Carolyn Carley-Richart
Office of Procurement Services
University of North Florida

February 15, 2023

Dear Carolyn,

With this letter, we are providing justification for the purchase of the STISIM Drive® driving simulator. The STISIM Drive® is a programmable and fully interactive virtual reality driving simulator engineered to take advantage of cutting-edge computer technology. Results from more than four decades of independently validated driving simulation research are incorporated into STISIM Drive® software and systems. We are the most widely used simulator for research. This driving simulator system uses the Scenario Definition Language (SDL), computer code language that allows the researcher to create custom-designed roadway environments and situations. The current research team has been using SDL for the past 15 years. The STISIM system is the only driving simulator system that uses this specific Scenario Definition Language (SDL); therefore, for our existing experiments to be useful and to design future experiments, the driving simulator system must accommodate this software coding language.

The following answers to your questions should provide more information regarding this purchase:

What is the product and what does the product do?
- M4000-OT (along with M4000-R) is a programmable and interactive driving simulator powered by the STISIM Drive software engine and it is integrated into an advanced console environment. The STISIM Drive® M4000-R comes with more than ninety diverse and ready to drive scenarios that provide assorted driving situations and customizable roadway environments. The system also allows for client definable data collection.
- All STISIM Drive® research systems include the Scenario Definition Language (SDL), software that allows researcher to create custom designed roadway environments and situations. Key features of SDL include:
  - Modify existing or create new custom scenarios
  - Allows definition of the visual data base (intersections, vehicles, pedestrians, traffic control devices, buildings, flora and fauna, miscellaneous elements).
  - Traffic and pedestrians are intelligent and can be programmed to present hazards.
  - Roadway profile is defined in terms of highway engineering specifications (horizontal and vertical curvature and transitions, cross section slopes).

- More than fifty different events can be called upon to create the driving scenario and add functionality to the roadway environment including events for controlling external hardware.
- Dynamically control events, signal lights, pedestrians, vehicle traffic.
- Events to control external hardware (serial, digital, analog)
- Built in eye tracking support (via the EyeWorks interface)
- Client defined data collection locations and variables.
- Includes built in tasks like car following, divided attention, simple pedal reaction times.
- Scenarios can easily be shared with colleagues and collaborators
- Extensive documentation including examples of all events.
- Extensive collection of roadway objects that can be used with different SDL events.
- Supports optional plugin modules that allow clients to program their own functionality into the simulator

Where will the product be located on campus? Building / room number
- The equipment will be housed in Building 51/Room 3107.

Will installation and/or on-site training by the vendor be required?
- The vendor requires a two-day onsite installation and training provided by technical engineers from STISIM Drive.

Do other manufacturers make similar products that will do the same job or meet the same goals?
- Other products do not allow for the customizable and research software that allows the customer to create custom designed roadway environments and situations.
- Other products do not use the Scenario Definition Language (SDL), which is required to run our current studies.

How is this product unique from all others?
- Other products do not allow for customizable and research software that allows the customer to create custom designed roadway environments and situations.
- Other products do not use the Scenario Definition Language (SDL), which is required to run our current studies.

What existing equipment or supplies are, or must be, compatible with the product?
- My old STISIM-100 was purchased in 2004 and it created a lot of compatible issues with the Windows 10 OS.
- The new module will replace the existing equipment.

Why are the unique characteristics of this product critical for your mission?
- The STISIM driving simulator will provide an interdisciplinary research environment so that faculty and students who are interested in driving research can design, program, and conduct their experiments with the simulator in the lab. There is adequate 65+ population in Jacksonville who can serve as participants in studies on age-related driving performance and on training effects on driving performance. Future research studies on teens is also planned, connecting visual

performance to driving performance. Research has shown as well that drivers' attitude toward safety correlates with driving performance. The STISIM driving simulator will serve as an education hub to offer training and research opportunities to drivers as well as innovative research experience for students and grant funding opportunities for faculty.

How will this purchase or failure to purchase the specifically proposed equipment impact the associated research? (if applicable)

- The old STISIM-100 was purchased in 2004, and it created a lot of compatibility issues with the Windows 10 OS. This system will become obsolete in the next couple of years.

Will the failure to purchase the specifically proposed equipment affect the continuity or validity of the associated research? (if applicable)

- Yes, the compatibility issues have already disrupted research projects in progress, and if not replaced, will eventually limit or halt future research in this area at UNF.

Please let me know if you need more information.
Sincerely,

Dong-yuan Wang

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