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Header @ 5

List View

General Information | Contact | Default Values | Discount | Document Information

Procurement Folder: 510505

SO Doc Code: CRFQ

Procurement Type: Central Purchase Order

SO Dept: 0708

Vendor ID: VS0000017902

SO Doc ID: ABC1900000002

Legal Name: Doron Precision Systems, Inc.

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Response Time: 16:18

Solicitation Description: Addendum No.02 - DUI/Texting Driving Simulator

Total of Header Attachments: 5

Apply Default Values to Commodity Lines

View Procurement Folder



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

**State of West Virginia  
 Solicitation Response**

**Proc Folder :** 510505  
**Solicitation Description :** Addendum No.02 - DUI/Texting Driving Simulator  
**Proc Type :** Central Purchase Order

Date issued	Solicitation Closes	Solicitation Response	Version
	2019-01-22 13:30:00	SR 0708 ESR01091900000003130	1

<b>VENDOR</b>
VS0000017902 Doron Precision Systems, Inc.

**Solicitation Number:** CRFQ 0708 ABC1900000002

**Total Bid :** \$113,400.00      **Response Date:** 2019-01-14      **Response Time:** 16:18:15

**Comments:** If additional information is required on Doron's Alternate Proposal please contact us. We were not able to attach additional documents on this website.

**FOR INFORMATION CONTACT THE BUYER**  
 Brittany E Ingraham  
 (304) 558-2157  
 brittany.e.ingraham@wv.gov

<b>Signature on File</b>	<b>FEIN #</b>	<b>DATE</b>
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All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	DUI/Texting Driving Simulator with 3 years of Warranty	1.00000	OR	\$113,400.000000	\$113,400.00

Comm Code	Manufacturer	Specification	Model #
25191736			

**Extended Description :** The West Virginia Purchasing Division is soliciting bids on behalf of WEST VIRGINIA ALCOHOL BEVERAGE CONTROL ADMINISTRATION (WVABCA) to establish a one time purchase to provide the WVABCA with a DUI/Texting Driving Simulator and 3 years of Warranty per the specifications and instructions contained in the solicitation.

**Comments:** Two Options are provided in our attachments: 1. Two additional years of warranty. 2. SkillTrak (Reaction Time Software)



January 14, 2019

State of West Virginia  
Department of Administration, Purchasing Division  
Attn: Brittany Ingraham  
2019 Washington Street East  
Charleston, WV 25305-0130  
Re: DUI/Texting Driving Simulator – Solicitation NO: CRFQ ABC1900000002

Dear Ms. Ingraham,

Doron Precision Systems, Inc. is pleased to submit the enclosed proposal for the design, manufacture, delivery, installation, instructor training and maintenance support of a comprehensive driving simulation system comprising of its industry leading 550Carplus™ driving simulator. We have also included an Alternate proposal for a more economical single screen solution comprising of our 425Carplus™ driving simulator system. We have fully familiarized ourselves with the requirements and training objectives as set forth in the solicitation. Based upon this review, Doron is confident that its proven 550Carplus™ and the 425Carplus™ driving simulator systems far exceed the requirements set forth by the State of West Virginia.

**The 550Carplus™ driving simulator is the simulator system of choice for many law enforcement agencies throughout the United States.** Since our establishment in 1973, Doron Precision Systems, Inc. has remained the global leader in design and production of driving simulator systems for training and assessment purposes. We are proud to have delivered over 25,000 driving simulators to over 3,000 client sites in 60+ countries. Doron is the leading provider of land vehicle simulators in the world and has sold more land vehicle driving simulators than all of its competitors combined. Because of this large customer base throughout the United States, you can be assured of prompt and reliable on-site customer service to support your system.

Doron is very proud of its support and commitment to its customers after the sale. We provide the best support program in the industry including sending technicians on regular visits to customer sites for routine maintenance. We have included a one (1) year warranty for the proposed simulator system which includes all parts, travel, routine preventative maintenance and on-site customer service. As per your request, we have included an option for an additional two years of warranty coverage for a total of three years.

Doron's proven curriculum is well known throughout the simulator training industry. The 550Carplus™ and 425Carplus™ simulator systems include a library of pre-loaded car scenarios designed to achieve specific training objectives set forth by the law enforcement industry and traffic safety training professionals.

Many of Doron's 50 employees have advanced degrees with a long tenure at the Company, some spanning the full 45 years of Doron's history. All of Doron's products are **designed and manufactured in the USA.**

The proposed 550Carplusplus™ and 425Carplus™ are Doron's latest standard "off-the-shelf" driving simulator systems to be offered to the law enforcement industry. The systems feature an upgraded scene management software rendering system that offers an industry leading graphics presentation in conjunction with enhanced vehicle dynamics for all drivable vehicles. The 550Carplusplus™ and 425Carplus™ provide an automatic transmission, Doron's standard dash board which represents a typical late model sedan, and a 5.1 surround sound audio system for added realism. The system integrates a high quality transducer mounted underneath the floor of the simulator which provides realistic vibrations and feedback to the driver while training. **Both systems include Doron's proprietary DUI/Texting software which allows the instructor to select the level of impairment or delay to the braking and steering system prior to each scenario. The instructor can input B.A.C. levels of .04%, .08%, and 1.5% which will create a delay in the virtual vehicles response to both the braking and steering functions. The optional SkillTrak software is used to test the reaction skills of drivers while comparing them to national norms.**

Doron meets and exceeds the requirement for instructor training. Doron will provide three (3) full days of on-site instructor training. Our trainers will also assist your instructors with integrating simulation into your current training program. With Doron's 45 years of driving simulation experience and having the largest customer base in the driving simulator industry, we are convinced that Doron's off-the-shelf 550Carplusplus™ and 425Carplus™ will meet and exceed all of the training requirements of the West Virginia Alcohol Beverage Control Administration.

On behalf of Doron Precision Systems, Inc., I thank you for the opportunity to present the enclosed, and I look forward assisting you as needed in any related matter. Do not hesitate to contact me if you have any questions at 607-772-1610 X 363 or [mstricek@doronprecision.com](mailto:mstricek@doronprecision.com)

Sincerely,



Michael P. Stricek  
Senior Vice President

Enclosures



**DORON PRECISION SYSTEMS, INC.**  
**550Carplus™ DRIVING SIMULATION SYSTEM**  
**PRIMARY PROPOSAL**  
**State of West Virginia – CRFQ ABC1900000002**  
**January 14, 2019**

- Single position 550Carplus™ driving simulator cab
- Equipped with TrueSteer™ digital servo steering system  
Includes three (3) 55" LED flat screen displays (225° field-of-view)
- One (1) IWS (Instructor Work Station)
- Remote Controlled side-view mirror adjustment
- Pre-recorded Audio Scenario Description Feature
- Audio system
- DUI Malfunction Software
- Scenario Package
- Automatic transmission
- Comprehensive user guide
- Three days of on-site Instructor training
- Shipping to Nitro, WV
- On-site installation
- One (1) year warranty

<b>Price:</b>	<b>\$ 111,500.00</b>
<b>Shipping:</b>	<b>\$ 1,900.00</b>
<b>Total System Price:</b>	<b>\$ 113,400.00</b>

**Options: (Not included in above pricing)**

- |  |             |
|--|-------------|
| • SkillTrak (Reaction Time Software)               | \$ 3,950.00 |
| • Two additional years warranty @ \$6,790 per year | \$13,580.00 |

Terms are as follows:

- Prices are FOB Nitro, WV
- Prices are valid for ninety (90) days from date
- Net thirty (30) Days
- Prices do not include any applicable duties or taxes
- Delivery is sixty to ninety (60-90) days ARO

Respectfully submitted,

Michael Stricek  
Senior Vice President

# INTERACTIVE CAR DRIVING SIMULATION SYSTEM

550Carplus™

## PRODUCT SPECIFICATION



# 1 ORGANIZATION OF THIS DOCUMENT

This specification contains the following sections:

1. Organization of document Describes the specific sections of this document.
2. Introduction Provides a summary level description of the 550Carplus™.
3. Functional Specification Describes the general capabilities of the 550Carplus™. This section covers the whole system and focuses on the functionality that is provided.
4. Hardware Specifications Provides additional detailed descriptions of the 550Carplus™ hardware specifications. Many topics from Section 3 are repeated here, with specific hardware functionality described in greater detail.
5. Software Specifications Provides a detailed description of the 550Carplus™ software specifications. Various topics from Section 3 are repeated here, with specific software functionality described in greater detail.
6. Options Describes options available at the time of purchase or in the future. These options expand the capability of the 550Carplus™.

## 2 INTRODUCTION

This document defines the system components for the supply and acceptance of a 550Carplus™ Driving Simulation System for use in the training and development of drivers. The primary use of the system is to provide driver license testing for both new licenses and renewals of existing licenses, driver education training/testing and defensive driving.

### 2.1 System Description

The 550Carplus™ is a self-contained Computer Generated Imagery (CGI) based, interactive driving simulation system. The simulator will be delivered, installed, and fully tested as a turnkey system—including all software and hardware required to support the training and development of the vehicle operators.

One comprehensive virtual driving world provides an environment where trainees may drive. This database is similar to the real world and includes urban, suburban, rural, industrial areas with buildings and foliage typically found in these regions. Highways are also provided. All of the driving areas are integrated into one virtual world. Drivers are able to drive from one area to any other just as in the real world.

The 550Carplus™ presents training opportunities with respect to situation awareness, judgment and decision-making skills, vehicle maneuvering skills, and skills assessment for driver trainees in the safe operation of a car. Software includes several vehicle dynamics models. Simulated driving surfaces include pavement, grass, gravel, and dirt/sand with traction and sound variations on each for both dry and wet conditions. Weather conditions include clear, variable fog, rain, and snow/ice. Light conditions are selectable by time-of-day period: day, night, or dawn/dusk. Sun glare is provided when driving to the West at sunset and to the East at sunrise.

The 550Carplus™ reinforces hands-on vehicle operation by providing realistic skill training anywhere in the virtual driving world. The simulator complements actual driving experiences by training for proper driver reactions to potentially dangerous surfaces, weather, and traffic conditions. Operation of the system will be under the control of a trained instructor operator who will interact with and/or critique the driver trainee (as appropriate) to meet the training needs. The instructor maintains control over weather and other real-time variables that affect road surface conditions, visibility, traffic situations, and vehicle performance.

### 2.2 System Components

The simulator is built using actual and/or representative parts and components. The simulator includes the driver's seat, active steering wheel, foot pedals, transmission selector, and other appropriate operational controls, gauges, indicators, and switches. The simulator also includes a simulated cab representing a typical car. All sight lines and

angles required to safely operate a car vehicle are accurately preserved for presentation to the student operator.

The simulator includes a real time computer system which: 1) simulates the functionality and dynamics of the vehicle, 2) controls “out-the-window” visual scenes and vehicle sounds as they relate to driving and student performance, 3) provides appropriate outputs to the trainee's dashboard instruments, 4) senses and responds to inputs via driver controls, 5) interfaces with the instructor Workstation, and 6) provides realistic interaction with other driving stations networked in the same scenario.

The simulator includes a minimum of three (3) high resolution 55” HD LCD displays to present a continuous horizontal visual field-of-view of at least 225 degrees. Slewing of images is not utilized nor required due to the appropriate field-of-view which is provided.



(Note: Above 550Carplus shows the optional Three Degree Freedom of Motion System.)

Simulated mirror images are inset in the displays. The size and relative position of the mirror images automatically changes to correctly replicate the vehicle being simulated. Simulated vehicles that use convex mirrors include simulated flat and convex mirror images. All mirror images can be remotely adjustable by the driver in real time during any training scenario.

The simulator includes a 5.1 Surround Sound system which generates appropriate vehicle motor and other operational sounds of a car.

The Instructor Workstation (IWS) is used to facilitate all training activities. The IWS enables the instructor to control the operation of the simulator, select training scenarios, replay all or portions of the session to highlight good or bad driving performance, perform record keeping of individual training sessions and overall trainer utilization.

All components of the disassembled system shall pass through a 34-inch wide by 80-inch high access opening. The complete driving simulator system can be installed in a room measuring 15 feet by 12 feet.

## **3 FUNCTIONAL SPECIFICATION**

### **3.1 General**

#### **3.1.1 Overall Responsibilities**

Doron is responsible for the design, manufacture, performance, reliability, documentation, packaging, shipping, installation, warranty and first year on-site maintenance service support of the system.

#### **3.1.2 Condition**

The 550Carplus™ is a complete, functional operating system that has been factory assembled, wired, tested, and is ready to operate upon installation within the user's facility.

### **3.2 Functional Specifications**

The training objectives and functional specifications for the 550Carplus™ are described in general terms in this section. Specific, detailed information for the base hardware, base software, and options are described in the following sections. These sections together describe the complete operational functionality of the 550Carplus™ Driving Simulation System.

#### **3.2.1 Training Objectives**

The objective is to train vehicle operators in the driving skills, decision-making and defensive driving. Specifically, the 550Carplus™ provides detailed driver orientation to the operation of vehicles, teaches vehicle maneuvering and presents a variety of decision-making challenges to the driver.

The 550Carplus™ supports the following specific training objectives.

##### **3.2.1.1 Basic Driving Skills**

The system enables instruction and testing of basic driving skills such as driving on a variety of roadways, cornering, and braking. This may pertain to job applicants, newly hired drivers, re-training of current drivers, or problem drivers needing remedial training in these areas. In addition, the system enables instruction and evaluation of other fundamental driver skills such as proper signaling, use of mirrors, etc.

##### **3.2.1.2 Maneuvering and Interacting with traffic**

The 550Carplus™ System enables instruction and testing for maneuvering in typical urban, suburban, rural and residential areas. Skills can be trained for lane position management, maneuvering in vehicular and pedestrian traffic, adherence to posted and un-posted traffic laws, and scanning techniques.

### 3.2.1.3 Judgment and Decision Making

The system provides scripted scenarios for both training and evaluating judgment/decision-making skills such as intersection analysis, lane choice, speed, vehicle positioning, etc.

### 3.2.2 Vehicle Simulation

The vehicle performance model provides an accurate representation of all components of the vehicle being simulated. A full power train (engine, transmission, axle ratio); accurate vehicle brakes; a suspension system; plus the steering system are modeled. The steering wheel also has a tilt adjustment.

The vehicle model faithfully responds to forces dependent on vehicle speed, road friction conditions, and driver inputs. Vehicle models react to the driver's inputs and provide the necessary data to the simulator to support an appropriate response from the instruments of the driving station.

The instructor has the ability to select the vehicle type and also vary any available characteristic from the instructor Workstation. The performance of the vehicle changes in response to the selected variable conditions and affects the handling and driving characteristics experienced by the student driver.

A series of instructor selected vehicle equipment failures are selectable and listed from the following table:

**TABLE 1 VEHICLE EQUIPMENT FAILURES**

<b>Failure</b>	<b>Response</b>
Engine Temperature	Illuminate Indicator, enact vehicle response
Check Engine	Check Engine Indicator, reduced engine response
Low Fuel	Fuel gauge drops to "empty"
Steering axle tire blowout.	Sound, effect induced by torque controller to steering wheel

Instructor-selected failures are conveyed to the student in the same manner as an actual vehicle conveys them. A combination of indicator lights, and/or vehicle performance responses is used to alert the student operator that a failure or malfunction has been initiated.

The simulated vehicle selected for a training session meets the following requirements.

#### 3.2.2.1 Vehicle Dynamics

The 550Carplus™ vehicle dynamics allows for representative sizes and weights for typical car vehicles. The vehicle handles correctly on all

variations of road and surface conditions with variable loads. Turning radius, acceleration and deceleration characteristics are correctly represented and utilized within the system software.

#### **3.2.2.2 Response to Terrain Changes**

Driving on pavement/concrete, gravel, dirt, sand, and grass areas with dry, rain, snow/ice, and icy conditions produces the appropriate effects. Traction (acceleration and braking) is correctly represented.

#### **3.2.2.3 Transmission Selector**

The simulator has an automatic transmission. The Engine sounds change as a function of gear and changes in engine speed (RPM).

#### **3.2.2.4 Gauges, Indicators and Controls**

The 550Carplus™ utilizes actual and/or representative components for selected active controls and gauges. Minimum active controls include brake, accelerator, gear selector, turn signals, essential light switches, essential indicator lights, and controls.

Active gauges include a speedometer, tachometer, fuel, voltmeter and various warning/indicator lights.

#### **3.2.2.5 Overhead View**

A momentary switch is provided on the dash that switches the displayed view from a driver's perspective to an overhead view in real time. The overhead view allows the driver to see his/her vehicle location with respect to other vehicles or objects within the virtual environment.

### **3.2.3 Vehicles/Pedestrians**

The virtual driving world includes at least 50 unique vehicles that can interact with student vehicles. Various types of cars, trucks, buses and municipal vehicles are included. Several pedestrians including men, women and children are also provided. The system also includes animals that can interfere with driving such as dogs and deer.

These vehicles and pedestrians are included in the pre-programmed scenarios to create specific training opportunities. They also are available to instructors, through the scenario developer, to create new scenarios or modify existing ones.

### **3.2.4 Collision Detection**

The 550Carplus™ software defines appropriate collision parameters for all objects in the visual database, including buildings, signs, fences, trees, and other

vehicles placed in the visual scene. System software detects any occurrence of the trainee vehicle's collision with any other vehicle or object.

Collisions are categorized as major or minor. Major collisions include trainee collisions with buildings, fences, trees, pedestrians, and any other vehicles (static or moving). Major collisions occur when impact speed is high. Low speed collisions are minor collisions. Major collisions generate an appropriate crash sound, an immediate halt of the simulator, and a broken windshield (simulated) in the trainee's simulator.

Minor collisions generate an appropriate crash sound but the trainee's driving activity is not automatically halted. When minor collisions occur, the trainee's vehicle performance is degraded.

The IWS provides a "repair" function. Instructors are able to repair a trainee vehicle after a collision with a mouse click. This function allows the instructor to choose to continue the training scenario if he/she chooses.

### **3.2.5 Computer Image Generation**

#### **3.2.5.1 Out-the-Window Scene**

The out-the-window scene is correct for each simulated vehicle and changes automatically for each vehicle upon vehicle selection. Rearview mirrors are provided for views behind and to the sides of the trainee's vehicle. Each rearview mirror presents the appropriate field of view the driver would see from the vehicle being simulated.

#### **3.2.5.2 Weather**

Weather affects driving surface conditions; the effects of rain, fog, and snow/ice on paved and unpaved surfaces are included.

#### **3.2.5.3 Time of Day**

Time of day is selectable from the Instructor Workstation twenty-four hours a day in increments no greater than ten minutes. This allows training in various levels of light (and darkness). Sun glare is provided in the early morning hours when driving to the East and in the evening when driving to the West.

### **3.2.6 Training Scenarios**

A library of more than one hundred (100) training scenarios are provided as part of the basic 550Carplus™ Driving Simulation System to meet specified training objectives. Each is selectable by the instructor from the IWS. Once the system has been powered up and the first scenario has been loaded, new scenarios load and are ready for training in no more than five (5) seconds. The System is capable of displaying several different virtual environments. The selected

scenario automatically loads the appropriate virtual environment for the desired training. It is not necessary for the instructor to select separate driving worlds to switch from one scenario to another.

While normal driver training will occur on the generic roadways, the 550Carplus™ Driving Simulation System permits off road driving any time and anywhere in the visual database. All streets, roads, and expressways are designed in accordance with U.S. federal and state highway specifications for grade, width, curvature, and overpass height. All traffic control devices and highway markings meet U.S. federal and state guidelines. All traffic signals (stop lights) are fully functional.

Instructors are able to select from a library of pre-recorded scenarios to which trainees may drive. The training scenarios vary in complexity from basic to advanced. Each scenario includes an instructor guide sheet detailing the specific training objectives of the scenario and suggestions for training.

### 3.2.6.1 Basic Driving Skills

The instructor is able to select the configuration and start the trainee's session at the beginning of a simulated testing area. The trainee's general driving skills associated with backing, cornering, parking, use of mirrors and turn signals, and other fundamental driving skills can be observed and evaluated qualitatively by the instructor.

This “basic skills” driving area is a flat, hard-surfaced terrain marked by white lines and orange cones which visually delineate training and testing areas for the control skills listed on the following table.

**TABLE 2. CONTROL SKILLS**

Forward stop at crossing line
Straight backing for at least 100 feet
Lane change right and left
Turning while backing through a five-cone serpentine course
Close quarters right turn
Angle park
Parallel park (right and left side)

Collision parameters are associated with the all objects in the driving area.

This driving area can also be used to teach the trainee essential backing skills, providing pointers about the handling characteristics or problems associated with his or her vehicle under adverse conditions.

### 3.2.6.2 Maneuvering in Urban and Residential Areas

Scenarios support driver training in city and expressway environments. City features include, at a minimum, wide avenues, two and four lane roads, and tight side streets. Gravel and dirt roads are included in the driving area. The rural driving portion includes hills and mountains. Buildings and trees are included appropriately throughout the driving area.

#### 3.2.6.2.1 City Expressway Driving

The expressway portion of the driving area is representative of the U.S. Interstate highway system. High-speed entrance/exit ramps are included, with both cloverleaf and trumpet style intersections. This driving area, with the presence of surrounding traffic, presents the certain types of driver training opportunities listed on the following table.

**TABLE 3. EXPRESSWAY DRIVER TRAINING OPPORTUNITIES**

Freeway entrance and exit
Merges
Lane changing
Signaling
Overtaking and passing
Being passed and reacting to being cut off
Maintaining proper following distance
Reacting to obstacles in the road
Reading and reacting to road directional signs
Emergency/high speed braking and steering
Merging two lanes into one lane

#### 3.2.6.2.2 City Driving

The city portion of the driving area includes two, three, and four-lane streets with turn lanes and intersections. Structures including houses, store fronts, bridges, factories, fire stations, commercial buildings, and sidewalks are present in the city driving area. Road signs, traffic control signs (including, as a minimum, stop signs, yield signs, one-way street signs, do not enter signs, merge signs, and speed limit signs), and functional traffic lights are provided. The city driving area, with the presence of surrounding traffic, provides the types of driver training opportunities listed in the following table.

**TABLE 4. CITY DRIVER TRAINING OPPORTUNITIES**

Maneuvering in tight city streets
Maneuvering on multi-lane city boulevards
Maintaining posted speeds
Maintaining proper following distance
Reacting to traffic signals, stop signs, and yield signs
Passing and being passed
Making lane changes
Proper signaling
Entry into moving traffic
Reacting to obstacles in the road
Making left and right turns
Maneuvering on a traffic circle
Reading and reacting to road directional signs
Back-up control and speed
Distance judgment while backing
Reacting to crossing pedestrians.

**3.2.6.2.3 Suburban Driving Area**

To facilitate additional high-speed driver training in traffic and in other adverse conditions, the driving area includes suburban two-lane roads incorporating numerous hills and curves. Limited visibility sections created by hidden curves and tree lines are included. Road surfaces are predominantly concrete or asphalt. Suburban intersections are controlled primarily by stop signs and occasionally by yield signs. The suburban driving area, with the presence of surrounding traffic, provides the types of driver training opportunities listed in the following table.

**TABLE 5. SUBURBAN DRIVER TRAINING OPPORTUNITIES**

Maneuvering on curving roads of various surfaces
Passing on curving roads and roads with limited sight lines
Emergency braking and steering.
Reacting to traffic signals, stop signs, yield signs, etc.
Passing other vehicles and being passed
Making left & right turns
Observance and responding to road directional signs and cues
Interaction with crossing pedestrians and animals

#### 3.2.6.2.4 Country Driving Area

The database includes country driving incorporating numerous hills and winding two-lane roads. Limited visibility presents sudden curves to enhance training in speed and vehicle control. To reflect actual driving areas, straight sections with limited foliage as well as winding sections that result in blind curves are provided. Some of the roadways are lined with cornfields presenting visibility problems. Drivers must be able to react to animals such as deer running in front of their vehicle.

Most road surfaces are uniform and smooth, but some are narrow—with little or no shoulder. Some of the country roads are made up of either gravel or dirt surfaces with accompanying changes in traction. Most intersections are controlled by stop signs and occasionally yield signs.

The country driving area, when combined with the presence of surrounding traffic, provides the types of training opportunities listed in the following table.

**TABLE 6. COUNTRY DRIVER TRAINING OPPORTUNITIES**

Maintaining posted speeds
Maintaining proper following distances
Maneuvering on curving roads
Reacting to traffic signals, stop signs, and yield signs
Passing and being passed
Reacting to obstacles in the road
Making left and right turns
Medium and high speed emergency braking and steering
Reading and reacting to road directional signs
Railroad crossings

#### 3.2.6.3 Light Industrial Driving Area

A light industrial driving area is included to represent geographic regions that are less urban in nature. This area incorporates a small number of office and manufacturing buildings and concentrates on including elements commonly found in municipal regions: multiple speed limit zones including hospital and school zones, a police department, fire department, DMV, corporate buildings, manufacturing buildings, fast food stores, gas stations, etc.

The Light Industrial Driving Area provides the training opportunities listed in the following table.

**TABLE 7. LIGHT INDUSTRIAL WORLD DRIVER TRAINING OPPORTUNITIES**

Maneuvering in typical city streets
Maneuvering on multi-lane suburban boulevards
Maintaining posted speeds
Maintaining proper following distance
Reacting to traffic signals, stop signs, and yield signs
Approach, entry, and exit of near- and far-side emergency stops
Passing and being passed
Making lane changes
Proper signaling
Entry into moving traffic
Making left and right turns
Reading and reacting to road directional signs
Parking both at curbsides and in parking lots
Back-up control and speed
Distance judgment while backing
Backing correction/over-correction
Reacting to crossing pedestrians.

### **3.3 Audio Scenario Instruction**

Scenarios include a pre-recorded or computer-generated audio instruction message that can be played prior to the start of each scenario for consistent training. This feature is controlled at the IWS and may be turned on or off by the instructor at any time during a training session.

#### **3.3.1 Sounds**

The 550Carplus™ includes an audio system for generation of sounds consistent with the visual scene and the driver's actions in the simulator. The simulator is capable of producing the following sounds.

**TABLE 8. GENERATED SOUNDS**

Simulated Vehicle
Squeal of tires, with traction varying with terrain and load, etc.
Proper engine sounds based on engine speeds and throttle position
Road noise
Major/minor collision sounds as appropriate
Wind/Rain/Thunder
Horn

### 3.3.2 Instructor Workstation (IWS)

The 550Carplus™ incorporates an Instructor Workstation (IWS) with PC, flat screen monitor, and mouse. The instructor uses this station, for example, to start and stop the simulator, to select the vehicle type for the trainee, to set environmental conditions (fog, rain, etc.), to monitor the student's actions and skill level, initiate "replay" and "restart" features for the student, perform record keeping and scenario development. The IWS provides a full-color windows format display and mouse selectable (point-and-click) menu-driven functions for easy operation. Instructor personnel only require simple training in the functionality of the IWS.

#### 3.3.2.1 Control of the Simulator

A principal purpose of the IWS is to enable the instructor operator to make key choices prior to and during each training session. The choices available to the instructor are listed on the following table.

**TABLE 9. INSTRUCTOR CHOICES PRIOR AND DURING TRAINING SESSION**

Driving conditions
Time of day (in ten minute increments or less) *
Driving surface friction (0% to 100%) *
Environmental conditions (dry, rain, snow/ice) *
Fog level, ranging from no fog to fog-reduced visibility (with visual grayness) of less than 100 feet *
Selection of training scenarios from library
Selection of training lessons from lesson library
Mechanical Failures (instructor initiated in real-time)
Tire blowout *
Engine overheat *
Low Fuel *
Simulator vehicle selection – from menu
Simulator vehicle repair *
Replay / Restart *

Items above marked with an asterisk symbol (\*) can be adjusted or modified by the instructor at any time during execution of a training scenario.

#### 3.3.2.2 Replay and Restart

Scenario replay and restart capabilities are provided to enable subjective, timely instructor feedback to the trainee and immediate correction of problem areas. Instructors are able to select replay and restart at any time during or at the end of any scenario. Replay displays the recorded events

and conditions of the simulation and the responses of the trainee as they occurred. The replay function allows instructors to skip forward and back to critical training points. Retry allows the trainee to drive the situation anew from the start of the scenario.

### **3.3.2.3 Replay Marks**

The instructor has the capability to establish specific locations/circumstances at any point in any training scenario and return to that exact situation at any time during the replay session. During replay, the instructor is able to skip forward and back from one replay mark to another to review the specific training objective. With consistent, repeatable training in mind, the replay marks are at the same point in each scenario for every trainee. Instructors may edit the replay marks and add additional ones if desired.

### **3.3.2.4 Record Keeping**

#### **3.3.2.4.1 Student Evaluation**

Data records are able to be stored in a database that will remain accessible from the Instructor Workstation. Data can be sorted by categories such as date, student name, job class, instructor name, class type, or other criteria. Selected data can be displayed at the Instructor Workstation for review.

#### **3.3.2.4.2 Saving to Disk**

The system is capable of saving the student's performance for future review.

## 4      **HARDWARE SPECIFICATIONS**

### **4.1 General**

#### **4.1.1 Facility Size Limitation**

The complete 550Carplus™ system fits in the designated simulator system room or trailer. Doron will provide a detailed drawing showing the installation of the system it offered in this installation site. The system will be arranged in a way that is functional for instruction.

The entire training system, when disassembled into components, can pass through a 34-inch wide by 80-inch high access opening.

#### **4.1.2 Environmental Conditions**

##### **4.1.2.1 Operating Temperature**

The operating temperature is 60° F to 80° F with preferred operating range less than 70°.

#### **4.1.3 Electrical Specifications**

##### **4.1.3.1 Power**

The system operates on 120 VAC +/-10%, 60 Hz, single phase electrical service and draws no more than 20 amps per each dedicated circuit.

##### **4.1.3.2 Fusing**

Each power and control circuit is fused at an applicable rating.

##### **4.1.3.3 Line Protection**

Cables, wires, and wire bundles will be installed in a manner to prevent abrasion, rubbing, strain, tension, and malfunction due to induction between wires and cables and will meet best commercial practices. Inter-connecting electrical lines of the system are routed through protective hardware. Any mounting hardware required is provided.

##### **4.1.3.5 Underwriters Laboratory**

Primary power components, are Listed, Classified, Recognized, or Approved and are labeled as such, by Underwriters Laboratory (UL) for their intended application.

## **4.2 Hardware Component Description**

The 550Carplus™ system is composed of a Car Driving Station(s) and an Instructor Workstation. The driving stations includes a Visual System, Sound System, and Computer System. The combined interaction of these subsystems provides an interactive, continuous, driving environment using computer generated imagery (CGI).

### **4.2.1 Driving Station**

The trainee or “student driver” interacts with the simulation through a vehicle driving position containing a driver’s seat, dashboard instrumentation, and vehicle operating controls. The driving stations are fabricated to include controls in the proper spatial orientation similar to that of the vehicle being simulated.

Each simulator cab contains all of the basic controls, features and gauges found in a late model car and each simulator cab does not duplicate a specific make, model or year vehicle to avoid obsolescence.

#### **4.2.1.1 Driving Position**

The driving position includes actual or replicated components present in actual vehicles. The driving position is mounted on casters to facilitate quick changes with other modular driving positions. A durable, industry-standard floor covering with a non-skid surface is installed to provide a long life for the simulator and aesthetic appeal.

All driving positions (which include the driver’s seat, dash assembly, steering and pedals) are modular. Any modular driving position from any of our vehicle simulators is interchangeable from one simulator to another.

##### **4.2.1.1.1 Real/simulated Mirrors**

Simulated rear view mirrors are provided and functional. Mirrors are included in the visual displays and are used to convey information regarding conditions as they exist behind and around the trainee’s vehicle. Drivers are able to adjust mirrors in real time by using remote controls located inside the cab enclosure. Both the flat and convex mirrors (when applicable) adjust in real time.

When a different vehicle is selected by the instructor from the IWS, the mirror size and position changes automatically to correctly represent the vehicle being simulated.

##### **4.2.1.1.2 Steering**

The simulator includes a force feedback steering system. Drivers “feel” road vibrations, changes in road surface and collisions through the steering wheel.

#### **4.2.1.1.3 Driver Controls**

All driving controls (steering wheel, accelerator, brake) are active and have a realistic feel. Steering is adjustable to “soft, medium or hard”. Other controls including turn signal controls, headlight dimmer switch, and park brake, function as in a typical vehicle.

### **4.2.1.2 Driver Seat**

#### **4.2.1.2.1 Adjustable Seat**

The driver’s seat is an actual vehicle seat and is adjustable.

#### **4.2.1.2.2 Seat Belt**

The driver’s seat is equipped with a seat belt that has a retractor mechanism to take up slack in the belt.

#### **4.2.1.2.3 Seat Belt Sensor**

The seat belt is installed with a sensor mechanism that alerts the instructor and trainee, after the ignition switch is turned on, that the seat belt has not been fastened.

#### **4.2.1.2.4 Seat Vibration**

The driver’s seat is equipped with a vibration device to simulate representative vehicle vibrations including driving surface responses.

### **4.2.1.3 Dashboard Instruments**

Dashboard instruments are the actual or replicated instruments used in a typical vehicle and are laid out in a similar manner.

#### **4.2.1.3.1 Ignition Switch**

The car simulator includes an ignition switch located on the steering column to start the vehicle.

#### **4.2.1.3.2 Speedometer**

The speedometer is an analog meter that replicates an actual vehicle speedometer. The operation of the speedometer is computer controlled to provide an accurate indication of the trainee’s vehicle speed during driving simulation. The speedometer is included in the front dash layout. The speed is also displayed on the forward visual screen.

#### **4.2.1.3.3 Tachometer**

The tachometer is an analog meter that replicates an actual vehicle tachometer. The operation of the tachometer is computer controlled to provide an accurate indication of the simulated engine rpm's during the driving simulation. The tachometer is included in the front dash layout.

#### **4.2.1.3.4 External Light Switch**

A headlight switch is provided on the simulator. Activation of the high beam switch turns on a light on the dashboard to indicate the current headlight condition (on/off). Placing the switch in the “on” position has the visual effect of turning on the headlights and illuminating the out-the-window scene ahead of the vehicle at night. Other external lights are visible in the visual scene but are not be required to illuminate the scene.

#### **4.2.1.3.5 Warning Lights, Indicators, and Switches**

Warning lights, indicators, and switches required to support driving are active. Other lights/indicators/switches (such as climate control) are present but are not active.

Temperature, fuel and oil pressure gauges are included and are active. An operational parking brake is installed and is operational.

#### **4.2.1.3.6 Compass**

A compass is provided and clearly displayed in the forward view graphics monitor. The compass provides directional data similar to that of an actual vehicle compass. The operation of the compass is computer controlled to provide an accurate indication of the trainee's vehicle heading.

### **4.2.1.4 Driving Controls**

The driving controls consist of the following:

#### **4.2.1.4.1 Accelerator and Brake Pedals**

The accelerator and brake pedal assemblies are similar to actual vehicle components in size, shape, and material construction. The position of the accelerator and brake pedals during student driving is sensed by the computer (using long-life potentiometers) and provides interaction with the simulation so that any changes in the visual scenes correspond to the dynamics of the trainee's vehicle—based on the position of the accelerator and brake pedals. Pedals

are provided in the appropriate orientation as they are positioned in an actual vehicle.

#### **4.2.1.4.2 Steering Controls**

The steering wheel is an actual vehicle component and provides realistic friction and restoring torque to simulate the resistance feel of an actual vehicle's steering system. The steering system is computer controlled to provide feedback to the trainee about the forces being generated at the driving wheel. This system also provides feedback when the front wheels of the trainee's vehicle strike an object. The movement of the steering wheel is sensed by the computer and provides interaction with the simulation so that the simulation of the visual scenes corresponds to the dynamics of the vehicle performance based on the position of the steering controls.

#### **4.2.1.4.3 Transmission Controls**

The simulator utilizes an automatic transmission selector controls similar to those in a typical car. Selection of each gear results in vehicle dynamic performance comparable to the actual vehicle.



Figure 4-1 Driving Position

## 4.2.2 Instructor Workstation



The Instructor Workstation (IWS) consists of the following elements:

### 4.2.2.1 Instructor Console

The IWS console is a desk or upright console manufactured of durable materials suitable for the training environment. The console has at least one (1) lockable cabinet which houses the computer and power supply. The IWS is equipped with a PC-based computer, a monitor, keyboard, and optical-mechanical mouse. The monitor is a LCD flat panel display and measures at least 22 inches diagonally and is capable of displaying at least 1920 x 1080 resolution with 32 bit color. The computer system is professionally installed and all wires are concealed from view.

The IWS communicates with the self-contained computer network system of the Trainer. This terminal is the communication input location for starting the simulator from a powered down condition, initiating system software loading of operational programs, performing system maintenance, conducting diagnostics and trouble-shooting, changing system level parameters, setting up the driving simulations, monitoring student driver actions and reactions to driving situations, recording student performance data, and initiating system shutdown.

## 4.2.3 Visual System Specifications

### 4.2.3.1 Computer Generated Imagery

The visual system consists of high quality Computer Generated Imagery (CGI) subsystems that create a presentation of a three-dimensional

geometric database. The 550Carplus™ includes three (3) 55” HD LCD screens providing views similar to those from the drivers seat in a late model car. All mirror images are adjustable in real time using a remote control in the driving station. The views presented by the 550Carplus™ is representative of those in the actual vehicles. The images in all views are presented in real time and are synchronous.

The comprehensive database presents buildings, obstacles, trees, hill, etc., with sufficient detail to determine one’s relative position. The visual presentation appears natural and represents typical U.S. roadways and communities.

The visual system provides the capabilities listed in the following table.

**TABLE 10. VISUAL SYSTEM CAPABILITIES**

Presentation of various weather conditions including variable fog, rain and snow/ice,
Presentation of various levels of sunlight intensity to simulate various periods of day/night time (including sun glare) adjustable in increments of 10 minutes or less
Presentation of a large quantity of active and passive traffic elements
Presentation of continuous motion
Arbitrary uninterrupted driving within the driving course (both on-highway and off-highway) at any time
Sufficient resolution for discovering, recognizing and identifying objects
Collision detection of vehicles, pedestrians, buildings and traffic signs.

The graphics computer or image generator is an open architecture design running a MS Windows operating system. The image generator is based on commercially-available “off the shelf” computers (COTS).

Photo texturing of polygons is used to maximize scene realism and to provide enhanced motion cues. Identically configured high-resolution image generators are used for the graphical presentation.

**4.2.3.2 Object Resolution**

The object resolution allows a student to detect a moving vehicle measuring approximately 8 foot by 8 foot about one half mile away.

**4.2.3.3 Visual System Display Units**

The 550Carplus™ includes three (3) 55” high definition visual displays with a minimum resolution of 1920 x 1080.

#### **4.2.3.4 Adjacent Channel Matching**

Variation in color, brightness, contrast, resolution, and collimation between adjacent channel displays is not immediately noticeable for the full range of simulated conditions. Special emphasis is given to matching brightness and contrast in barely visible portions of the dawn/dusk and night scenes.

#### **4.2.3.5 Video Rates and Scene Quality**

Moving models are updated and a complete scene is computed at a rate of 60 Hz. The scene is “textured” to maximize scene realism and to provide improved motion cues. Critical objects utilize “photo texturing” which provides for the display of digitized photographs of buildings, signs, and other objects—adding realism to any scene.

#### **4.2.3.6 Field of View**

The 550Carplus™ includes three (3) 55” high definition visual displays providing a horizontal field-of-view of at least 225 degrees. The simulator provides a vertical field-of-view of at least 32 degrees. Slewing of visuals is not utilized.

#### **4.2.3.7 Overhead View**

A momentary switch is provided on the dash that switches the displayed view from a driver’s perspective to an overhead view in real time. The overhead view allows the driver to see his/her vehicle location with respect to other vehicles or objects within the virtual environment.

#### **4.2.3.8 Rearview Mirrors**

The 550Carplus™ includes simulated mirror images. These images are representative in size, shape, location and field-of-view of the mirrors in the actual vehicles. All mirror images for all vehicles are adjustable by the driver via remote controls located in the simulator driving position.

All mirror images are representative of the vehicle being simulated. When the instructor selects a different vehicle from the IWS, the simulated mirrors automatically change to correctly represent the new vehicle’s mirrors.

### **4.2.4 Dolby 5.1 Surround Sound System**

The sound system incorporates a high-quality audio reproduction of continuous and asynchronous vehicle sounds. The sounds correlate to driver actions and environmental conditions as well as the visual scene.

#### **4.2.4.1 Vehicle Sounds**

##### **4.2.4.1.1 Realistic Sounds**

The sound system for the 550Carplus™ presents realistic, real-time digital audio reproduction of sounds including:

- engine starting
- engine running – normal and continuous based on throttle position and speed
- normal traction
- reduced traction
- sound of tires on pavement
- sound of tires “off-road”
- tire skidding
- tire curb impact
- vehicle cornering
- tire blowout
- abnormal sounds based on malfunctions
- wind
- rain
- thunder
- horn
- collision – major and minor

##### **4.2.4.1.2 Audio Scenario Instruction**

Each scenario includes a pre-recorded or computer-generated audio instruction message that can be played prior to the start of each scenario for consistent training. This feature is controlled at the IWS and may be turned on or off by the instructor at any time during a training session.

##### **4.2.4.1.3 Simultaneous Sounds**

The sound system is capable of reproducing multiple, digital audio channels of sound (simultaneously). It contains provisions to mix the digital audio channels to provide a variety of audio cueing presentations.

##### **4.2.4.1.4 Speakers**

Vehicle sounds are computer-generated and rendered by audio speakers included with the system. Volume is adjustable.

##### **4.2.4.1.5 Coordinated Sounds**

Vehicular audio sounds properly result from student actuation of controls, computer evaluation of control positions (accelerator,

brake, etc.), and computer evaluation of engine speed and load, vehicle speed, and interaction with road or surface conditions.

## **4.2.5 Modularity**

### **4.2.5.1 Computer hardware**

The computer system for the 550Carplus™ is modular and allows for future expandability. Components are PC-based and consist entirely of third party commercial off the shelf (COTS) products.

### **4.2.5.2 Modular Driving positions**

The driving positions are of modular design. This feature allows for the addition of new simulators without the necessity of purchasing an entirely new system.

## 5 SOFTWARE SPECIFICATIONS

### 5.1 Visual System

The visual system software and the associated visual database (virtual world) are two of the main software components of the driving simulator. Advanced C++ software and algorithms performing state-of-the-art visual computation and database integration is used to provide a high performance system and advanced scene management. The well proven database has been expertly constructed to provide both the details and performance necessary in all situations required for driving simulation.

All other software subsystems (vehicle dynamics, sound system and IWS software) are expertly synchronized together in real-time with the visual system to provide a smooth, glitch free simulation experience.

#### 5.1.1 Simulated Terrain

The 550Carplus™ includes a generic terrain database with urban and suburban areas, two lane expressways, industrial area, rural area and a testing area.

The 550Carplus™ is capable of displaying several different virtual environments. The selected scenario automatically loads the appropriate virtual environment for the desired training. It is not necessary for the instructor to select separate driving worlds to switch from one scenario to another.

While normal driving is expected to occur (drivers will remain on roadways), the Computer-Generated Imagery database permits and supports driving off-road at any time and anywhere in the virtual environment.

#### 5.1.2 Weather Effects

##### 5.1.2.1 Weather Conditions

Various weather conditions are provided, to include fog, rain, snow/ice, sunlight, darkness and dawn/dusk lighting conditions. Presence and variation of these remain selectable from the IWS during simulator operation.

#### 5.1.3 Time-of-Day Effects

##### 5.1.3.1 Time-of-Day Visual Effects

Simulated visual effects for time-of-day are provided. The instructor may select the time-of-day (within increments of ten (10) minutes or less) at the start of a training session and the system can remain capable of modifying time of day at any time during any individual training session. Sun glare is provided when the simulated vehicle is heading to the East in the early morning and to the West late in the day.

## **5.1.4 Visual Representation**

### **5.1.4.1 Realistic Representation**

A realistic representation of three-dimensional objects is provided, including signs, ramp markings, buildings, other vehicles, with textured surfaces being similar to the real world in appearance and location.

### **5.1.4.2 Perspective**

Visual scenes have correct perspective and scale for all visual objects.

### **5.1.4.3 Concealment**

The CGI system renders the visual scenes with correct adjacent concealment of three-dimensional objects.

### **5.1.4.4 Degree of Realism**

Environmental models consist of the visual cues required to provide maximum realism within the limitations of the model. Modeling is optimized to provide useful scene content and a high degree of realism.

### **5.1.4.5 Update Rate**

The image generation system renders the entire visual scene as a presentation of continuous motion. Smooth motion of the trainee's vehicle over the driving surfaces with realistic interaction of the vehicle, environment, and terrain types is provided.

## **5.2 Sound System Software**

### **5.2.1 Vehicle Sounds**

Sound system commands are generated by the computer application as a result of sensing the actuation of controls such as the accelerator and/or the brake pedal. Sound cues are derived computations made by the host computer. The engine sound is replicated from idle speed to highway speeds. As a minimum, the following sounds are simulated and produced during driver training sessions based on the parametric evaluation of system conditions.

**TABLE 11. GENERATED ENGINE SOUNDS**

<i>Student Vehicle</i>
Engine Starting
Engine cranking/starting -- continuous while condition persists
Kill engine – cue
Engine Running
Normal -- continuous while condition persists with volume and frequency a function of engine speed and throttle position
Vehicle Speed
Normal traction -- continuous while vehicle moving
Reduced traction -- continuous while vehicle moving
Variation with road surfaces -- continuous while vehicle moving
Tire Skidding -- continuous while condition persists
Tire Curb Impact – cue
Horn
Tire Blowout – cue
Major and Minor Collisions -- separate cues

### 5.3 Instructor Workstation (IWS)

#### 5.3.1 General Considerations

The IWS software generates window menu displays with mouse selectable buttons or icons that support a user-friendly hierarchy of System control menus. The IWS uses the familiar Windows operating system for ease of operation.

##### 5.3.1.1 Simulator Setup and Initialization

Users are able to initiate a system startup/shutdown, perform diagnostics, and access CD-Writers, and other long-term storage devices.

#### 5.3.2 Control

During the driver training session, the instructor is able to control the scenarios and the progress of the student's training by using the Graphical User Interface GUI at the IWS. All of the following are controlled by a mouse click. The instructor is able to:

SCENARIO SELECT	This function allows the instructor to select any scenario from the menu.
LESSON	Instructors may select a lesson (a group of scenarios) to be loaded for training.

VEHICLE SELECT	This allows instructors to choose any vehicle from the menu to drive for the current scenario.
DAMAGE THRESHOLD	This allows instructors to set the amount of damage necessary to disable a student vehicle.
REPAIR	This allows the instructor to repair any student vehicle that has been in a collision.
TIME-OF-DAY	This allows the instructor to change the lighting conditions to reflect any time of day or night within 10 minute intervals or less.
WEATHER	Environmental conditions may be selected including clear, rain, snow and fog. Fog density may be adjusted.
ROAD FRICTION	Instructors may alter the road surface friction.
START	Instructors shall be able to remotely start trainee vehicles from the IWS.
REPLAY	Instructors may replay any scenario.
SKIP	This may be used to skip forward or back between replay points to expedite training.
RESTART	This function shall restart the active scenario.

### 5.3.3 Replay Overhead View

To assist the instructor and review training objectives with the trainee, there is a REPLAY OVERHEAD VIEW, which may be activated by a mouse click from the IWS during replay. Toggling this function changes the view back and forth between a straight ahead (normal) out-the-window view and an overhead or bird's eye view.

## 5.4 Scenario Developer™

The 550Carplus™ includes the user-friendly Scenario Developer™ to facilitate creation of scripted traffic scenarios that will satisfy specific training objectives in support of new hire training, remedial training or to approximate accident conditions. The Scenario Developer provides a user interface that incorporates a windows-based operation. The windows-based interface allows the instructor to quickly and easily create new scenarios. It is possible to create new scenarios with dozens of moving vehicles in minutes. The movements of vehicles and pedestrians appear natural and smooth when new scenarios are played.

Scenarios are repeatable and selectable at the Instructor Workstation. The software allows additional scenarios to be crafted by modifying existing scenarios and saving them to a new file name. Newly developed scenarios may be maintained in the existing library so they can be easily managed by training instructors and shared with other agencies.

## **5.5 Networked Simulators**

The ability to network multiple simulators to operate within the same virtual training environment is a base feature of the application software. Networking allows the conduct of training maneuvers that involve multiple participants to “see” and interact with other trainees within the same training exercise. Instructors are able to facilitate and administer training for the networked configuration via a single, common Instructor Workstation. Each simulator installation is configured as a network to support the introduction of additional simulator devices that can be used to support future growth or expansion into other driver training disciplines. Up to four (4) simulators can be configured to operate in the same network using a single IWS.

## **5.6 One Year Warranty and Maintenance Service**

A one year warranty is provided after delivery and installation of the system. The one year warranty includes all parts and labor, including all necessary on-site labor and all travel expenses for technicians. Routine preventive maintenance visits are provided. Additional warranty and maintenance can also be provided. See quote sheet.

### **5.6.1 Delivery, Installation, and Training**

Each system includes installation, testing, and all training modules required for the user’s instructional staff to become proficient with the operation and maintenance of the installed system. There will be three days of on-site Instructor Training provided. Our Instructor will assist in building additional scenarios to fit specific training requirements.

Training includes: 1) routine system maintenance; 2) daily setup, operation and control of the delivered system; and 3) training on the use and application of the Scenario scripting software. Instructor training is completed by an individual with several years experience providing driving simulator training.

## 6 OPTIONS

This section describes enhancements, additions, and modifications that can be added to the standard system described above.

### 6.1 Additional Years of On-site Maintenance Service Support

Doron offers on-site maintenance service support that can be provided after the first year warranty and maintenance service is complete. The follow-on annual maintenance program covers the costs for all parts and labor, including all necessary on-site labor to maintain the system. There is no additional cost or charges for parts, technician's travel or labor.

### 6.2 Three Degree of Freedom Motion System

The motion system provides 3 degrees of pitch and roll and 1.5 inches of heave to provide turning, braking, and acceleration cues to the student. The electro-mechanical motion system has controls and capabilities for the instructor to enable or disable it as desired. The motion cues are derived from the virtual vehicle speed, acceleration, orientation, as well as the simulator steering wheel, accelerator and brake pedal inputs.

### 6.3 SkillTrak™ (Reaction Testing)

The system includes the capability to test driver's reactions in a standardized way for screening and periodic review. Instructors are able to compare results of the reaction testing with national averages (norms).

This feature also measures driver's threat recognition time, plus reaction time and converts these times to total distance traveled. This feature adds standard braking distance for selected distances imposed and displays the results as a measure of total stopping distance in feet.

#### 6.3.1 Printing

The instructor has the option of printing hard copy of the student's performance evaluation and reaction testing scores and/or saving to the hard drive or a removable storage device.



**DORON PRECISION SYSTEMS, INC.**  
**425Carplus™ DRIVING SIMULATION SYSTEM**  
**ALTERNATE PROPOSAL**  
**State of West Virginia – CRFQ ABC1900000002**  
**January 14, 2019**

- Single position 425Carplus™ driving simulator cab
- Equipped with active centering torque steering system
- Equipped with one (1) 55" flat screen display
- One (1) IWS (Instructor Work Station)
- Remote Controlled side-view mirror adjustment
- Pre-recorded Audio Scenario Description Feature
- Audio system
- DUI Malfunction Software
- Scenario Package
- Automatic transmission
- Comprehensive user guide
- Three days of on-site Instructor training
- Shipping to Nitro, WV
- On-site installation
- One (1) year warranty

<b>Price:</b>	<b>\$ 57,950.00</b>
<b>Shipping:</b>	<b>\$ 1,900.00</b>
<b>Total System Price:</b>	<b>\$ 59,850.00</b>

**Options: (Not included in above pricing)**

- SkillTrak (Reaction Time Software) \$ 3,950.00
- Two additional years warranty @ \$6,790 per year \$13,580.00

**Terms are as follows:**

- Prices are FOB Nitro, WV
- Prices are valid for ninety (90) days from date
- Net thirty (30) Days
- Prices do not include any applicable duties or taxes
- Delivery is sixty to ninety (60-90) days ARO

Respectfully submitted,

Michael Stricek  
Senior Vice President

REQUEST FOR QUOTATION  
DUI Driving Simulator

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**Contract Manager:** Graham Upton

**Telephone Number:** 607-772-1610

**Fax Number:** 607-772-6760

**Email Address:** gupton@doronprecision.com

## West Virginia Ethics Commission



### Disclosure of Interested Parties to Contracts

Pursuant to *W. Va. Code* § 6D-1-2, a state agency may not enter into a contract, or a series of related contracts, that has/have an actual or estimated value of \$1 million or more until the business entity submits to the contracting state agency a Disclosure of Interested Parties to the applicable contract. In addition, the business entity awarded a contract is obligated to submit a supplemental Disclosure of Interested Parties reflecting any new or differing interested parties to the contract within 30 days following the completion or termination of the applicable contract.

For purposes of complying with these requirements, the following definitions apply:

*"Business entity"* means any entity recognized by law through which business is conducted, including a sole proprietorship, partnership or corporation, but does not include publicly traded companies listed on a national or international stock exchange.

*"Interested party"* or *"Interested parties"* means:

- (1) A business entity performing work or service pursuant to, or in furtherance of, the applicable contract, including specifically sub-contractors;
- (2) the person(s) who have an ownership interest equal to or greater than 25% in the business entity performing work or service pursuant to, or in furtherance of, the applicable contract. (This subdivision does not apply to a publicly traded company); and
- (3) the person or business entity, if any, that served as a compensated broker or intermediary to actively facilitate the applicable contract or negotiated the terms of the applicable contract with the state agency. (This subdivision does not apply to persons or business entities performing legal services related to the negotiation or drafting of the applicable contract.)

*"State agency"* means a board, commission, office, department or other agency in the executive, judicial or legislative branch of state government, including publicly funded institutions of higher education: Provided, that for purposes of *W. Va. Code* § 6D-1-2, the West Virginia Investment Management Board shall not be deemed a state agency nor subject to the requirements of that provision.

The contracting business entity must complete this form and submit it to the contracting state agency prior to contract award and to complete another form within 30 days of contract completion or termination.

*This form was created by the State of West Virginia Ethics Commission, 210 Brooks Street, Suite 300, Charleston, WV 25301-1804. Telephone: (304)558-0664; fax: (304)558-2169; e-mail: [ethics@wv.gov](mailto:ethics@wv.gov); website: [www.ethics.wv.gov](http://www.ethics.wv.gov).*

# West Virginia Ethics Commission Disclosure of Interested Parties to Contracts

(Required by W. Va. Code § 6D-1-2)

Name of Contracting Business Entity: Doron Precision Systems, Inc. Address: 150 Corporate Drive  
Binghamton, NY 13904

Name of Authorized Agent: Graham Uton Address: 150 Corporate Drive, Binghamton, NY 13904

Contract Number: CRFQ ABC1900000002 Contract Description: DUI/Texting Driving Simulator

Governmental agency awarding contract: State of West Virginia

Check here if this is a Supplemental Disclosure

List the Names of Interested Parties to the contract which are known or reasonably anticipated by the contracting business entity for each category below (attach additional pages if necessary):

**1. Subcontractors or other entities performing work or service under the Contract**

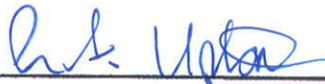
Check here if none, otherwise list entity/individual names below.

**2. Any person or entity who owns 25% or more of contracting entity (not applicable to publicly traded entities)**

Check here if none, otherwise list entity/individual names below.

**3. Any person or entity that facilitated, or negotiated the terms of, the applicable contract (excluding legal services related to the negotiation or drafting of the applicable contract)**

Check here if none, otherwise list entity/individual names below.

Signature: 

Date Signed: January 14, 2019

**Notary Verification**

State of New York, County of Broome:

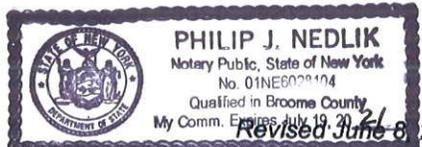
I, GRAHAM UTON, the authorized agent of the contracting business entity listed above, being duly sworn, acknowledge that the Disclosure herein is being made under oath and under the penalty of perjury.

Taken, sworn to and subscribed before me this 14th day of January, 2019

  
Notary Public's Signature

**To be completed by State Agency:**

Date Received by State Agency: \_\_\_\_\_  
Date submitted to Ethics Commission: \_\_\_\_\_  
Governmental agency submitting Disclosure: \_\_\_\_\_



STATE OF WEST VIRGINIA  
Purchasing Division

**PURCHASING AFFIDAVIT**

**CONSTRUCTION CONTRACTS:** Under W. Va. Code § 5-22-1(i), the contracting public entity shall not award a construction contract to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees.

**ALL CONTRACTS:** Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

**EXCEPTION:** The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

**DEFINITIONS:**

**"Debt"** means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

**"Employer default"** means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

**"Related party"** means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

**AFFIRMATION:** By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) 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, that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

**WITNESS THE FOLLOWING SIGNATURE:**

Vendor's Name: Doron Precision Systems, Inc.

Authorized Signature: *[Signature]* Date: January 14, 2019

State of New York

County of Broome, to-wit:

Taken, subscribed, and sworn to before me this 14<sup>th</sup> day of January, 2019.

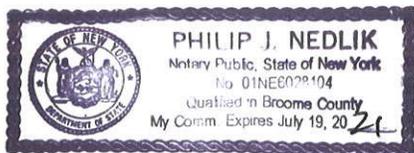
My Commission expires July 19, 2021, 2021.

**AFFIX SEAL HERE**

**NOTARY PUBLIC**

*[Signature]*

*Purchasing Affidavit (Revised 01/19/2018)*





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

State of West Virginia  
 Request for Quotation  
 27 — Miscellaneous

Proc Folder: 510505

Doc Description: Addendum No.01 - DUI/Texting Driving Simulator

Proc Type: Central Purchase Order

Date Issued	Solicitation Closes	Solicitation No	Version
2019-01-10	2019-01-17 13:30:00	CRFQ 0708 ABC1900000002	2

**BID RECEIVING LOCATION**

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

**VENDOR**

Vendor Name, Address and Telephone Number:

**FOR INFORMATION CONTACT THE BUYER**

Brittany E Ingraham  
 (304) 558-2157  
 brittany.e.ingraham@wv.gov

Signature X

FEIN #

DATE

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

**ADDITIONAL INFORMATION:**

Addendum

Addendum No.01 issued to publish and distribute the attached information to the vendor community.

\*\*\*\*\*

**Request for Quotation**

The West Virginia Purchasing Division is soliciting bids on behalf of the West Virginia Alcohol Beverage Control Administration (WVABCA) for the one-time purchase, training, installation, and warranty of a DUI/Texting driving simulator, per the bid requirements, specifications, terms, and conditions attached to this solicitation.

The simulator package will involve the development of customized DUI scenarios, training, installation of software, and installation of the simulator in the trailer provided by the West Virginia Alcohol Beverage Control Administration (WVABCA).

INVOICE TO		SHIP TO	
ACCOUNTING DEPARTMENT ALCOHOL BEVERAGE CONTROL COMMISSION 4TH FLOOR 900 PENNSYLVANIA AVE CHARLESTON WV25302 US		ABCA WAREHOUSE HUB INDUSTRIAL PARK 97 INDEPENDENT AVE NITRO WV 25143 US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	DUI/Texting Driving Simulator with 3 years of Warranty	1.00000	OR		

Comm Code	Manufacturer	Specification	Model #
25191736			

**Extended Description :**

The West Virginia Purchasing Division is soliciting bids on behalf of WEST VIRGINIA ALCOHOL BEVERAGE CONTROL ADMINISTRATION (WVABCA) to establish a one time purchase to provide the WVABCA with a DUI/Texting Driving Simulator and 3 years of Warranty per the specifications and instructions contained in the solicitation.

**ADDENDUM ACKNOWLEDGEMENT FORM**  
**SOLICITATION NO.: CRFQ ABC19\*02**

**Instructions:** Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

**Acknowledgment:** I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

**Addendum Numbers Received:**

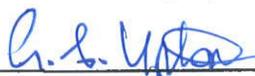
(Check the box next to each addendum received)

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6  |
| <input type="checkbox"/> Addendum No. 2            | <input type="checkbox"/> Addendum No. 7  |
| <input type="checkbox"/> Addendum No. 3            | <input type="checkbox"/> Addendum No. 8  |
| <input type="checkbox"/> Addendum No. 4            | <input type="checkbox"/> Addendum No. 9  |
| <input type="checkbox"/> Addendum No. 5            | <input type="checkbox"/> Addendum No. 10 |

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Doron Precision Systems, Inc.

\_\_\_\_\_  
Company



\_\_\_\_\_  
Authorized Signature

January 14, 2019

\_\_\_\_\_  
Date

**NOTE:** This addendum acknowledgement should be submitted with the bid to expedite document processing.  
Revised 6/8/2012

**SOLICITATION NUMBER: CRFQ ABC1900000002**

**Addendum Number: No.01**

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The purpose of this addendum is to modify the solicitation identified as (“Solicitation”) to reflect the change(s) identified and described below.

**Applicable Addendum Category:**

- | Modify bid opening date and time
- | Modify specifications of product or service being sought
- | Attachment of vendor questions and responses
- | Attachment of pre-bid sign-in sheet
- | Correction of error
- | Other

**Description of Modification to Solicitation:**

Addendum issued to publish and distribute the attached documentation to the vendor community.

1. The purpose of this addendum is to publish vendor questions and agency responses.

No other changes.

**Additional Documentation:** Documentation related to this Addendum (if any) has been included herewith as Attachment A and is specifically incorporated herein by reference.

**Terms and Conditions:**

1. All provisions of the Solicitation and other addenda not modified herein shall remain in full force and effect.
2. Vendor should acknowledge receipt of all addenda issued for this Solicitation by completing an Addendum Acknowledgment, a copy of which is included herewith. Failure to acknowledge addenda may result in bid disqualification. The addendum acknowledgement should be submitted with the bid to expedite document processing.

**DUI/Texting Driving Simulator**  
**CRFQ ABC1900000002**  
**Vendor Questions and Agency Answers**

Q1.) If possible, we would like some additional information, and or pictures of the proposed trailer in order to ensure your trailer meets our installation specifications for mounting the driving simulator.

A1.) See Attached photos