purchasing Division.

**2.6. "Award Document"** means the document signed by the Agency and the Purchasing Division, and approved as to form by the Attorney General, that identifies the Vendor as the contract holder.

**2.7. "Solicitation"** means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.

**2.8. "State"** means the State of West Virginia and/or any of its agencies, commissions, boards, etc. as context requires.

**2.9. "Vendor" or "Vendors"** means any entity submitting a bid in response to the Solicitation, the entity that has been selected as the lowest responsible bidder, or the entity that has been awarded the Contract as context requires.

**3. CONTRACT TERM; RENEWAL; EXTENSION:** The term of this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below:

**Term Contract**

**Initial Contract Term:** The Initial Contract Term will be for a period of \_\_\_\_\_. The Initial Contract Term becomes effective on the effective start date listed on the first page of this Contract, identified as the State of West Virginia contract cover page containing the signatures of the Purchasing Division, Attorney General, and Encumbrance clerk (or another page identified as \_\_\_\_\_), and the Initial Contract Term ends on the effective end date also shown on the first page of this Contract.

**Renewal Term:** This Contract may be renewed upon the mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any request for renewal should be delivered to the Agency and then submitted to the Purchasing Division thirty (30) days prior to the expiration date of the initial contract term or appropriate renewal term. A Contract renewal shall be in accordance with the terms and conditions of the original contract. Unless otherwise specified below, renewal of this Contract is limited to \_\_\_\_\_ successive one (1) year periods or multiple renewal periods of less than one year, provided that the multiple renewal periods do not exceed the total number of months available in all renewal years combined. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's office (Attorney General approval is as to form only)

**Alternate Renewal Term** – This contract may be renewed for \_\_\_\_\_ successive \_\_\_\_\_ year periods or shorter periods provided that they do not exceed the total number of months contained in all available renewals. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's office (Attorney General approval is as to form only)

**Delivery Order Limitations:** In the event that this contract permits delivery orders, a delivery order may only be issued during the time this Contract is in effect. Any delivery order issued within one year of the expiration of this Contract shall be effective for one year from the date the delivery order is issued. No delivery order may be extended beyond one year after this Contract has expired.

**Fixed Period Contract:** This Contract becomes effective upon Vendor's receipt of the notice to proceed and must be completed within \_\_\_\_\_ days.



**Fixed Period Contract with Renewals:** This Contract becomes effective upon Vendor's receipt of the notice to proceed and part of the Contract more fully described in the attached specifications must be completed within \_\_\_\_\_ days. Upon completion of the work covered by the preceding sentence, the vendor agrees that:

the contract will continue for \_\_\_\_\_ years;

the contract may be renewed for \_\_\_\_\_ successive \_\_\_\_\_ year periods or shorter periods provided that they do not exceed the total number of months contained in all available renewals. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's Office (Attorney General approval is as to form only).

**One-Time Purchase:** The term of this Contract shall run from the issuance of the Award Document until all of the goods contracted for have been delivered, but in no event will this Contract extend for more than one fiscal year.

**Construction/Project Oversight:** This Contract becomes effective on the effective start date listed on the first page of this Contract, identified as the State of West Virginia contract cover page containing the signatures of the Purchasing Division, Attorney General, and Encumbrance clerk (or another page identified as \_\_\_\_\_), and continues until the project for which the vendor is providing oversight is complete.

**Other:** Contract Term specified in \_\_\_\_\_

**4. AUTHORITY TO PROCEED:** Vendor is authorized to begin performance of this contract on the date of encumbrance listed on the front page of the Award Document unless either the box for "Fixed Period Contract" or "Fixed Period Contract with Renewals" has been checked in Section 3 above. If either "Fixed Period Contract" or "Fixed Period Contract with Renewals" has been checked, Vendor must not begin work until it receives a separate notice to proceed from the State. The notice to proceed will then be incorporated into the Contract via change order to memorialize the official date that work commenced.

**5. QUANTITIES:** The quantities required under this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below.

**Open End Contract:** Quantities listed in this Solicitation/Award Document are approximations only, based on estimates supplied by the Agency. It is understood and agreed that the Contract shall cover the quantities actually ordered for delivery during the term of the Contract, whether more or less than the quantities shown.

**Service:** The scope of the service to be provided will be more clearly defined in the specifications included herewith.

**Combined Service and Goods:** The scope of the service and deliverable goods to be provided will be more clearly defined in the specifications included herewith.

**One-Time Purchase:** This Contract is for the purchase of a set quantity of goods that are identified in the specifications included herewith. Once those items have been delivered, no additional goods may be procured under this Contract without an appropriate change order approved by the Vendor, Agency, Purchasing Division, and Attorney General's office.

**Construction:** This Contract is for construction activity more fully defined in the specifications.

**6. EMERGENCY PURCHASES:** The Purchasing Division Director may authorize the Agency to purchase goods or services in the open market that Vendor would otherwise provide under this Contract if those goods or services are for immediate or expedited delivery in an emergency. Emergencies shall include, but are not limited to, delays in transportation or an unanticipated increase in the volume of work. An emergency purchase in the open market, approved by the Purchasing Division Director, shall not constitute a breach of this Contract and shall not entitle the Vendor to any form of compensation or damages. This provision does not excuse the State from fulfilling its obligations under a One-Time Purchase contract.

**7. REQUIRED DOCUMENTS:** All of the items checked in this section must be provided to the Purchasing Division by the Vendor as specified:

**LICENSE(S) / CERTIFICATIONS / PERMITS:** In addition to anything required under the Section of the General Terms and Conditions entitled Licensing, the apparent successful Vendor shall furnish proof of the following licenses, certifications, and/or permits upon request and in a form acceptable to the State. The request may be prior to or after contract award at the State's sole discretion.

The apparent successful Vendor shall also furnish proof of any additional licenses or certifications contained in the specifications regardless of whether or not that requirement is listed above.

**8. INSURANCE:** The apparent successful Vendor shall furnish proof of the insurance identified by a checkmark below prior to Contract award. The insurance coverages identified below must be maintained throughout the life of this contract. Thirty (30) days prior to the expiration of the insurance policies, Vendor shall provide the Agency with proof that the insurance mandated herein has been continued. Vendor must also provide Agency with immediate notice of any changes in its insurance policies, including but not limited to, policy cancelation, policy reduction, or change in insurers. The apparent successful Vendor shall also furnish proof of any additional insurance requirements contained in the specifications prior to Contract award regardless of whether that insurance requirement is listed in this section.

Vendor must maintain:

**Commercial General Liability Insurance** in at least an amount of: \$1,000,000.00 per occurrence.

**Automobile Liability Insurance** in at least an amount of: \$1,000,000.00 per occurrence.

**Professional/Malpractice/Errors and Omission Insurance** in at least an amount of: \_\_\_\_\_ per occurrence. Notwithstanding the forgoing, Vendor's are not required to list the State as an additional insured for this type of policy.

**Commercial Crime and Third Party Fidelity Insurance** in an amount of: \_\_\_\_\_ per occurrence.

**Cyber Liability Insurance** in an amount of: \_\_\_\_\_ per occurrence.

**Builders Risk Insurance** in an amount equal to 100% of the amount of the Contract.

**Pollution Insurance** in an amount of: \_\_\_\_\_ per occurrence.

**Aircraft Liability** in an amount of: \_\_\_\_\_ per occurrence.

**9. WORKERS' COMPENSATION INSURANCE:** Vendor shall comply with laws relating to workers compensation, shall maintain workers' compensation insurance when required, and shall furnish proof of workers' compensation insurance upon request.

**10. VENUE:** All legal actions for damages brought by Vendor against the State shall be brought in the West Virginia Claims Commission. Other causes of action must be brought in the West Virginia court authorized by statute to exercise jurisdiction over it.

**11. LIQUIDATED DAMAGES:** This clause shall in no way be considered exclusive and shall not limit the State or Agency's right to pursue any other available remedy. Vendor shall pay liquidated damages in the amount specified below or as described in the specifications:

\_\_\_\_\_ for \_\_\_\_\_.

Liquidated Damages Contained in the Specifications.

Liquidated Damages Are Not Included in this Contract.

**12. ACCEPTANCE:** Vendor's signature on its bid, or on the certification and signature page, constitutes an offer to the State that cannot be unilaterally withdrawn, signifies that the product or service proposed by vendor meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise indicated, and signifies acceptance of the terms and conditions contained in the Solicitation unless otherwise indicated.

**13. PRICING:** The pricing set forth herein is firm for the life of the Contract, unless specified elsewhere within this Solicitation/Contract by the State. A Vendor's inclusion of price adjustment provisions in its bid, without an express authorization from the State in the Solicitation to do so, may result in bid disqualification. Notwithstanding the foregoing, Vendor must extend any publicly advertised sale price to the State and invoice at the lower of the contract price or the publicly advertised sale price.

**14. PAYMENT IN ARREARS:** Payments for goods/services will be made in arrears only upon receipt of a proper invoice, detailing the goods/services provided or receipt of the goods/services, whichever is later. Notwithstanding the foregoing, payments for software maintenance, licenses, or subscriptions may be paid annually in advance.

**15. PAYMENT METHODS:** Vendor must accept payment by electronic funds transfer and P-Card. (The State of West Virginia's Purchasing Card program, administered under contract by a banking institution, processes payment for goods and services through state designated credit cards.)

**16. TAXES:** The Vendor shall pay any applicable sales, use, personal property or any other taxes arising out of this Contract and the transactions contemplated thereby. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.

**17. ADDITIONAL FEES:** Vendor is not permitted to charge additional fees or assess additional charges that were not either expressly provided for in the solicitation published by the State of West Virginia, included in the Contract, or included in the unit price or lump sum bid amount that Vendor is required by the solicitation to provide. Including such fees or charges as notes to the solicitation may result in rejection of vendor's bid. Requesting such fees or charges be paid after the contract has been awarded may result in cancellation of the contract.

**18. FUNDING:** This Contract shall continue for the term stated herein, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise made available, this Contract becomes void and of no effect beginning on July 1 of the fiscal year for which funding has not been appropriated or otherwise made available. If that occurs, the State may notify the Vendor that an alternative source of funding has been obtained and thereby avoid the automatic termination. Non-appropriation or non-funding shall not be considered an event of default.

**19. CANCELLATION:** The Purchasing Division Director reserves the right to cancel this Contract immediately upon written notice to the vendor if the materials or workmanship supplied do not conform to the specifications contained in the Contract. 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 § 148-1-5.2.b.

**20. TIME:** Time is of the essence regarding all matters of time and performance in this Contract.

**21. APPLICABLE LAW:** This Contract is governed by and interpreted under West Virginia law without giving effect to its choice of law principles. Any information provided in specification manuals, or any other source, verbal or written, which contradicts or violates the West Virginia Constitution, West Virginia Code, or West Virginia Code of State Rules is void and of no effect.

**22. COMPLIANCE WITH LAWS:** Vendor shall comply with all applicable federal, state, and local laws, regulations and ordinances. By submitting a bid, Vendor acknowledges that it has reviewed, understands, and will comply with all applicable laws, regulations, and ordinances.

**SUBCONTRACTOR COMPLIANCE:** Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to comply with all applicable laws, regulations, and ordinances. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

**23. ARBITRATION:** Any references made to arbitration contained in this Contract, Vendor's bid, or in any American Institute of Architects documents pertaining to this Contract are hereby deleted, void, and of no effect.

**24. MODIFICATIONS:** This writing is the parties' final expression of intent. Notwithstanding anything contained in this Contract to the contrary no modification of this Contract shall be binding without mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any change to existing contracts that adds work or changes contract cost, and were not included in the original contract, must be approved by the Purchasing Division and the Attorney General's Office (as to form) prior to the implementation of the change or commencement of work affected by the change.

**25. WAIVER:** The failure of either party to insist upon a strict performance of any of the terms or provision of this Contract, or to exercise any option, right, or remedy herein contained, shall not be construed as a waiver or a relinquishment for the future of such term, provision, option, right, or remedy, but the same shall continue in full force and effect. Any waiver must be expressly stated in writing and signed by the waiving party.

**26. SUBSEQUENT FORMS:** The terms and conditions contained in this Contract shall supersede any and all subsequent terms and conditions which may appear on any form documents submitted by Vendor to the Agency or Purchasing Division such as price lists, order forms, invoices, sales agreements, or maintenance agreements, and includes internet websites or other electronic documents. Acceptance or use of Vendor's forms does not constitute acceptance of the terms and conditions contained thereon.

**27. ASSIGNMENT:** Neither this Contract nor any monies due, or to become due hereunder, may be assigned by the Vendor without the express written consent of the Agency, the Purchasing Division, the Attorney General's office (as to form only), and any other government agency or office that may be required to approve such assignments.

**28. WARRANTY:** 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 defect in material and workmanship.

**29. STATE EMPLOYEES:** State employees are not permitted to utilize this Contract for personal use and the Vendor is prohibited from permitting or facilitating the same.

**30. PRIVACY, SECURITY, AND CONFIDENTIALITY:** The Vendor agrees that it will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the Agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the Agency's policies, procedures, and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in [www.state.wv.us/admin/purchase/privacy](http://www.state.wv.us/admin/purchase/privacy).

**31. YOUR SUBMISSION IS A PUBLIC DOCUMENT:** Vendor's entire response to the Solicitation and the resulting Contract are public documents. As public documents, they will be disclosed to the public following the bid/proposal opening or award of the contract, as required by the competitive bidding laws of West Virginia Code §§ 5A-3-1 et seq., 5-22-1 et seq., and 5G-1-1 et seq. and the Freedom of Information Act West Virginia Code §§ 29B-1-1 et seq.

**DO NOT SUBMIT MATERIAL YOU CONSIDER TO BE CONFIDENTIAL, A TRADE SECRET, OR OTHERWISE NOT SUBJECT TO PUBLIC DISCLOSURE.**

Submission of any bid, proposal, or other document to the Purchasing Division constitutes your explicit consent to the subsequent public disclosure of the bid, proposal, or document. The Purchasing Division will disclose any document labeled "confidential," "proprietary," "trade secret," "private," or labeled with any other claim against public disclosure of the documents, to include any "trade secrets" as defined by West Virginia Code § 47-22-1 et seq. All submissions are subject to public disclosure without notice.

**32. LICENSING:** In accordance with West Virginia Code of State Rules § 148-1-6.1.e, Vendor must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agency or political subdivision. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Upon request, the Vendor must provide all necessary releases to obtain information to enable the Purchasing Division Director or the Agency to verify that the Vendor is licensed and in good standing with the above entities.

**SUBCONTRACTOR COMPLIANCE:** Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to be licensed, in good standing, and up-to-date on all state and local obligations as described in this section. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

**33. ANTITRUST:** In submitting a bid to, signing a contract with, or accepting a Award Document from any agency of the State of West Virginia, the Vendor agrees to convey, sell, assign, or transfer to the State of West Virginia all rights, title, and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the State of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to Vendor.

**34. VENDOR NON-CONFLICT:** Neither Vendor nor its representatives are permitted to have any interest, nor shall they acquire any interest, direct or indirect, which would compromise the performance of its services hereunder. Any such interests shall be promptly presented in detail to the Agency.

**35. VENDOR RELATIONSHIP:** The relationship of the Vendor to the State shall be that of an independent contractor and no principal-agent relationship or employer-employee relationship is contemplated or created by this Contract. The Vendor as an independent contractor is solely liable for the acts and omissions of its employees and agents. Vendor shall be responsible for selecting, supervising, and compensating any and all individuals employed pursuant to the terms of this Solicitation and resulting contract. Neither the Vendor, nor any employees or subcontractors of the Vendor, shall be deemed to be employees of the State for any purpose whatsoever. Vendor shall be exclusively responsible for payment of employees and contractors for all wages and salaries, taxes, withholding payments, penalties, fees, fringe benefits, professional liability insurance premiums, contributions to insurance and pension, or other deferred compensation plans, including but not limited to, Workers' Compensation and Social Security obligations, licensing fees, etc. and the filing of all necessary documents, forms, and returns pertinent to all of the foregoing.

Vendor shall hold harmless the State, and shall provide the State and Agency with a defense against any and all claims including, but not limited to, the foregoing payments, withholdings, contributions, taxes, Social Security taxes, and employer income tax returns.

**36. INDEMNIFICATION:** The Vendor agrees to indemnify, defend, and hold harmless the State and the Agency, their officers, and employees from and against: (1) Any claims or losses for services rendered by any subcontractor, person, or firm performing or supplying services, materials, or supplies in connection with the performance of the Contract; (2) Any claims or losses resulting to any person or entity injured or damaged by the Vendor, its officers, employees, or subcontractors by the publication, translation, reproduction, delivery, performance, use, or disposition of any data used under the Contract in a manner not authorized by the Contract, or by Federal or State statutes or regulations; and (3) Any failure of the Vendor, its officers, employees, or subcontractors to observe State and Federal laws including, but not limited to, labor and wage and hour laws.

**37. NO DEBT CERTIFICATION:** In accordance with West Virginia Code §§ 5A-3-10a and 5-22-1(i), the State is prohibited from awarding a contract to any bidder that owes a debt to the State or a political subdivision of the State. By submitting a bid, or entering into a contract with the State, Vendor is affirming that (1) for construction contracts, the Vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, neither the Vendor nor any related party owe a debt as defined above, and neither the Vendor nor any related party are in employer default as defined in the statute cited above unless the debt or employer default is permitted under the statute.

**38. CONFLICT OF INTEREST:** Vendor, its officers or members or employees, shall not presently have or acquire an interest, direct or indirect, which would conflict with or compromise the performance of its obligations hereunder. Vendor shall periodically inquire of its officers, members and employees to ensure that a conflict of interest does not arise. Any conflict of interest discovered shall be promptly presented in detail to the Agency.



**39. REPORTS:** Vendor shall provide the Agency and/or the Purchasing Division with the following reports identified by a checked box below:

Such reports as the Agency and/or the Purchasing Division may request. Requested reports may include, but are not limited to, quantities purchased, agencies utilizing the contract, total contract expenditures by agency, etc.

Quarterly reports detailing the total quantity of purchases in units and dollars, along with a listing of purchases by agency. Quarterly reports should be delivered to the Purchasing Division via email at [purchasing.division@wv.gov](mailto:purchasing.division@wv.gov).

**40. BACKGROUND CHECK:** In accordance with W. Va. Code § 15-2D-3, the State reserves the right to prohibit a service provider's employees from accessing sensitive or critical information or to be present at the Capitol complex based upon results addressed from a criminal background check. Service providers should contact the West Virginia Division of Protective Services by phone at (304) 558-9911 for more information.

**41. PREFERENCE FOR USE OF DOMESTIC STEEL PRODUCTS:** Except when authorized by the Director of the Purchasing Division pursuant to W. Va. Code § 5A-3-56, no contractor may use or supply steel products for a State Contract Project other than those steel products made in the United States. A contractor who uses steel products in violation of this section may be subject to civil penalties pursuant to W. Va. Code § 5A-3-56. As used in this section:

- a. "State Contract Project" means any erection or construction of, or any addition to, alteration of or other improvement to any building or structure, including, but not limited to, roads or highways, or the installation of any heating or cooling or ventilating plants or other equipment, or the supply of and materials for such projects, pursuant to a contract with the State of West Virginia for which bids were solicited on or after June 6, 2001.
- b. "Steel Products" means products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated or otherwise similarly processed, or processed by a combination of two or more or such operations, from steel made by the open heath, basic oxygen, electric furnace, Bessemer or other steel making process.
- c. The Purchasing Division Director may, in writing, authorize the use of foreign steel products if:
  1. The cost for each contract item used does not exceed one tenth of one percent (.1%) of the total contract cost or two thousand five hundred dollars (\$2,500.00), whichever is greater. For the purposes of this section, the cost is the value of the steel product as delivered to the project; or
  2. The Director of the Purchasing Division determines that specified steel materials are not produced in the United States in sufficient quantity or otherwise are not reasonably available to meet contract requirements.

**42. PREFERENCE FOR USE OF DOMESTIC ALUMINUM, GLASS, AND STEEL:** In Accordance with W. Va. Code § 5-19-1 et seq., and W. Va. CSR § 148-10-1 et seq., for every contract or subcontract, subject to the limitations contained herein, for the construction, reconstruction, alteration, repair, improvement or maintenance of public works or for the purchase of any item of machinery or equipment to be used at sites of public works, only domestic aluminum, glass or steel products shall be supplied unless the spending officer determines, in writing, after the receipt of offers or bids, (1) that the cost of domestic aluminum, glass or steel products is unreasonable or inconsistent with the public interest of the State of West Virginia, (2) that domestic aluminum, glass or steel products are not produced in sufficient quantities to meet the contract requirements, or (3) the available domestic aluminum, glass, or steel do not meet the contract specifications. This provision only applies to public works contracts awarded in an amount more than fifty thousand dollars (\$50,000) or public works contracts that require more than ten thousand pounds of steel products.

The cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than twenty percent (20%) of the bid or offered price for foreign made aluminum, glass, or steel products. If the domestic aluminum, glass or steel products to be supplied or produced in a “substantial labor surplus area”, as defined by the United States Department of Labor, the cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than thirty percent (30%) of the bid or offered price for foreign made aluminum, glass, or steel products. This preference shall be applied to an item of machinery or equipment, as indicated above, when the item is a single unit of equipment or machinery manufactured primarily of aluminum, glass or steel, is part of a public works contract and has the sole purpose or of being a permanent part of a single public works project. This provision does not apply to equipment or machinery purchased by a spending unit for use by that spending unit and not as part of a single public works project.

All bids and offers including domestic aluminum, glass or steel products that exceed bid or offer prices including foreign aluminum, glass or steel products after application of the preferences provided in this provision may be reduced to a price equal to or lower than the lowest bid or offer price for foreign aluminum, glass or steel products plus the applicable preference. If the reduced bid or offer prices are made in writing and supersede the prior bid or offer prices, all bids or offers, including the reduced bid or offer prices, will be reevaluated in accordance with this rule.

**43. INTERESTED PARTY SUPPLEMENTAL DISCLOSURE:** W. Va. Code § 6D-1-2 requires that for contracts with an actual or estimated value of at least \$1 million, the Vendor must submit to the Agency a disclosure of interested parties prior to beginning work under this Contract. Additionally, the Vendor must submit a supplemental disclosure of interested parties reflecting any new or differing interested parties to the contract, which were not included in the original pre-work interested party disclosure, within 30 days following the completion or termination of the contract. A copy of that form is included with this solicitation or can be obtained from the WV Ethics Commission. This requirement does not apply to publicly traded companies listed on a national or international stock exchange. A more detailed definition of interested parties can be obtained from the form referenced above.

**44. PROHIBITION AGAINST USED OR REFURBISHED:** Unless expressly permitted in the solicitation published by the State, Vendor must provide new, unused commodities, and is prohibited from supplying used or refurbished commodities, in fulfilling its responsibilities under this Contract.

**45. VOID CONTRACT CLAUSES:** This Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law.

**46. ISRAEL BOYCOTT:** Bidder understands and agrees that, pursuant to W. Va. Code § 5A-3-63, it is prohibited from engaging in a boycott of Israel during the term of this contract.

**DESIGNATED CONTACT:** Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

(Printed Name and Title) Rebecca W Hudson  
(Address) 9800 4th Street North, Ste 204, St Petersburg, FL 33702  
(Phone Number) / (Fax Number) 727 560 4846  
(email address) bhudson@atstrainingsystems.com

**CERTIFICATION AND SIGNATURE:** By signing below, or submitting documentation through wvOASIS, I certify that: I have reviewed this Solicitation/Contract in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation/Contract for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that this bid or offer was made without prior understanding, agreement, or connection with any entity submitting a bid or offer for the same material, supplies, equipment or services; that this bid or offer is in all respects fair and without collusion or fraud; that this Contract is accepted or entered into without any prior understanding, agreement, or connection to any other entity that could be considered a violation of law; that I am authorized by the Vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on Vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

*By signing below, I further certify that I understand this Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law; and that pursuant to W. Va. Code 5A-3-63, the entity entering into this contract is prohibited from engaging in a boycott against Israel.*

ADVANCED TRAINING SYSTEMS LLC

(Company) \_\_\_\_\_  
Rebecca W Hudson  
(Signature of Authorized Representative)  
Rebecca W Hudson  
(Printed Name and Title of Authorized Representative) (Date)  
727 560 4846  
(Phone Number) (Fax Number)  
bhudson@atstrainingsystems.com  
(Email Address)

**VENDOR: Advanced Training Systems, LLC - Truck Driving Simulator with Snow Plow package**

Item No.	Description:	Model & Part Number Being Bid	Quantity	Unit Price	Item Total Cost
1	Virage VS600M or equal with snow plow package	2024 Advanced Training Systems FleetMaster-PRIME™ (Part#:FM-PRIME-24) Simulator with Snowplow package	4	\$86,000.00	\$344,000.00
2	Shipping	FM-SHIP	4	\$2,411.00	\$9,644.00
3	Installation / Training (2-locations)	FM-I-T	2	\$3,211.00	\$6,422.00
4					
<b>Total Bid Cost</b>					<b>\$360,066.00</b>

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

**Vendor Information**

**Company Name:** Advanced Training Systems, LLC

**Contact Manager:** Rebecca W Hudson, Vice Presiden

**Address:** Advanced Training Systems, LLC 9800 4th Street North - Suite 204 St. Petersburg, FL 33702

**Phone:** MAIN: 800 - 870 - 5782 Direct 727 560 4846

**Fax:** ----

**E-mail:** [bhudson@atstrainingsystems.com](mailto:bhudson@atstrainingsystems.com)

**Signature:** *Rebecca W Hudson*



## **“Proudly Made in the USA”**

In the interest of clarity ATS has provided responses to each of the CRFQ requirements in blue:

### **1. GENERAL REQUIREMENTS:**

**1.1. Mandatory Contract Item Requirements:** Contract Item must meet or exceed the mandatory requirements listed in each section below.

#### **1.1.1. Truck driving simulator.**

**1.1.1.1.** Must have a build date of no more than six months prior to delivery date and be a current production model.

The attached specification meets this requirement. The proposed 2024 model-year FleetMaster-PRIME™ systems will have a build date of no more than six months prior to delivery date and are a current production model.

**1.1.1.2.** Prototypes and demonstrator models will not be accepted.

The attached specification meets this requirement. The proposed FleetMaster-PRIME™ systems are not prototypes or demonstrator models.

**1.1.1.3.** Shall have actual truck seat with air adjustability and three point seat belt

The attached specification meets / exceeds this requirement. The actual truck seat is an OEM component and has various air adjustability (height, position, lumbar support, Recline, Fore/aft movement, etc.) and three point seat belt.

**1.1.1.4.** Shall have 10, 13, 18 speed manual, 18 speed Eaton fuller shifter knob with selectable gear ratio software.

The attached specification meets / exceeds this requirement. The system provides Automatic, Semi-automatic, Push-button automatic as well as 10, 13, 18-speed manual. In regard to the shift-lever, an 18-speed Eaton fuller shifter knob with selectable gear ratio software, and the shift-knob is driven pneumatically, as in an actual vehicle.

Regarding shifting - The FleetMaster-PRIME™ features self-paced Gear-selection, Shifting, Clutching and Progressive shifting drills led by the Digital Coach™ - featured in ATS patented adaptive training ([US Patent 8,770,980 B2](#)). Additionally, ATS 'patented 'Lock-out' transmission ([US Patent 8,469,711 B2](#)) Drivers / Student may practice shifting just as they would in a real-truck, without the danger of actual vehicle damage. The simulator transmission sub-system provides the same feedback as in a truck and 'locks-out' and 'grinds' as in a real-commercial vehicle if the Driver executes an improper shift.

Further, ATS 'patented 'glass-dash 'technology (*US Patent 8,894415 B2*) allows the Operator to select various vehicle / transmission models, resulting in a variable display that mimics a variety of truck makes/models - of which, the Instructor may manipulate - send faults, errors, component failure, etc. In addition, the system is modular, affording customers the ability to enhance the simulator system, as well as reduce future obsolescence.

**1.1.1.5. Selectable manual or automatic transmission including the new automated manual transmissions.**

The attached specification meets / exceeds this requirement. As mentioned in section 1.1.1.4, the system provides Automatic, Semi-automatic, Push-button automatic as well as 10, 13, 18-speed manual. Further, the system features the latest OEM-emulating software in regard to new automated manual transmissions. ATS has established relationships with OEM manufacturers (Kenworth, Freightliner, etc.) that results in the most-accurate simulation-based training.

**1.1.1.6. Digital instrument cluster with LCD touch screen representing the selected vehicle.**

The attached specification meets / exceeds this requirement. ATS 'patented 'Glass-dash ' technology allows the Operator to select various vehicle / transmission models, resulting in a variable display that mimics a variety of truck makes/models - of which, the Instructor may manipulate - send faults, errors, component failure, etc.

*ATS is the exclusive provider of this patented technology (*US Patent 8,894415 B2*).*

**1.1.1.7. Multi function display for vehicle and simulator controls from the driver station.**

The attached specification meets / exceeds this requirement. ATS 'patented 'Glass-dash ' technology (*US Patent 8,894415 B2*) features a multi-function display for vehicle and simulator controls from the driver station. ATS is the exclusive provider of this patented technology.

**1.1.1.8. Three channel visual system, 180 degree forward field of view using 55 inch LED 4K, with a minimum 3840x2160 pixel high resolution displays.**

The attached specification meets / exceeds this requirement. The FleetMaster-PRIME™ simulator sight-system is comprised of a Six (6) monitor sight-system providing a 270° field-of-view integrated into the visual perspective of the Driver, as well as a touchscreen display and dashboard 'glass-dash'. Further, the monitors are purpose-built to reduce image flicker, enhance graphics and maintain (at minimum) 60 frames-per-second (FPS) to mitigate the onset of Simulator Adaptation Syndrome (SAS), also known as 'motion sickness'.

For the readers understanding, reference



photos of similar-customers systems attached below:

**1.1.1.9.** Shall have additional 60 degree (out of driver window view) inset in left display for angle parking and alley docking.

The attached specification meets / exceeds this requirement. In addition to the sixth 'rear-monitor' the FleetMaster-PRIME™ also provides a 60-degree (out of driver window view) inset in left display for angle parking and alley docking. Likewise, the Driver / Instructor may also activate the G.O.A.L. button (industry common acronym for 'Get Out And Look') and be provided with additional perspectives.





For the readers understanding, ATS provides an extracted scenario-reference photo-example



of G.O.A.L.view attached below:

**1.1.1.10.** Simulation of the adjustable left and right side mirrors both standard and convex on each side.

The attached specification meets / exceeds this requirement. The simulation of the adjustable left and right side mirrors include both standard and convex on each side. In addition to the adjustable mirrors, the simulator incorporates our patented Dynamic Mirror Module or 'DMM' (*US Patent - 9,418,568 B2; System, Method and Apparatus for Driver TRAINING SYSTEM WITH DYNAMIC MIRRORS*).

By including this patented technology, the Driver has the ability to adjust the mirrors as in an actual vehicle. During simulated sessions, the system will 'track' the variable head-position of the Driver and adjust the Drivers-perspective of what is visible via the rear-view mirrors. Should the Driver lean to the left, right, forward - or adjust their head in any-position, the mirror perspective will change - simulating the perspective and perception of a real-vehicle.

**1.1.1.11.** Shall have adjustable tilt, height steering wheel with adjustable active force feedback to match selected vehicle to mimicking real vehicle steering wheel operation.

The attached specification meets / exceeds this requirement. The proposed FleetMaster-PRIME™ simulator features a vehicle specific-dash, actual OEM components (such as steering wheel, steering column, turn-signal cluster, switches and peripheral equipment). The OEM equipment features an adjustable tilt, height steering wheel and adjustable active force

feedback that matches selected vehicles, mimicking real vehicle steering wheel operation, degrees of rotation, physical forces and feedback such as curves, driving surfaces, weather or atmospheric conditions (such as ice, snow, sand or water) etc.

**1.1.1.12. Shall have High fidelity 5.1 3D surround sound.**

The attached specification meets / exceeds this requirement. Included within the FleetMaster-PRIME™ simulator a high-fidelity 5.1 surround sound audio-system that replicates engine sounds, road noise, and communication with instructors in addition to ambient interference, gear-grinding and Digital Coach™ narration. Further, the system is integrated with various tactile vibration transducers that replicate engine vibration, gear-grinding, etc.

**1.1.1.13. Shall have multiple tractor semi-trailer configurations including flatbed, tanker, straight truck, dump truck.**

The attached specification meets / exceeds this requirement. Included within the FleetMaster-PRIME™ simulator a vehicle library includes multiple tractor semi trailer configurations including flatbed, tanker, straight truck, dump truck. In addition, the system will also feature additional vehicles (as well as the prescribed Snow Plow option) such as ‘Double-trailers’, 40-ft containers, Intermodal-containers, etc.

**1.1.1.14. Shall have changeable driving situations such as different terrains, elevations, asphalt, snow and ice, city, urban, expressways, highways, mountainous roads, practice field and CDL testing area.**

The attached specification meets / exceeds this requirement. Included within the FleetMaster-PRIME™ simulator various changeable driving situations such as different terrains, elevations, asphalt, snow and ice, city, urban, expressways, highways, mountainous roads, practice field and CDL testing area. Additionally, the system features various scenarios, including the following (provided as examples - full-list available on-request:

- Quadrant™ Introduction to Shifting
- Quadrant™ Shifting Ladder (Progressive shifting lesson)
- Simulator Acclimation (4-practices)
- Left Turns (4-practices)
- Lane Changes (4-practices)
- Stay Back / Following Distance (4-practices)
- Winter Driving (6-practices)
- Yield to Others (4-practices)
- Reduce the Risk (4-practices)
- Slow Down (4-practices)
- Know What’s Happening (4-practices)
- Expect the Unexpected (4-practices)
- Loss of Control (4-practices)
- Backing (35-practices featuring 5-virtual settings)
- Quadrant™ Quick-drive Scenarios (6-practices with focused environments, such as ‘Round-a-bouts’, ‘Inspection Checkpoints’ and ‘Construction Zones)
- Geo-typical and Geo-Specific ‘Free-Driving ’Scenarios (16-Virtual Settings)

**1.1.1.15. Shall have 3 axis motion/vibration system to give a real feel driving simulation.**

The attached specification meets / exceeds this requirement. ATS patented OnQ™ Motion system ([US Patent 9,852,650 B2](#)) features technology exclusive to ATS by which the Driver will experience enhanced motion feedback, such as acceleration, braking, traction-loss, vibration, etc. The motion-system will also simulate Linear motion (such as acceleration / braking) and Yaw-motion (such as traction-loss) as in an actual commercial-vehicle.

In-line with ATS' Human-centered Design / ISO adaptation, these factors and haptic-feedback are incorporated into the entirety of the system. By this approach, Steering, Motion, Sound, visuals and OEM components provide a better, more realistic simulated training environment.

***What is ISO 9241-210 Human Centered Design, and why is it being used to improve a driving simulator s performance?***

Human-Centered Design (HCD) is a design and management framework that develops solutions to problems by involving the human perspective in all steps of the problem-solving process. Human involvement typically takes place in observing the problem within context, brainstorming, conceptualizing, developing, and implementing the solution.

ATS uses Human-Centered Design processes to include critical customer requirements to ensure that systems are designed to be usable and useful by focusing on the users, their needs and requirements, and by applying human factors/ergonomics, usability knowledge, and techniques. This approach enhances effectiveness and efficiency, improves human well-being, technical user satisfaction, accessibility and sustainability; and counteracts possible adverse effects of use on human health, safety and performance. ISO 9241-210 is the document that defines these processes.

Human-Centered = Customer-Centered: ATS recognizes that the customer has much to contribute in defining the system performance that they want. HCD provides a way for that experience and knowledge to be a part of the system design.

Finally, should the reader care to see a visual / media-based example as to how ATS patented OnQ™ Motion system mitigates SAS, please navigate to the following-link: [youtube.com/watch?v=7OTZr\\_6Y1Jo](https://www.youtube.com/watch?v=7OTZr_6Y1Jo)

**1.1.1.16.** Shall have a CDL proficiency-based training programs including shifting, backing, turns, coupling procedures, air brake pre trip inspection and skill assessments.

The attached specification meets / exceeds this requirement. The FleetMaster-PRIME™ content library includes CDL proficiency-based training programs including shifting, backing, turns, coupling procedures, air brake pre-trip inspection and skill assessments.

In addition, and specifically targeting Air-brake pre-trip inspection, the FleetMaster-PRIME™ simulator (Parking Brake / Trailer Brake), features a hardware addition; A pneumatic system featuring OEM components and a push/pull-type mechanism - as in an actual commercial-vehicle. This allows students to practice the muscle-memory based process using the system, and replicate the Air-Brake test / Air-Brake failure and pneumatically deploy/retract the brake-valve

Should the reader require, more information available upon request.

**1.1.1.17.** Shall have a vehicle pre trip inspection training mode.

The attached specification meets / exceeds this requirement. The FleetMaster-PRIME™ is equipped with a vehicle pre-trip inspection training mode, featuring a variety of Makes/Models. Additionally, the Pre-Trip component includes a learning, evaluation and free-practice mode.

**1.1.1.18.** Shall have an interactive air brake training system with usable fault scenarios.

The attached specification meets / exceeds this requirement. The FleetMaster-PRIME™ is equipped with an interactive air brake training system with usable fault scenarios. Additionally, the Air-Brake component includes a learning, evaluation and free-practice mode.

**1.1.1.19.** Shall a driver tracker tool to track and report driver skill development performance and progress.

The attached specification meets / exceeds this requirement. The FleetMaster-PRIME™ simulator features a driver tracker tool to track and report driver skill development performance and progress and can be accessed / utilized by several methods, dependent on the Instructor / Training Organizations preference.

1. **'Simple Report'** - Below, the reader will find a screen-shot of a 'Sample' report, what ATS refers to as a 'Simple Report'.
2. **'Detailed Report'** - In addition, customers also have access to the ATS' Driver Tracking platform, wherein the Operator / Instructor can view data analytically and compare

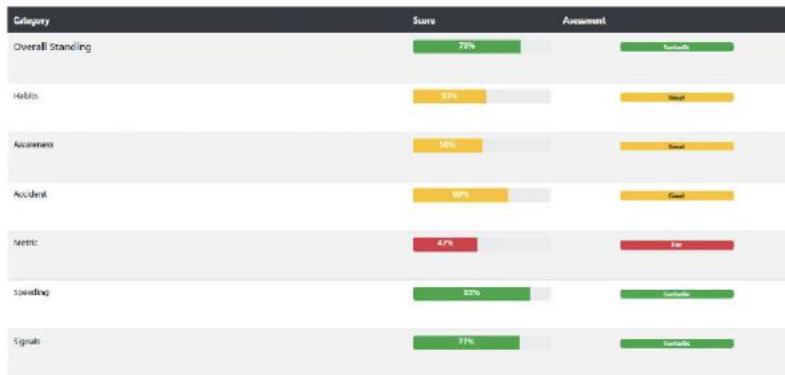
## Admin page

Active	User	Group	Company	Program	Started	Finished	Score	PEO	NextSync	Progress	Reset	Module Progress
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<input checked="" type="checkbox"/>	Jane Smith	Testing/Com	LeadM/LeadCompany	LeadM/Lead Program	Nov 18, 2021 7:44 AM	Nov 18, 2021 7:44 AM	77%	814	50%	100%	<input type="button" value="Reset"/>	<div><div style="width: 100%;"></div></div>
<input checked="" type="checkbox"/>	John Doe	Testing/Com	LeadM/LeadCompany	LeadM/Lead Program	Nov 18, 2021 7:48 AM	Nov 18, 2021 7:48 AM	77%	814	50%	100%	<input type="button" value="Reset"/>	<div><div style="width: 100%;"></div></div>
<input checked="" type="checkbox"/>	Jane Smith	Testing/Com	LeadM/LeadCompany	LeadM/Lead Program	Nov 18, 2021 7:44 AM	Nov 18, 2021 7:44 AM	77%	814	50%	100%	<input type="button" value="Reset"/>	<div><div style="width: 100%;"></div></div>
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<input checked="" type="checkbox"/>	Jane Smith	Testing/Com	LeadM/LeadCompany	LeadM/Lead Program	Nov 18, 2021 7:44 AM	Nov 18, 2021 7:44 AM	77%	814	50%	100%	<input type="button" value="Reset"/>	<div><div style="width: 100%;"></div></div>

individual drivers, groups, classes or Driver-populations. Sample excerpts found on the following-page

## User page

### 6. Driver scorecard



**Driving Aggression Score: 99.5**

Cornering G Forces: 100  
Braking G Forces: 100  
Accel G Forces: 98  
Kinetic Energy: 100

**Situational Awareness Score: 99.7**

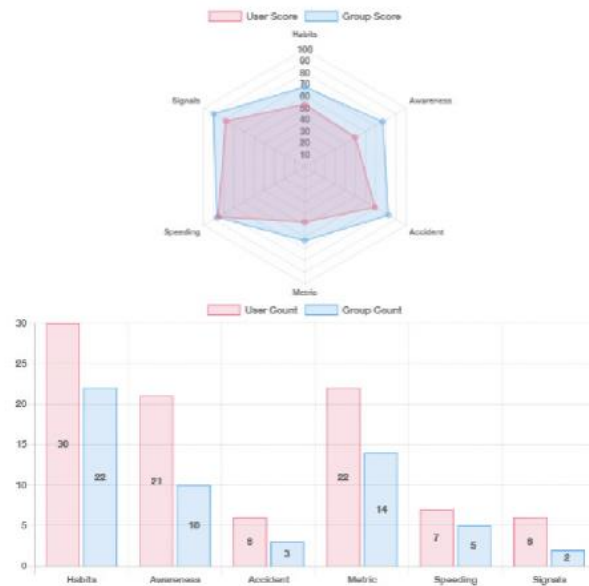
Space Cushion: 100  
Brake Covering: 100  
Emergency Reactions: 95  
Collision Avoidance: 100

**Overall Combined Score: 97.9**

Seconds Elapsed: 1136.6    Average MPH: 4.98  
Miles Traveled: 6.42    Average MPH: 20.32  
Gallons Burned: 1.29    Avg Reaction Sec: 0.00  
Objects + Cones Hit: 0    Average G Forces: 0.05  
Right Turn Signal: 4    Kinetic Risk Factor: 0.45  
Left Turn Signal: 10    Average RPM: 1800

14.00	57	Crossed a Scenario Line
100.00	60	Checked for full stop
100.00	69	Measured 9 mph vs limit of 10
100.00	98	Checked for full stop
0.00	101	Checked turn signals used
100.00	105	Checked seatbelt used
100.00	121	Checked wipers used
100.00	126	Measured 18 mph vs limit of 30
100.00	140	Measured 18 mph vs limit of 30
100.00	178	Checked wipers used
100.00	203	Checked turn signals used
100.00	205	Checked for full stop
82.50	239	Measured 21 mph vs limit of 40
100.00	231	Checked turn signals used
100.00	298	Checked seatbelt used
100.00	311	Checked turn signals used
100.00	330	Checked wipers used
92.36	360	Measured 37 mph vs limit of 55
0.00	334	Speed 29 vs 47 mph reference
90.93	335	Measured 29 mph vs limit of 47
0.00	391	Speed 30 vs 50 mph reference
03.92	392	Measured 30 mph vs limit of 50
100.00	399	Checked for correct lane choice
73.64	453	Measured 37 mph vs limit of 65
100.00	460	Checked turn signals used
96.67	492	Measured 34 mph vs limit of 60
100.00	519	Checked turn signals used

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8. Driver performance per day

Day 1					Day 2					Day 3				
Score	Group Score	Relator	Category	Relator	Score	Group Score	Relator	Category	Relator	Score	Group Score	Relator	Category	Relator
23	120	Red	Bad	Red	1	675	Red	Bad	Red	1	100	Green	Good	Green
4	230	Red	Bad	Red	1	577	Red	Bad	Red	1	230	Green	Good	Green
12	570	Red	Bad	Red	1	514	Red	Bad	Red	1	107	Green	Good	Green
9	200	Green	Good	Green	1	100	Red	Bad	Green	1	100	Green	Good	Green
2	100	Red	Bad	Red	1	100	Red	Bad	Red	1	140	Red	Bad	Red
16	730	Red	Bad	Red	1	210	Red	Bad	Red	1	100	Red	Bad	Red

**1.1.1.20.** Shall have a debrief station for visual and audio recording of the driver's training session to be used for debriefing during training or record keeping.

The attached specification meets / exceeds this requirement. The FleetMaster-PRIME™ incorporates a debrief station for visual and audio recording of the driver's training session to be used for debriefing during training or record keeping. Likewise, the station allows a variety of configurations that are best-suitable to the Customer / End-user / Instructor / Site.

**1.1.1.21.** Shall be designed to operate from a standard 110V 15-amp electrical outlet.

The attached specification meets / exceeds this requirement. The FleetMaster-PRIME™ is designed to operate from a standard 110V 15-amp electrical outlet.

**1.1.1.22.** Unit shall not require an internet connection for normal operation.

The attached specification meets / exceeds this requirement. The FleetMaster-PRIME™ does not require an internet connection for normal operation.

**1.1.1.23.** Simulator unit shall be a maximum of 72 inches by 98

inches and be open operator station design.  
The FleetMaster-PRIME™ complies with the above specification and features a maximum of 72 inches by 98 inches and is an open operator station design.

**1.1.1.24.** Operator station and electronic cabinet shall be a maximum size of 42inches by 26 inches by 58 inches.  
The FleetMaster-PRIME™ complies with the above specification and the Operator station and electronic cabinet are a maximum size of 42inches by 26 inches by 58 inches.

**1.2. Snowplow training program shall be provided with truck simulator, the mandatory requirements are listed below.**

**1.2.1.** Snow plow controls shall be certified power solutions Freedom XDS.  
The FleetMaster-PRIME™ complies with the above specification.

**1.2.2.** Simulation of spreader, left, right or rear shall be configurable by the instructor.  
The FleetMaster-PRIME™ complies with the above specification.

**1.2.3.** Shall have Instructor selectable configuration of front plow and wing plows.  
The FleetMaster-PRIME™ complies with the above specification.

**1.2.4.** Sound and motion cues shall correlate with snow plow's position.  
The FleetMaster-PRIME™ complies with the above specification.

**1.2.5.** Vehicle performance shall be affected by the amount of snow being pushed.  
The FleetMaster-PRIME™ complies with the above specification.

**1.2.6.** Stopping, backing up and replowing a given area shall be allowed.  
The FleetMaster-PRIME™ complies with the above specification.

**1.2.7.** Shall have visible road lines in the mirror allowing driver to assess the vehicles lane position.  
The FleetMaster-PRIME™ complies with the above specification.

**1.2.8.** Shall include snowplowing city, snowplowing rural, snowplowing freeway, backing up and practice field.  
The FleetMaster-PRIME™ complies with the above specification.

**1.3. Warranty:**

**1.3.1.** The complete unit must be accompanied by a one-year 100% warranty on hardware and software including full support.

The attached specification exceeds this requirement. The unit is accompanied by a Two-year 100% warranty on hardware and software including full support.

In addition, ATS affords customer the ability of Remote Support, free-of-charge. By utilizing this capability, ATS personnel have the ability (at the permission of the customer via a security protocol) to access the system to troubleshoot, provide additional training and support, etc.

#### **1.4. Operating and Service Manuals and Parts Lists:**

**1.4.1.** On site installation. Technical and train the trainer training for 3 days shall be included.

The attached specification meets / exceeds this requirement. On-site installation, Technical and train the trainer training for 3 days are included.

#### **1.5. Preventative Maintenance & Operator Procedures:**

**1.5.1. Manufacturers** and/or dealers will be required to submit to the Equipment Division, in addition to the operating and service manuals, booklets and pamphlets explaining the Preventative Maintenance and Operator Procedures to be used by the operators of this equipment, and must include such things as daily prestart inspection procedure, service schedule, and routine maintenance required, safety precautions, etc. The successful vendor shall furnish all training aids; i.e. videos, projectors as required in conducting the training.

The attached specification meets / exceeds this requirement. specification / direction.

**SEE ATTACHED TECHNICAL SPECIFICATIONS FOR FLEETMASTER PRIME™**





# FleetMaster-PRIME™ Technical Description



**A Simulator System Designed for Heavy Truck Training  
Adapted from ISO 9241-210 (Human-Centered Design)**

***“PROUDLY MADE IN AMERICA”***



**Heavy Truck Articulated & Non- Articulated (Class 6, 7, & 8 Specialty) Training Simulators**

### **What is ISO 9241-210 Human Centered Design, and why is it being used to improve a driving simulator's performance?**

Human-Centered Design (HCD) is a design and management framework that develops solutions to problems by involving the human perspective in all steps of the problem-solving process. Human involvement typically takes place in observing the problem within context, brainstorming, conceptualizing, developing, and implementing the solution.

ATS uses Human-Centered Design processes to include critical customer requirements to ensure that systems are designed to be usable and useful by focusing on the users, their needs and requirements, and by applying human factors/ergonomics, usability knowledge, and techniques. This approach enhances effectiveness and efficiency, improves human well-being, technical user satisfaction, accessibility and sustainability; and counteracts possible adverse effects of use on human health, safety and performance. ISO 9241-210 is the document that defines these processes.

Human-Centered = Customer-Centered: ATS recognizes that the customer has much to contribute in defining the system performance that they want. HCD provides a way for that experience and knowledge to be a part of the system design.

### **What makes this driving simulator uniquely qualified to fulfill your training tasks?**

This simulator's present advancement in performance is the direct result of applying ISO 9241-210 with these points:

1. Over 5 years of review and analysis of today's current simulator performance and user disappointments
2. Creating a design that embodies the concept of delivering optimum performance for minimum cost.
3. Having the level of training desired dictated the degree of fidelity delivered.
4. Incorporating over 10 years of human factors by review of best practices, aggregate improvement of driver proficiency and student acceptance of targeted training objectives.

### **How this simulator works.**

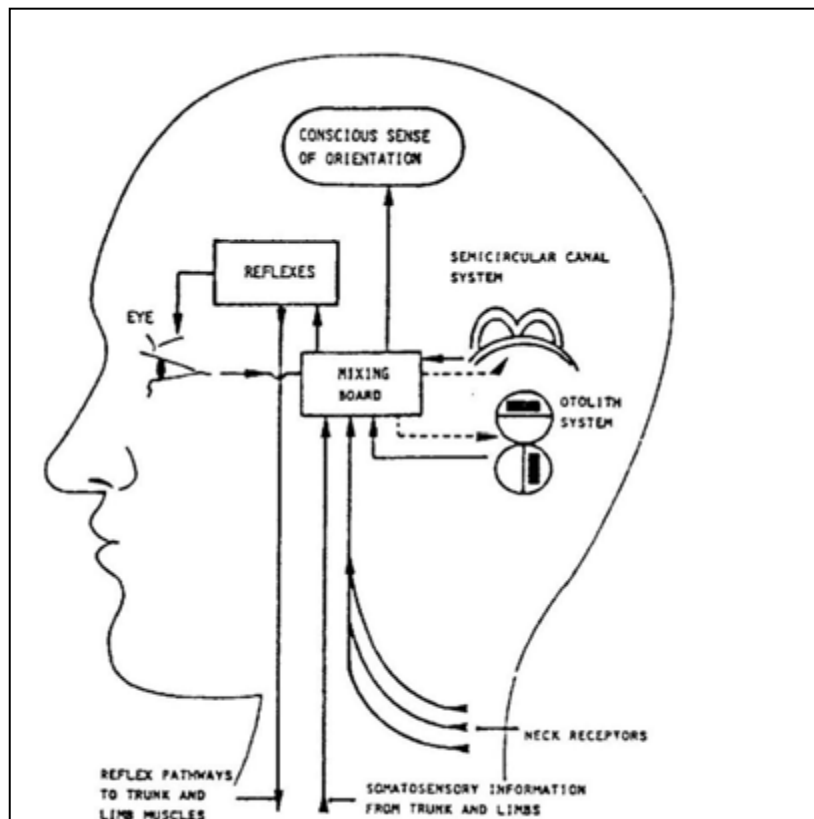
The driver is treated as a transducer (a highly sensitive receiver) and his/her headspace is the primary collector of simulator data. Inputs to the driver are not added to the noise and clutter of background chatter but coordinated and synchronized with other sensory stimuli to present an understandable and compatible symphony of perceived orientation, physical position and motion.

This has been achieved through years of human factors testing and discovering

thresholds for acceptance and reaction. This is the empirical approach (Human-Centered) to modern immersive driving simulation training. Our goal is to make the process easier to understand from a user's perspective, thus increasing acceptance. The sketch in Figure 1 introduces this process. Space orientation is provided mainly by the eyes. The vestibular organs (middle ear) on both sides of the head provide orientation. The sensory receptors found chiefly in muscles, tendons, joints, jointed neck receptors, and skin, detect or feel the motion or position of the body or a limb by responding to motion stimuli arising within the receptors. This response provides the input for the user to qualify and reinforce the visual and orientation of the stimuli.

***In other words, with ATS's patented motion and haptic feedback the driver is moved at middle ear and therefore feels what their brain is telling them they should feel because of what they are seeing; so, the training is accepted as real.***

Now, for the purposes of establishing the maximum realistic simulator performance for the minimum cost, we design and analyze the task or exercise and establish student performance thresholds. The three sensory areas of stimulation: Visual, Vestibular and Proprioceptive are added to or enhanced to provide more detail for the driver to recognize and accept. This detail may take the form of higher resolution imagery, greater display contrast, and augmented external pressure application as well as motion cues all of which are focused to be delivered to the headspace as close to the real-world event parameters as is possible, scaled to the training need. What is critical to note is that what is provided is the minimum best effort to achieve maximum value and total immersion in the scenario.



**Figure 1. Start with the headspace and gradually expand sensory input**

One major benefit is the remarkably improved system reliability or MTBF (mean time before failure) that has resulted in selectively simplifying the simulator design. Longer simulator life and less downtime is being experienced.

In addition to its optimized performance, this simulator can directly interface with the student. As an advanced feature, the training programming has the ability to independently assess each student and with the instructor's approval, guide them through a formatted lesson. This is in support of repeated lessons used to improve proficiency.

The uniqueness in this simulator's design is not so much reflected in its documentation as its comparative performance. Drive it and experience the difference. The green note below will draw attention to and let the reader know that the subsystem being described contributes significantly to the overall acceptance of the simulator and manages high fidelity training. This note will be highlighted and placed throughout this document where applicable.

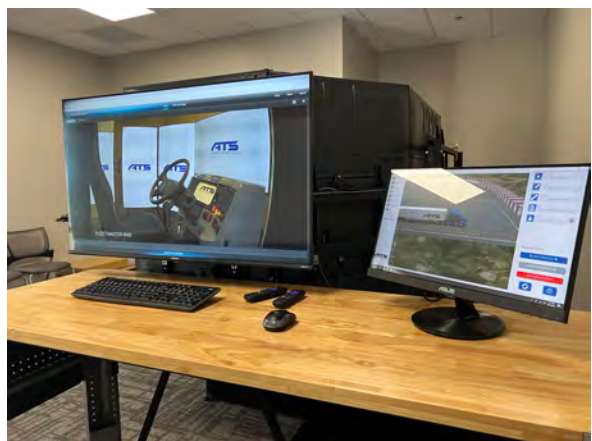
## Technical Description

(higher performing components may be substituted for those specified)

### Introduction

The ATS FleetMaster-PRIME™ provides student-paced, expert guided, basic to advanced driver training for non-synchronous heavy truck transmission shifting training and defensive driving. FleetMaster-PRIME™ exceeds traditional simulator performance by incorporating self-guided, student-paced, introductory Computer Based Training (CBT), richly textured computer graphics, interactive student practice sessions, simulated training scenarios, immediate feedback, guided 'best-practices', audio coaching, learning management system (LMS) in a reconfigurable driver training simulator.

Reconfigurable means that the simulator can be used to train on additional types of vehicles (various class semis, straight trucks, vans, utility vehicles, etc). This expanded capability is an added value feature to ensure a higher return on investment and minimized obsolescence. The FleetMaster-PRIME™ is factory-delivered as multi-use shifting trainer configuration. This designed growth adapts the simulator both physically and functionally to expand its performance for a variety of driver training needs. System growth includes the visual field of view, added steer-ability, expanded software performance, additional interactive courseware and training exercise stimulation packages to heighten exercise immersion and realism.



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## Training Performance Summary

This hardware platform provides a part-task heavy truck shifting simulator and fully functioning virtual truck driving platform.

The FleetMaster-PRIME™ Simulator's basic physical features consist of the following:

- FleetMaster-PRIME™ incorporates adaptive electronic coaching that guides the student through selected exercises.
- The driver's station has a vehicle-like look with an open seat driver's station with a self-contained air ride seat.
- One robust computer operates all functions on the simulator; the glass dashboard controls/gages, the shifting simulation; it controls the interactivity of the CBT and allows for future upgrades.
- The Main Display monitor provides a high resolution, real time out the front windshield view of the road.
- The transmission shifter subsystem incorporates new advanced technologies that provide higher reliability with improvements to shift feel and behavior. Gearshift lever and simulated gearing assembly provide realistic shifting feedback, coordinated interaction and sound. It is a patented Lock-Out transmission.
- The air operated seat adjusts positioning for height and distance to the steering wheel.
- Reconfigurable dashboard/touch screen using a glass cockpit arrangement which replicates gauges and their placement in various types of vehicles and serves as the input device for the shifting sim.
- New CAN architecture provides Internal I/O circuitry and connections designed to withstand all normal environmental use conditions to include mobile (trailer and RV) and portable environments.
- A Control Forced Loading (CFL) system provides functional and adjustable (foot pressure) to the brake, clutch and accelerator pedals.
- **Remote** LAN management provides simulator access. An on-board diagnostic program tracks system use, and subsystem performance and functionality.
- A digital sound system simulates normal vehicle operating sounds.

The FleetMaster-PRIME™ Simulator's basic functional advantages include the following:

- The simulator includes self-paced basic lessons on transmission shifting. Each lesson includes driver measurement software, interactive and adaptive CBT and statistical analysis software.
- FleetMaster-PRIME™ green design reduces heat signature, power consumption and component failure improving reliability over traditional simulator systems. This extends Mean Time Between Failure (MTBF) which results in less down time/cost and more training value.
- Visual system provides a 270° HFOV view using 6-channels each with a high-resolution image resolution using PC-based, Direct-X image generation hardware.

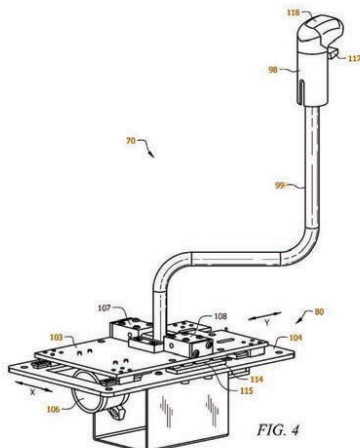
- Reconfigurable dashboard using a glass cockpit arrangement replicates gauges and their placement in various types of vehicles.
- Interactive rear-view mirrors and convex mirror views simulate the Drivers perspective within an actual vehicle.
- Responsive clutch pedal resistance can be adjusted using onboard air-pressure.
- Digital surround sound system simulating normal vehicle operating sounds, including engine, skidding and collisions as well as environmental sounds with Doppler effect.
- A road surface database model allows the simulator's vehicle dynamics and tire models to correctly interact resulting in appropriate simulator response.
- Multi-DOF vehicle dynamics software samples the road surface at 1,000 Hz providing realistic feedback to the driver.
- All subsystems, including vehicle dynamics, sound, visual, mechanical and scenario control, operate in a correlated manner, synchronized with one-another in real-time.
- Courseware is interactive with selected driving databases and training scenarios.

## Transmission Hardware

Manual floor mounted Double-H pattern gated transmission, for Automatic, Push-button Automatic, 10-13-18 speed vehicles with patented 'Lock-out' (Patent Number US 8,469,711 B2) haptic gear grinding and electrical mechanical mechanism allowing for the transmission to impede an improper / incorrect gear change, replicating a grinding gear effect palpable to the driver / trainee.

The transmission module is coupled to an OEM-ergonomically correct shift knob and lever incorporating an OEM pneumatic hi / lo – range selector shifter handle and splitter. The pneumatic OEM shifter handle allows for true to life air pressure release sounds providing necessary sound cues for effective muscle memory shifting technique. The transmission incorporates a variable frequency and amplitude vibration transducer, allowing for haptic feedback based on motor RPM and vehicle speed data derived from the simulation software.

Selecting a synchronized / automatic transmission, the User may also utilize several transmission configurations; Such as Automatic, 'Push Button' Automatic, Paddle-shift module, etc.



## Dash Hardware

### *Glass Dash*

The simulator incorporates ATS' patented 'Glass Dash' technology, which in turn, is also capable of displaying additional gages, instrumentation and instructional interaction with the driver, such as Pre-trip and Air-Brake modules. The Glass Dash is configured to be adjustable and reduce the simulator's width to allow its passage through doorways.

The Glass Dash and 'message center' display a number of functioning gauges and indicators including speedometer, tachometer, oil pressure, oil temperature, battery voltage, and fuel gauge depending on the actual layout of the real vehicle chosen. It also contains a Warning Light subpanel with a manufacturer's message box, replicating vehicle and on-road messages to the driver.

The Right-Panel is an LCD touch screen that allows the User to control the basic functions of the simulator. From this screen, computer-based training (CBT) can be introduced as part of the curriculum, enter driver data and perform diagnostics, and more.

The driver identification is available as an option. The simulator can upgrade with a Smart Card reader, Bio-metric Scanner, or Driver company/organizational credentials - allowing connection and the ability to expand security to include additional devices. The 'Glass-dash' OpCon will allow the user to load a series of shifting transmissions and drive trains.

In summary - the entire approach, from the incorporation of actual OEM components, to the Glass Dash and touchscreen technology, allows for a better and more-efficient training platform, based on muscle-memory learning and 'ease of use' for both the Driver and Instructor.





- The dash is vehicle specific, and represents the actual configuration for a FREIGHTLINER CASCADIA. Its instrument cluster is that of the layout to the model being simulated, and can incorporate a variety of additional equipment, such as logging-devices, controls for Snow Plows, etc.
- The instruments position is adjustable to emulate a truck at the proper height and vertically positioned to allow the driver to view all of the gauges.



**Figure 3. FleetMaster-PRIME™ Dash Layout**

### **Vehicle Cab/Driver's Station**

The simulator can achieve optional physical re-configuration by re-positioning the seat; adjusting the touchscreen display, and incorporating the appropriate programming or hardware controls to the new vehicle dashboard (instruments, warning lights, switches and style). As a reconfigurable option, the appropriate vehicle dynamics model is automatically engaged when the training vehicle is selected.

#### **Included Vehicles to be driven (each vehicle comes with its own vehicle performance software):**

- Class 6, 7, and 8 commercial vehicles with various loads (i.e. tanker, flatbed, specialty, 40-ft Containers, Intermodal containers, etc.)
- Step-vans and various delivery vehicles
- Heavy-equipment Vehicles (Dump Truck / Straight 'Box' Truck / Snow Plow)
- Articulated vehicle and tractor trailers (singles, doubles, triples)

**Dash Gauges**

- Typical instrument gauge layouts are provided for the major truck/ car/commercial vehicle configurations. These gauges are automatically loaded when the simulated vehicle is selected.
- **Gauges and switches** included in the dash (sample):

<b>Functional</b>	
<b>“Failable” from OpCon station/ display (F)</b>	
<p><i>Gauges</i> (F)= can be failed by trainer</p> <ul style="list-style-type: none"> <li>Speedometer</li> <li>Tachometer</li> <li>Fuel (F)</li> <li>Water temperature</li> <li>Battery</li> </ul> <p>Additional for the truck model:</p> <ul style="list-style-type: none"> <li>• Primary air pressure</li> <li>• Secondary air pressure</li> <li>• Oil pressure (F)</li> <li>• Oil temperature</li> <li>• Battery Voltage (F)</li> <li>• Fuel (F)</li> </ul>	
<p><i>Switches</i></p> <ul style="list-style-type: none"> <li>Headlights and parking lights</li> <li>Windshield wipers/washers</li> <li>Hazard / Emergency Flashers</li> <li>Digital Coach Button</li> <li>Clutch-pressure adjustment</li> <li>Vehicle Light Controls</li> </ul> <p>Additional for the truck model:</p> <ul style="list-style-type: none"> <li>• Parking brake ( pneumatic / air )</li> <li>• Trailer air supply</li> <li>• Ignition key</li> <li>• Ignition start</li> <li>• 2-cylinder engine brake</li> <li>• 4-cylinder engine brake</li> </ul>	
<i>Emergency Lights with Audible Warning</i>	

Transmission Position (NRD) High beam indicator Low oil pressure Low Air Pressure Low Tire Pressure Brake fault High Engine Temperature Check engine ABS OFF/ON Traction Control Off/On Transmission Fault Lane Departure Promity Sensor
<i>Optional Gauges and Switches via Glass Dash</i> Siren (Typical manufactures) Wig-wag lights setting Radio Am /FM Radio Comm. Navigation System Maintenance due Airbag Fault

**Table 1. Functional Gauges and Switches**

### **Functional OEM style Brakes and Brake Valves**

The brake system provides a simulated pneumatic sub-system allowing simulated air pressure derived from virtual brake activation, including simulated ABS feedback on the patented motion-system allowing for an interactive brake system. As well, at customers discretion, the system may be configured to display the valves on the touchscreen display.

The virtual system replicates brake pressure activation and brake pressure failure of the OEM style Parking Brake and Trailer Brake on the simulator. Additional feedback is provided through a detailed review via exclusive Digital Coach providing a real-time, fully interactive and complete representation of the vehicle braking system and functionality. Likewise, the system is equipped with Pneumatic controls, emulating those found in commercial vehicles. By this approach, Drivers can train using Pre-Trip / Air-Brake components that are 'faulted' or 'fail-able' in nature.

### **Pneumatic Seat**

- Adjustable OEM air ride seat with 3-point seatbelt

### **Steering Wheel Hardware Options**

Steering wheel is interchangeable, based on the customer configuration, as to the vehicle type and will be oriented correctly as it pertains to the seat and dashboard.

- Equipped with OEM steering wheel and OEM functional horn
- Equipped with OEM-functional turn signal, light and windshield-wiper controls.
- Equipped with OEM emergency 4-way flasher switch

## Steering Feel

Steering control force loading (CFL) provides accurate feedback to the driver allowing replication of tire scrub, squeal, blowouts, driving over curbs, potholes and road feel normally felt through the steering wheel when driving a real vehicle. The re-configurable seat with 3-point seat belt accommodates the changes in cockpit layout for the driver as to height, distance from image. In other words, a truck will feel and be laidout as a truck and the two other basic configuration changes will have their own driver station ergonomically correct.



## **Controller Area Network (CAN) Based Real-Time Control System**

- Designed for the vehicle manufacturers, CAN is a highly reliable and well supported
- CAN operates serially and over a 2-wire bus
  - The cost of system wiring harnesses is drastically reduced by using a serial protocol
  - Broadly supported industry standard connectors are used
  - Simplifies system & Improves Reliability
  - Greatly reduces cable count in system
  - Talks to computer through the USB port



**Figure 5. Typical CAN circuit board – simple, rugged, reliable**

- Most industrial and embedded controllers (motors, pumps, actuators, etc.) support the protocol thus making it possible to easily integrate Commercial Off the Shelf (COTS) equipment.
- CAN messages have short and real-time (guaranteed) latency
- Implementation costs are low due to the wide availability of CAN enabled silicon

## Computer and Control Systems

The host computer system incorporates a PC architecture with off-the-shelf components. The intent for choosing a PC platform is for ease of maintenance and minimum cost for repairs and parts. ATS has chosen ATX style Motherboard rugged and reliable compute power. Communication I/O to the server/network is achieved via high speed cell phone. (plug and play). No wired IT connection is needed. This configuration has Very High Reliability with two mirrored drives, Windows 64 bit system (double bandwidth)

The PC uses a common operating system, Microsoft Windows®, robust Graphics Cards to provide for the high resolution needed and individual channel control for each main viewing screen.



**Figure 6. I-5 Motherboard**  
**(twice the processing power of conventional simulator computer systems)**

## Visual Subsystem

The visual system is built upon a **Direct X architecture** and is comprised of the PC-based image generator (IG) and image display. The visual system description is as follows:

	<b>Feature</b>	<b>Description</b>
1.	Number of Channels	5 channels 55" monitors (16 x 9 aspect ratio monitors) 1 channel 'backing' monitor
2.	Resolution	4K"3840x2160 pixel high-resolution configuration
3	Eye Distance to Screen	36" to 48" inches (adjustable depending on seat position)
4.	Horizontal Field of View (FOV)	270°; slew-able to 90° on each side (left and right)
5.	Vertical FOV	35° (adjustable)
6.	Scene Edge Matching	5 side-by-side, 1-Backing monitor 1-Opcon Monitor, Glass Dash config
7.	Rear View Mirrors	Driver's side, center and right-side insets, mirror shape to be defined. Convex mirror, one to each side (L&R), future enhancements will include accommodation for head movement.

**Table 2. Visual System Description (monitors, screen, or projectors)**

The visual sub-system comprises six 4K 3840x2160 pixel high resolution displays with a 270-degree field of view consisting of 6-high resolution monitors with an optic representation ratio of 1:1.

The additional 'Backing monitor' feature provides the driver / trainee with important feedback and visual cues with reference to the vehicle's position on the road and in synchronization with the virtual environment and driver's left rear view mirror, increasing training efficacy specially in backing maneuvers.

The six-channel visual sub-system reproduces real-time high polygon-count optimized photo textures incorporating anti-aliasing and anisotropic filtering.

### Image Generators (IG)

The IG is the computer that creates the real-time interactive image the driver sees out of the window.

	Feature	Description
1.	Image Generator	PC based (Direct X format)

2.	Update Rate	60 Hertz or better minimum
3.	Refresh Rate	60 Hertz or better (flicker free)
4.	Resolution @ 70 Hz	1080 P
6.	Photo Texture	Yes
7.	Time of Day	Day, dusk, night, sun rise and night fall with visual obfuscation
8.	Illumination	Headlights, taillights, directional and for emergency vehicles: wig wag lights, EVO, Left and Right Alley lights and Overhead Takedown lights, glare effects from sun and outside light sources
9.	Weather Effects	Fog, haze, rain, snow, ice, snow and ice, accumulating snow, wiper blades w/ streaking
10.	Transparency	Yes
11.	Color	64-bit
12.	Other Moving Vehicles/Objects: centers of rotation and articulation	Over 60 with rotating wheels, shadow, steering and suspension behavior characteristics, real-time shadows

**Table 3. Image Generator Capabilities**

### Rear View Mirrors

- Mirrors are inset in the side (for trucks) and (for smaller vehicles) center and side displays.
- Mirror placement and angle is controllable
- Size and placement of the mirrors shall approximate those found in a dynamically correct placement for the simulated vehicle
- Convex mirrors will allow the driver to view a towed trailer's wheels during turns.
- ATS US Patented Dynamic Mirrors US 9,418,568 B2 mirrors that adjust with the movement of the driver's head

### Dynamic Mirrors

The mirrors in the driving simulator behave as real mirrors do. Consequently, the driver using these mirrors is closer to a real operating situation. This is critical in backing and lane changing maneuvers. Head position and the direction in which the driver is looking is measured. Objects in the mirror adjust and shift as the student's/driver's view shifts allowing the observer to see beyond a fixed mirror image.

The ATS Dynamic Mirrors system consists of a patented design (US 9,418,568 B2) that tracks the user's head and moves the image represented on the virtual mirrors according to the user's head position and orientation changing the perspective on the mirror. This feature allows the user to have the illusion of being on a real vehicle. With this implementation, the view changes in sync with the driver's head movements in-simulation separate viewpoints to draw each mirror's view has the capability to track the user's position even when wearing facial masks face covering



The field of view for depth sensing is 70 degrees horizontally and 60 vertically. working in a range from 2ft to 14ft distance from the driver. This technique reproduces the driver's vehicle in their own mirrors.



*NOTE: Above photo-reference features TaskMaster-NG™ Simulator. DMM available on all ATS-simulator platforms.*

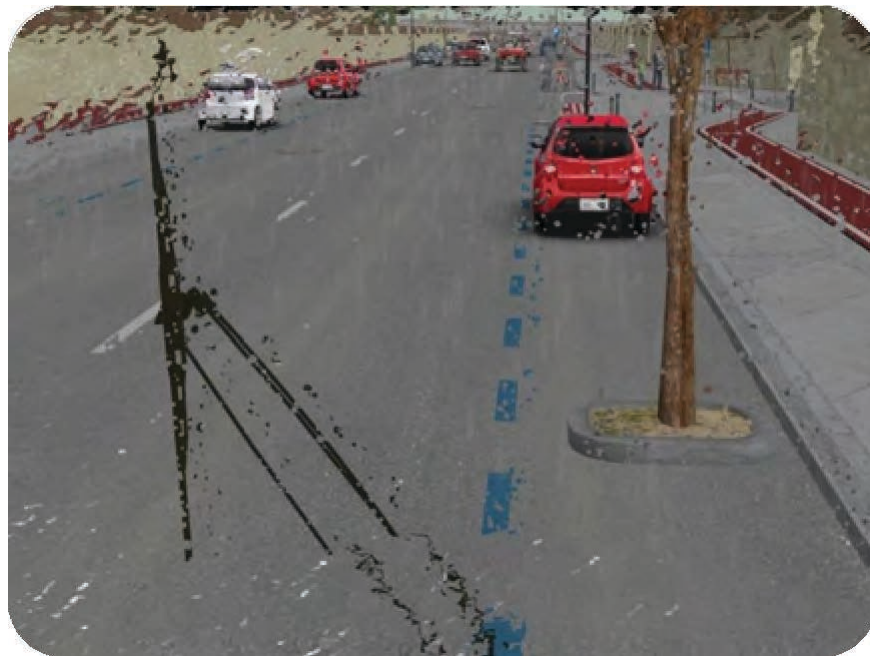
### Visual System Performance

Examples of visual system performance creating a realistic training environment with restricted visual clarity can be seen in Figures 7 through 10.



**Figure 7. Critical effects from sun glare**

**Figure 8. Dynamic Shadows can cause confusion during time of day**



**Figure 9. Visual distortion of image due to rain on windshield between wipes**



**Figure 10. Visual impairment due to high contrast light sources**

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## Audio and Vibration System

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 sound levels experienced in the real vehicle.

Internal vehicle audio source emulation includes:

- Engine audio source synthesis
- Tires, road noise and chassis digital audio replay

External audio source emulation includes:

- Wind vs. speed (and vehicle aerodynamic model)
- Miscellaneous environmental sounds (sirens, traffic etc.)
- 3-Dimensional sound directionality with Doppler effect (i.e., passing automobiles, trucks...)

Vibration includes:

- Seat motion and stochastic road feel.
- Tactile transducer / actuator under seat to simulate road vibration and feedback.
- Steering wheel feel providing natural tactile stimuli (bandwidth > 20 Hz, amplitude correlation with tire/roadway interaction and engine operation, and fully synchronous and complementary with audio signals)

The audio software includes the following:

- Engine sound is specific to each scenario vehicle
- Horn sound is specific to various scenario vehicle types
- Siren sound is specific to various scenario vehicle types
- Other sounds can be associated with the position of any scenario vehicle
- Own cab engine sound is specific to the model being driven
- "Static" sounds with fixed spatial position are available
- "Dynamic" sounds that can be associated with any scenario object are available
- Air brake sounds for own vehicle and scenario vehicles
- Large, intuitive control buttons
- AGC technology: Self-adjusting speaker volume according to speed and ambient noise

## Motion Base

### The Purpose of Motion in a Simulator

Motion provides cues to the driver that provide the impression that the simulator is moving through the training exercise. For motion to be an effective cue, it must be coordinated with several other subsystems (vehicle dynamics, visual imagery, scenario database, road/tire model, steering model, as well as all sensory cue devices.) See Figure 1 to review the importance of cue correlation. When motion is not designed or tuned correctly, driver discomfort is quickly the result.



### ATS OnQ Motion™

#### The Human-Centered Approach to Motion Design

Years of assessing effective motion designs and human factors has given ATS insights into what can and hasn't worked. Keep in mind that the purpose of Human-Centered Design is to facilitate effective solutions. For an economically priced system, that required significant review and experimentation. ATS believes that a sense of physical motion is essential to contribute a total immersive experience. Motion alone does not provide adequate scenario realism. What most motion systems lack and ATS provides is a combined sensory stimulus approach that includes dynamic models that correct for direction, amplitude and frequency. This is a patented process that ATS calls SDI – Selective Directional Input. It engages a symphony of onset cues, motion, haptic and stochastic stimuli all directed at specific body receptors to present to the driver a more complete immersion in the training exercise events. Enhanced maneuvers include hard braking and pushing, simulated yaw cues from fishtailing and bumps or height obstacles, to include sliding and slipping on ice and water.

As we have concluded that in generic training and evaluation virtual environments, the most important factor is acceleration and braking (forward - backward). This translating to an onset cue to the driver through the vestibular system (inner ear).

This is accomplished by having + /- 6 degrees of movement calculated from the driver's center mass, allowing for acceleration and deceleration feedback. In an immersive setting, testing this particular platform, "On Q - Motion" has proven itself to be quite effective in both adaptation and reduction of SAS (Simulator Adaptive Syndrome / Kinetosis).

The motion system consists of a patented design ( US 9,852,650 B2 ), controlling displacement. The primary motion will consist of a compact base module which the simulator seat is positioned, integrating matching longitudinal supports incorporating a linear path that about about a horizontal path. The motion will exert on the driver a accelerating or decelerating forward /rear-ward motion.

The expected "minimum" forward / rearward motion linearly is 6-degrees or greater, providing a minimum of 2 Hz controllable stable motion. +/-40/sec/sec of angular acceleration and +/- 6 degrees of travel integrating two coincident degrees of freedom (DOFs) together, as follows: X-axis acceleration and X-axis deceleration in addition to the factors of road-vibration, vehicle feedback, environmental conditions and vehicle conditions.

The resulting motion signal combinations are " inevitable " in all types of highway vehicles and are inevitably coincident because forces act on the vehicle's the center of gravity (CG), and that CG is typically located above the vehicle's axles in highway vehicles.

The motion base control software derives and optimizes real physical motion-cues from the simulated vehicle's motion dynamics and generates acceleration / deceleration onset- cues, from the actuators and motion axes, applying those onset-cue conditions to produce sustained motion cues that correlate to the real vehicle's suspension- angle positions, facilitating a natural washout process of motion cues

See vimeo video - <https://vimeo.com/224595847>

## Vehicle Dynamics Model

### Vehicle Dynamics

- Vehicle dynamics models are validated against vehicle data derived from test track results.
- Vehicle dynamics shall effectively simulate the dynamic motion of real suspension, steering and drivetrain properties.
- The visual display will show the motion of suspension components relative to the chassis.
- Provide levels of collision and cueing that allow the scenario to continue, such as when a tire sidewall hits a curb while turning a corner.



**Figure 11. Graphical depiction of crash avoidance and collision detection ranges**

ATS's vehicle dynamics models provide realistic vehicle responses and behaviors when given steering, acceleration, and braking inputs from the driver's station. ATS uses actual vehicle kinematic and dynamic data to calculate resultant data for driver measurement purposes and for statistical review. Each tire/wheel/suspension point, steering wheel, engine/drive train, and chassis is modeled. ATS models support anti-lock brakes on both tractor and trailer as well as allowing for trailer brakes applied only.

ATS's vehicle dynamics models are modular and adjustable representations of the actual vehicle's subsystems. The tire patch model provides interaction with the road surface to simulate actual skids, tire envelopment over objects, and road hazards. The tire-road model interaction with dynamic forces allows a full spectrum of tire reactions which provides a driver the ability to feel a variety of forces/sensations through the steering wheel as the wheels hit, roll-into, or roll-over a specific object.

ATS's tire patch model characterizes SAE standard functions, including:

- Normal force vs. vertical displacement vs. tire pressure
- Lateral-slip vs. slip-angle vs. normal force
- Longitudinal force vs. rolling slip vs. normal force

- Composite vector limits on total reaction force vs. normal force
- Ability to model both trailer duals or super singles

ATS's tire models are measured at multiple points per tire footprint.

### **OwnCab Models**

An OwnCab model is the simulator's cockpit with all of its particular vehicle and scenario performance packages. Each steering wheel configuration comes with a set of related owncab vehicles and vehicle dynamics software. How real the owncab feels and behaves, heavily influences the driver's acceptance of the training scenario.

Each OwnCab model will have its appropriate power train (engine/transmission/differential/drive wheels). Engine types will be specific so the end user can identify with their popular choices: for example – Cummins, Caterpillar and Detroit.

### **Scenario Models**

Scenario models are fundamental to creating believable training scenarios. Since the driver interacts with these vehicles it is important to consider their part in a coordinated symphony of presentation.

Scenario models are vehicle models that are used to populate the road for an exercise. Their role in creating realistic training exercises is manifested in how they behave. The scenarios include audio, scripted scenarios that are described in Appendix A. A believable scenario starts with realistic looking traffic that acts as traffic should and vehicles that behave as real vehicles, such as turning on its steering wheels and not rotating around a center of mass. Additionally, wheels should rotate to depict motion.

### **Scenario Vehicle Control Features**

The instructor can control the scenario vehicles within a scenario from the OpCon. The scenario content is based on a geo-typical visual database including: multi-lane, local / city, interstate highway , urban, suburban, rural / interstate.

Scenario selected vehicles can be controlled to include :

- Speed
- Lane position
- Parking position
- Forward/reverse direction
- Obedience to rules of road (stop or yield, etc)
- Driver drunkenness (DUI characteristics, 5 levels of BAC up to BAC.10), and
- Aggressiveness
- Evasive Driving
- Defensive Driving

- Backing Straight Line
- Backing Parallel
- Backing Offset
- Backing Blind Side
- Backing Alley Dock
- Quadrant Curriculum ( see manual)
- Virtual Skills Pad

### **Scenario Vehicle Models Supplied**

Following is a list of scenario ambient vehicles supplied.

1. Taxi Van
2. Chevrolet Tahoe Police SUV
3. Chevrolet Camaro coupe
4. Dodge Charger SRT Hellcat
5. Toyota Prius hybrid hatchback
6. Cadillac Escalade SUV
7. GMC Canyon 205 pickup truck
8. Ford Mustang GT Coupe
9. Harley-Davidson Night Rod
10. Triple E Empress camper bus
11. Triple E Regency GT camper van
12. CAT Auto Crane
13. Freightliner Classic XL with Timber Semi
14. Freightliner Business Class M2 06
15. International DuraStar Box Van
16. International LoneStar Semi-Trailer
17. Kenworth T680 with Tipper Semi-Trailer
18. Kenworth W900 with Flat Bed Loader Semi- Trailer
19. Mack TerraPro LEU Refuser
20. Mitsubishi Fuso Canter Tow
21. Peterbuilt 386 with Tanker Semi-Trailer
22. Pierce Fire Rescue
23. Volvo VN with Cargo Box Semi-Trailer

### **Road Surface Model**

Road surface models are 3-Dimensional and include curbs, gutters, soft edges, variations in surface texture, content (asphalt, cement, gravel, sand, dirt, ice, snow, pot-holes, and assorted hazards). The tire surface iteration rate is at a minimum of 1,000 Hz. Some road surfaces are designed to the U.S. Standards for Highways or The American Association State Highway Traffic Office.

### **Controlling the Simulator's Scenario**

The OpCon includes multiple display areas and icon control buttons. A single GUI (graphical User Interface) screen provides all the functions required for one instructor to control all the training and simulator control functions for up to 4 linked simulators. The operator uses an ordinary mouse and keyboard to select and activate the GUI functions. The operator can



control and manipulate individual vehicles in the driving scenario while the scenario is running. From the OpCon, for example, a car can be made to stop or pull out in front of the driver when the instructor commands it to happen.

The OpCon or O/IC allows the operator to select the vehicle type and dynamics to be driven by the student, called OwnCab. For example, a Tractor with a 53-foot box trailer can be selected then driven by one student while another student drives a Tractor with double tanker trailers. Each simulated vehicle's feel and performance will approximate that vehicle's size, weight, turning radius, tire and suspension characteristics.

The trainee's drive can be recorded and played back. The replay can be seen on the touch panel and its view can be changed to a variety of perspectives with 6 pre-set perspectives. When a trainee hits an object, the scenario can continue or stop depending on how the instructor sets up the scenario at the OpCon.

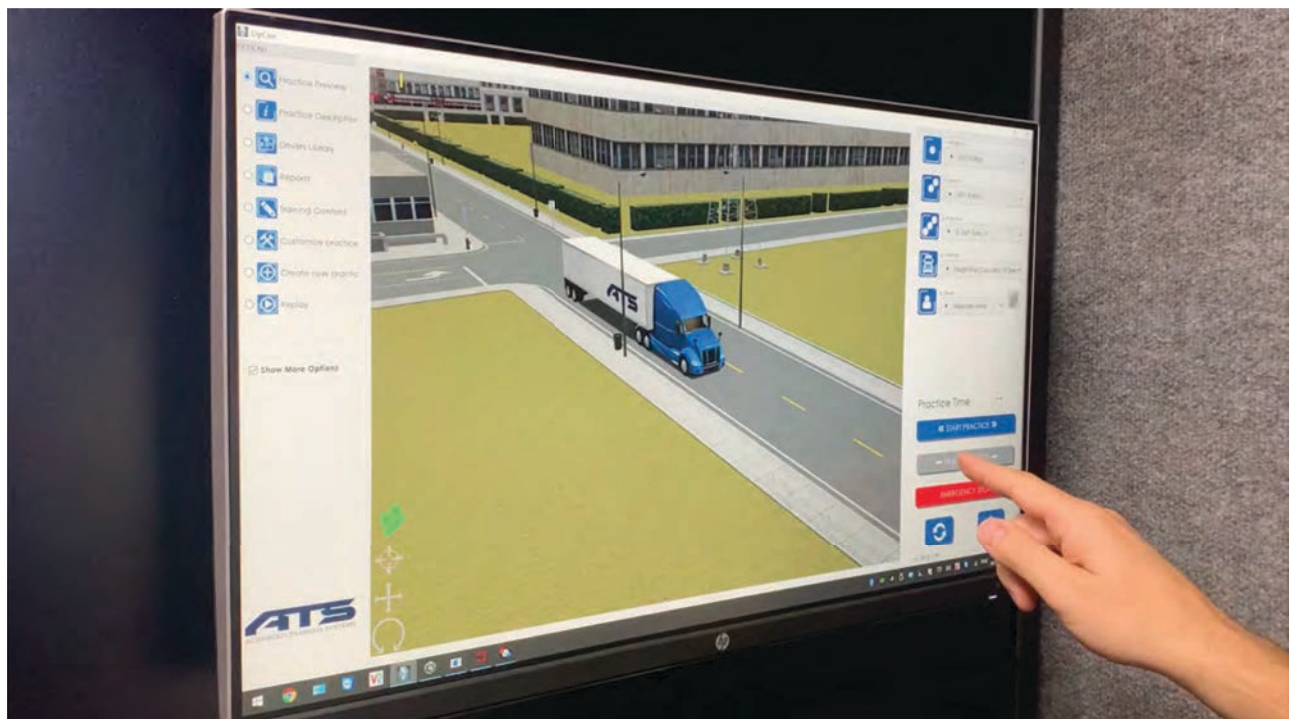
The simulator provides two modes of operation: 1) instructor managed and 2) student self-paced. The latter is intended to relieve the instructor of continued monitoring of student progress on repetitive tasks. For the purposes of student-paced operations, the student does not need access to the OpCon or Operator/Instructor's Console (O/IC). The simulator can provide its own scenario control through the onboard touch screen, which provides a limited student control for convenience sake. The control console will have upgradeability to include simulator voice activated commands. An instructor can use a wireless over-ride and control capability from a laptop or PC. The touch screen and a wireless control can be set up and co-driven to provide an easy, non-intimidating instructional flow to start the simulator, choose scenarios, change scenario conditions, change own cab vehicle, and interact with the driver "on the fly".

## **Operator's Console (OpCon) Details**

The OpCon's principal functions include the following:

1. Login screen and student registration
2. Course selection screen
3. Selection of exercises
  - a. Organized in modules according to level of difficulty
  - b. Advancing from one module to the next is only allowed when the present module is mastered or with a Supervisory User password.
  - c. A description of the exercise shall be exhibited along with an image referring to the described exercise
4. Vehicle selection
5. Selection of time of day (corresponding lighting and shadows)
6. Selection of weather conditions ( rain, snow, ice, fog, etc. )
7. Selection of driver/student competency level
8. Selection of traffic level (density and aggressiveness)

9. Selection of pedestrians
10. Selection of trainer's view
11. Change the glass dash instrument configuration
12. Change from manual to automatic seamlessly
13. The visual graphic's screen is always visible in real time
14. The vehicle being driven (owncab) along with the traffic vehicles included in the exercise are always operating in real time
15. Status display is always visible (mini glass dash)
16. Orbiting camera, zoom in – out focused on the vehicle
17. Arial view focused on the vehicle
18. Repeat function can be controlled with the mouse
19. Review of reports and telemetry
20. Be able to control up to 4 simulators simultaneously
21. Control the exercises completed by the student/driver (how many completed and how many remaining to be completed)



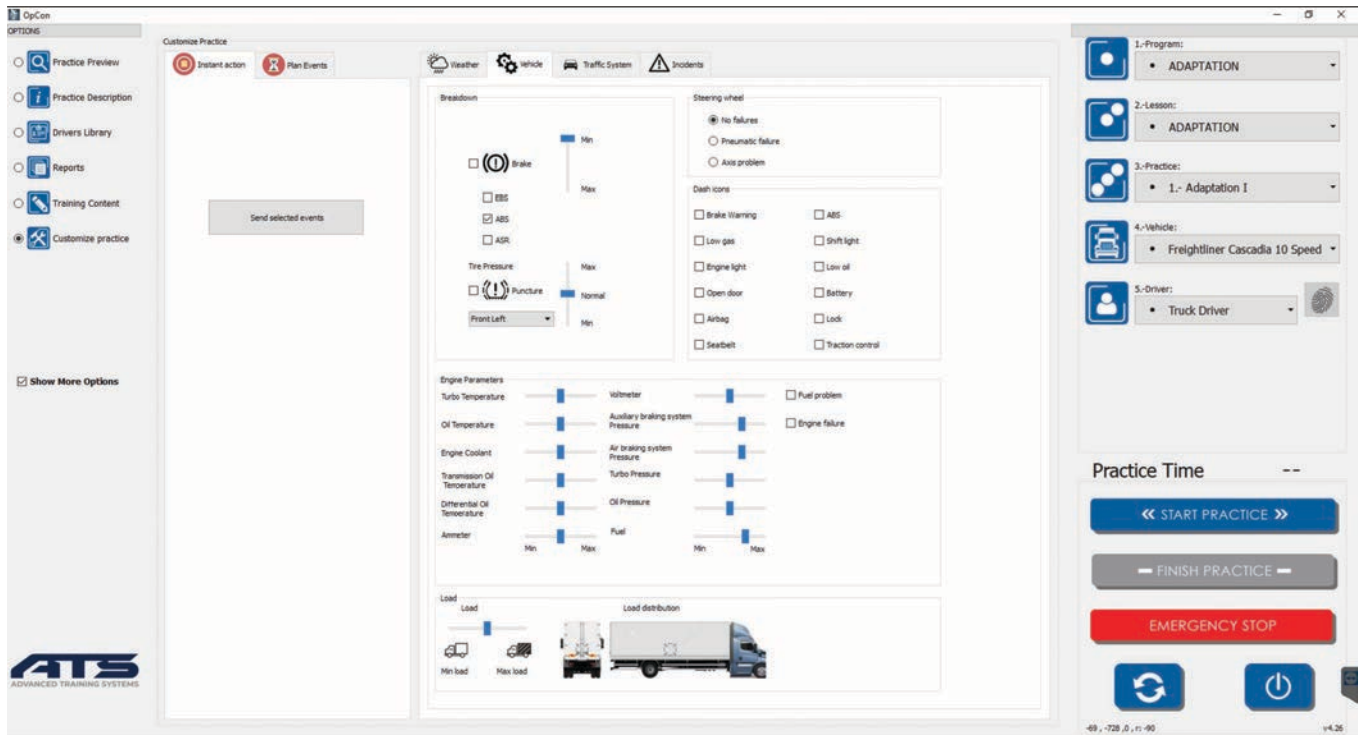


Figure 12. Examples of Operator's Console Instructional Screen showing scenario alterations

## Database and Driving Environment

This is where the high-fidelity models, dedicated software programs and additional visual stimulation come together in a multi-integrated, simulator-based immersive training experience.

The Database is the natural setting that includes road surface, terrain and architecture. The driving environment is part of the database that controls traffic. It would include lights, signage, road surface markings, traffic control algorithms, and it must be focused on 'out the window' and in the 'rear view mirror' perspectives. If the driving environment doesn't look good the fidelity of the training experience is compromised. ATS has made a special effort to achieve that very realistic look. These driving environments shall include rural, freeway, city/residential, mountain pass, and warehouse (docking) environments.

Snap shots of the typical driving databases and driving environments follow.



Figure 13. Suburban-industrial, edge of city



Figure 14. Urban, downtown



Figure 15. Busy city intersection



Figure 16. Suburban environment



Figure 17. Detail on a mountain road



Figure 18. Mountain road



Figure 19. Highway approaching a city



Figure 20. Typical Freeway Traffic

### **Accommodations for an Enhanced Training Experience**

All of the scenarios shall contain; and all the vehicles shall include, the essential aspects critical in establishing a realistic training exercise environment. Specifically:

1. Scenario and Environmental Traffic Signage
2. Traffic Vehicles with appropriate logos and signage
3. Training scenarios created from Licensed Curriculum
4. Realistic visual layout of Interior of "ownership" Vehicles
5. Realistically displayed Trees and foliage
6. Room to add Company logo & advertisement
7. Railroad Crossings with Stoplights and Arm Barriers
8. New screen displays that can be loaded

## Training

- ◆ Training is the main purpose for this simulator. As such, it offers some of the most advanced applications and conveniences as its training features which are compliant with new Entry Level Driver Training effective February 7, 2022.
- ◆ Included within the FleetMaster-PRIME™ simulator various changeable driving situations such as different terrains, elevations, asphalt, snow and ice, city, urban, expressways, highways, mountainous roads, practice field and CDL testing area.
  - Quadrant™ Introduction to Shifting
  - Quadrant™ Shifting Ladder (Progressive shifting lesson)
  - Simulator Acclimation (4-practices)
  - Left Turns (4-practices)
  - Lane Changes (4-practices)
  - Stay Back / Following Distance (4-practices)
  - Winter Driving (6-practices)
  - Yield to Others (4-practices)
  - Reduce the Risk (4-practices)
  - Slow Down (4-practices)
  - Know What's Happening (4-practices)
  - Expect the Unexpected (4-practices)
  - Loss of Control (4-practices)
  - Backing (35-practices featuring 5-virtual settings)
  - Quadrant™ Quick-drive Scenarios (6-practices with focused environments, such as 'Round-a-bouts', 'Inspection Checkpoints' and 'Construction Zones')
  - Geo-typical and Geo-Specific 'Free-Driving' Scenarios (16-Virtual Settings)
- ◆ Incorporates driver measurement software for assessing comprehension of lessons presented, progression of driver's performance, data collection process for statistical analysis, and assessment software to match the driver to the appropriate level training lesson.
- ◆ Training Exercise Scenarios will have the ability to start the replay at any point in the drive rather than only being able to start and stop from the beginning or end of the replay. It will include the ability to save the replay to a file name and location that is easily found and later replayed.
- ◆ Includes ATS Pre-Trip / Air-Brakes Inspection interactive app. This app takes the student to every part of the truck from the tires, brakes, inside the cab to underneath the truck for the Pre-Trip Inspection.



## Additional Content and Equipment - Snow Plow

- Per the Clients RFQ - the following equipment / training content are included in the FleetMaster-PRIME™ proposal.
  - Snowplow training program shall be provided with truck simulator, the capabilities, hardware / software, and courseware are listed below.
    - Snow plow controls shall be certified power solutions Freedom XDS.
    - Simulation of spreader, left, right or rear shall be configurable by the instructor.
    - Shall have Instructor selectable configuration of front plow and wing plows.
    - Sound and motion cues shall correlate with snow plow's position.
    - Vehicle performance shall be affected by the amount of snow being pushed.
    - Stopping, backing up and replowing a given area shall be allowed.
    - Shall have visible road lines in the mirror allowing driver to assess the vehicles lane position.
    - Shall include snowplowing city, snowplowing rural, snowplowing freeway, backing up and practice field.
- ◆ The FleetMaster-PRIME™ complies with the above specification / requirements





# Attachment

## US Patent References



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## ***U.S. PATENTS***

*Advanced Training Systems LLC is the holder of the following US Patents:*

### **US 8,469711 B2; System, method and apparatus for driver training of shifting (*LOCK OUT TRANSMISSION*)**

***What it means to the user -***

This patent allows for a new configuration of shifting hardware that is set up for realistic feedback and sensation, including “lock-out” from improper gear selection, in a low-profile design. The physical size is reduced allowing compaction of the transmission to fit more restricted cab configurations without compromising transmission fidelity or integrity.

### **US 8,770,980 B2; SYSTEM, METHOD AND APPARATUS FOR *ADAPTIVE DRIVER TRAINING***

***What it means to the user -***

This patent describes the interactive training process that occurs during the **same** session on the simulator which includes, self-paced, interactive training that provides the student/driver with immediate evaluation feedback, corrective training and re-evaluation. The transfer of this training to the field is much higher because of the immediacy of evaluation and re-training.

### **US 8,894415 B2; System, method and apparatus for driver training; *GLASS DASH***

***What it means to the user -***

This patent provides the user with a configuration of touch screen and viewing panels that allow the student/driver to physically respond and demonstrate knowledge of graphically related information to a particular function. It improves the students’ association with a function through graphical reinforcement. Thus, allowing tracking of transfer of training.

### **US 9,177,486 B2; *SHIFTER FORCE DETECTION***

***What it means to the user -***

This patent provides a way for a manual transmission shifter to measure and report the amount of force being applied to the shifting lever as imparted by the person shifting the transmission. It is important to measure this force to determine if the student/driver is shifting smoothly or applying excessive force to engage gears. This system contributes to adaptive training inputs.

## **US 9,646,509 B2; System, Method and Apparatus for *DRIVER TRAINING SYSTEM WITH STRESS MANAGEMENT***

### ***What it means to the user -***

This patent provides an adaptation to the input variables to include human factors such as stress. Human factor parameters are measured and integrated into the Adaptive Training environment to expand the simulator's awareness of the student's/driver's condition as well as the effect the training exercise is having on the student/driver. These effects and reactions can be measured and correlated to identify and address training effectiveness and student/driver stability.

## **US 9,418,568 B2; System, Method and Apparatus for Driver *TRAINING SYSTEM WITH DYNAMIC MIRRORS***

### ***What it means to the user -***

The mirrors in the driving simulator behave as real mirrors do. Consequently, the driver using these mirrors is closer to a real operating situation. This is critical in backing and lane changing maneuvers. Head position and the direction in which the driver is looking is measured. Objects in the mirror adjust and shift as the student's/driver's view shifts allowing the observer to see beyond a fixed mirror image.

## **US 9,852,650 B2; On Q *SIMULATION MOTION DEVICE***

### ***What it means to the user -***

This motion provides onset cues to the driver through the vestibular system (inner ear). This is accomplished by having + /- 6 degrees of pitch calculated in a 1.8-meter radius from the drivers center mass, allowing for acceleration and deceleration feedback.

The two types of motion cues that are present in a real vehicle and that are critical in a drivers' vehicle control process are present in the On Q™ simulation motion device. The critical cues include: (1) longitudinal cues for acceleration and braking, and (2) lateral cues for turning. These are the most recurring motion cues in driving. By providing all of these motion cues, the driver has a "real" driving experience. Those motion systems that do not provide onset cues for both types of motions may easily stimulate "simulator sickness."

**Canadian Intellectual Property Office ("CIPO") Patent Number  
(21) 2 992 106 on above US Patent 9,852,650 B2**

**Instituto Mexicano de Propiedad Industrial ("IMPT"), Mexican  
Patent Number 384858 on above US Patent 9,852,650 B2**



# Attachment

Customer Letters of Reference /  
Recommendation



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3274 Hedgesville Road, Martinsburg WV 25403

March 12, 2024

To Whom It May Concern,

I am writing to express my sincere appreciation and gratitude to ATS (Advanced Training Systems) for providing the Mobile Commercial Driving Simulator to James Rumsey Technical Institute. It is with great pleasure that I offer this letter of recommendation, acknowledging ATS's exceptional product and outstanding customer service.

From the moment we decided to explore options for enhancing our commercial driving training program, ATS has been incredibly responsive to our needs and requirements. Their team demonstrated a deep understanding of our objectives and worked diligently to tailor a solution that aligned perfectly with our educational goals.

The Mobile Commercial Driving Simulator provided by ATS has exceeded our expectations in every aspect. Its state-of-the-art technology, realistic simulation scenarios, and comprehensive training modules have significantly enhanced the learning experience for our students. The simulator's user-friendly interface and interactive features have made it an invaluable tool for teaching and assessing critical driving skills in a safe and controlled environment.

In addition to the superior quality of their product, ATS's commitment to customer satisfaction and ongoing support have been truly exceptional. Their team has been readily available to address any questions or concerns we have had, and they have gone above and beyond to ensure that our instructors and students receive the necessary training and assistance to maximize the benefits of the simulator. I am confident that our partnership with ATS and the implementation of their Mobile Commercial Driving Simulator have greatly enriched our commercial driving training program. The simulator has provided our students with valuable hands-on experience, improved their confidence behind the wheel, and better prepared them for success in their future careers as professional drivers.

I wholeheartedly recommend ATS to any organization or institution seeking innovative solutions for commercial driving training. Their commitment to excellence, responsiveness, and dedication to customer satisfaction make them a trusted partner and an industry leader in driving simulation technology. We are grateful for the opportunity to collaborate with ATS and are confident that their products and services will continue to benefit educational institutions and training facilities worldwide.

Ken Dombroski

*Ken Dombroski*  
Sincerely,



## Patterson High School

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David Guzman  
*Student Support  
Services  
Coordinator*

08/01/2023

Subject: Letter of Recommendation

As the CDL coordinator/instructor at Patterson High School I am extremely delighted to recommend Advanced Training Systems (ATS) as a provider for driver simulation training. Patterson High School purchased two FleetMaster simulators in 2017 and we have been extremely pleased with the quality of the product as well as their outstanding customer service.

ATS has developed an a training system that is very adaptable to a wide variety of learning modalities and students are able to learn quickly with their use of embedded immediate remediation as well as positive reinforcement. As an instructor I appreciate the wide array of lessons and how they are systemically scaffolded to ensure the student driver develops the necessary skills to become a safe, professional driver. In fact a recent graduate of the PHS program recently thanked me for the simulator he received after he had a front tire blow out on his truck. He shared when it happened he didn't have any time to think, but the simulator training allowed him to react quickly and correctly which he feels saved his life.

In addition to an outstanding product, what sets this company apart is their dedication providing the highest level of customer service. In the six year of using this product I have always felt 100% supported and any tech issues I have had were always remedied in an exceptional timely manner.

It is for these reasons that Advanced Training Systems has my fullest recommendation as a driver simulator provider.

If you have any questions, feel free to contact me at: 209-648-3003 or [ddein@patterson.k12.ca.us](mailto:ddein@patterson.k12.ca.us).

Regards,  
Dave Dein



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August 2, 2023

American Driver Training Academy is a privately owned and operated Commercial Driving School. ADTA just celebrated it's 21<sup>st</sup> year in business, and recently earned the title of World's Greatest CDL School from Century Productions. After operating with a successful business model for the last two decades, the addition of a simulator did not seem important. Our team of 9 Instructors were firm believers in 'nothing prepares you for driving like using the real thing'. A vast majority of our team became certified on an ATS *competitors'* simulator, which we used to instruct prisoners in the Department of Corrections. We were not impressed. However, all of that changed when we visited a partner CDL school. They were using the ATS Fleetmaster simulator, and we were able to experience the world of difference! We quickly came to see the amazing benefits of incorporating a simulator to our curriculum. In fact, the Instructors whom we felt would resist the addition (lifelong truckers), were the biggest fans of the improvement that it made in our students' safety. As an owner, the savings in transmissions and clutch brakes was recognized immediately. The simulator will pay for itself in saved repairs by the end of the year!

It was a blessing to work with the simulator at DOC prior to purchasing one directly. We noticed that the system we were using in the prison system had so many flaws. We were not interested in spending money on a simulator if we couldn't find something better, but we believed that there HAD to be a better product on the market. The limitations on other simulators were immense. The graphics were circa 1980. The computer coding was extremely limited which made the driving simulations unrealistic. The seat and shifter *appeared* to be realistic but had numerous limitations; thereby, reducing the preparedness of the students for our actual trucks. And the biggest issue was motion sickness. 50% of our staff became motion sick and nearly 60% of the students experienced motion sickness. After a month of solid research and speaking with other schools and institutions, we decided to commit to the purchase of a simulator when we connected with ATS and experienced the Fleetmaster 6NG. The graphics and coding are realistic and provide immense benefits for our students. The entire ATS team has been hands-on and ever-present. Any questions/ concerns are handled within the hour and resolved completely. We've been using the Fleetmaster for 10 months now and we haven't had one complaint! The students love it, the Instructors love it, the mechanics love it and my bank account loves it! (And motion sickness has become a moot issue). Additionally, our "One and Done" rate has exceeded by 35% with the use of the Fleetmaster 6NG!

If you have any questions regarding the simulator, please don't hesitate to reach out. I wish you the greatest success and I'm delighted for you that you found ATS.

Jaden McKinley





**NORTHWEST**  
MISSISSIPPI COMMUNITY COLLEGE

08.01.2023

To whom it may concern:

Northwest Mississippi Community College is please to recommend Advanced Training Systems as a vendor of preference when seeking to purchase a FleetMaster-Prime simulator. Recently, our college was in need purchasing two simulators to support our Commercial Truck Driving programs located on two separate campuses. As this was a new line of equipment for our college, Mr. Mar, Director of Sales and Integration at Advanced Training Systems, was an integral part of assisting in answering any questions or concern we had prior to purchase, follow up through the shipping and receiving process, as well as on site setup and training for our instructors. Mr. Mar and his team kept us abreast on any concerns or issues prior to set up and has been responsive to questions following set up as we prepare to implement. Our college has been very pleased with the simulators themselves and the training and support provided to our instructors from Advanced Training Systems.

Please feel free to contact me if you have any questions or concerns.

Sincerely,

A handwritten signature in blue ink that reads "Katie Broadway". The signature is written in a cursive, flowing style.

Katie Broadway  
Director of Career-Technical Education and Program Advancement  
Northwest Mississippi Community College  
662.562.3341  
kbroadway@northwestms.edu

August 2, 2023

Subject: Letter of Recommendation

To whom it may concern,

My name is Peter Held and I am the dean of non-credit programs at Rock Valley College. I am writing to recommend Advanced Training Systems LLC, who supplied us with a FleetMaster simulator two years ago.

We have been using their simulator regularly, as it is an integral part of our 5-week CDL training program, and we are very happy with its performance and results. It helps our students learn skills such as shifting, and provides them basic practice before they drive our actual trucks.

We have seen significant improvements in our students' learning outcomes and satisfaction levels since we installed the simulator. Our students have reported increased confidence and competence after using the simulator. They have also shown higher levels of knowledge retention, skill transfer, and problem-solving abilities.

Advanced Training Systems LLC has been an excellent partner throughout the whole process. They have been professional, responsive, and attentive to customer satisfaction. They have provided us with timely and comprehensive support from installation to troubleshooting to updates. I would recommend Advanced Training Systems LLC and their FleetMaster simulator as a reliable and trustworthy vendor for your project. I am confident that they will deliver a high-quality product that will meet your needs and expectations. If you have any questions or need more information from me, please contact me at [p.held@rockvalleycollege.edu](mailto:p.held@rockvalleycollege.edu) or (815) 921-4106.

Sincerely,

Peter Held  
Dean of Non-Credit Programs  
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Attn: Purchasing Department

8/1/2023

Re: Letter of Recommendation

As the Director of Transportation at Wor-Wic Community College, I have had the opportunity to test many simulators. When Advanced Training Systems (ATS) won the bid to supply us with a new simulator for our new technology center, I was pleased. However, leadership at my college was skeptical. They had never heard of ATS and were concerned about the quality of the simulator and customer service problems.

ATS has gone above and beyond to provide excellent customer service and a superior product in simulation technology. We have received prompt, reliable service for any questions we have had regarding the simulator. Whether it was a simple fault or me not remembering a password, they have always helped immediately.


All of my instructors rave about the step-by-step training and the informative videos prior to each lesson for the student. The components and parts are superior quality and the instructors find them to be realistic. The shifting modules, including the shifting ladder, are nearly foolproof for teaching double-clutching and the shifting pattern. The instructors love it!

Our college also loves to show the simulator to visitors in the new technology building on campus. The set-up and design are particularly conducive to training others while someone else is driving the simulator.

Needless to say, the college is now as delighted as I am that ATS won the bid and that we have a first-rate driving simulator to assist our students in earning their CDL.

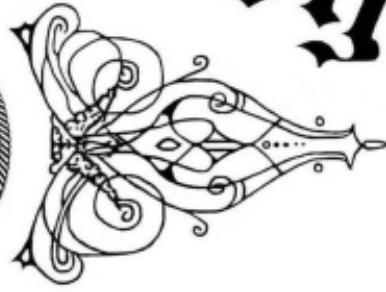
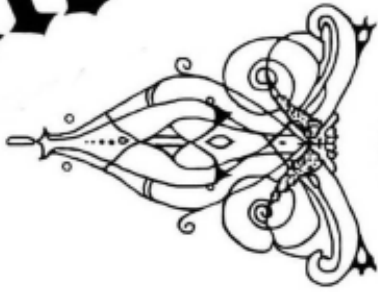
Please don't hesitate to call or email me with questions or concerns: 410-334-6729 or [kcarey@worwic.edu](mailto:kcarey@worwic.edu)

Sincerely,



Kelly Carey

# State of West Virginia



## Certificate

*I, Mac Warner, Secretary of State,  
of the State of West Virginia, hereby certify that*

ADVANCED TRAINING SYSTEMS, LLC

has filed the appropriate registration documents in my office according to the provisions of the West Virginia Code and hereby declare the organization listed above as duly registered with the Secretary of State's Office.

*Given under my hand and  
the Great Seal of West Virginia  
on this day of  
January 19, 2024*



*Mac Warner*

*Secretary of State*