FORUM 8
3D Visual Interactive Simulation Specialists
VR-design Studio™
…formerly UC-win/Road

CASE Study

Date: Sept. 2019

The Lebanese American University in Beirut opts for a motion-based Driving Simulator System from FORUM8

The competitive world-wide tender that FORUM8 bid for and won was for the supply, installation and support of a Traffic Driving Simulator, as per the Invitation to Tender Document from the LAU Byblos Campus, Lebanon

The Lebanese American University (LAU) specified its requirement for the supply of a Driving Simulator hardware system comprising a fully integrated full or half-car cabin with windshield, high-fidelity driving system with natural 3D viewing and a minimum of 180º wraparound display. The tender document specified that the Simulator possess a high-quality authentic car control environment including both driver and passenger seating, digital audio stereo system and all the normal car equipment.

The desired interactive 3D VR simulation and modeling software should provide real time driving simulation with advanced scenario and data import and export capabilities. In addition, the required software system should also provide a significant library of pre-built road networks, vehicles, pedestrians and additional road infrastructure, street furniture and associated 3D objects. The application of the driving simulation software should also allow for the monitoring, collection and recording of the driving data. Finally the required software should offer additional software plug-ins that can be used to expand the capabilities of the overall system at a later stage. Plug-ins should include the addition of such items as driver's eye and head motion sensors to enable the monitoring of such things as fatigue and driver distraction. In addition, it is assumed that the system should be able to accommodate a range of other advanced features such as vehicle to vehicle and vehicle to infrastructure communication and autonomous driving systems.

Dr. John El Khoury, Professor of Transportation Engineering within the LAU Department of Civil Engineering who led the procurement process for the Driving Simulation (DS) System, summarized the University's objectives as follows:

"The goal behind acquiring a state-of-the-art traffic driving simulator is strengthen our research drive of enhancing safe mobility by deepening our understanding of the social and behavioral issues important to transportation, within the Lebanese context.

"The main focus of the effort is to:

- *Evaluate the effects of public policy programs that promote safe driving*
- *Expand knowledge of the social and behavioral factors related to high-risk driving behavior*
- *Investigate social, behavioral, and cognitive factors related to transportation"*

The FORUM8 Solution

FORUM8 proposed that it would supply and manage the whole project, ensuring the successful integration of all the hardware elements of the system with the FORUM8 3D VR driving simulation software. In addition, FORUM8 would be responsible for supervising the system installation, the training of client staff and the ongoing software maintenance and technical support.

The warranty period for the Driving Simulator hardware system is 1 year (12 months) from the date of installation. Delivery will be within 9 months following receipt of purchase order including transit time to Beirut and the time necessary to clear Lebanese customs. The warranty period of the IT and software elements of this proposal are covered by the maintenance agreements in place at the time.

Final LAU DS Installation Description

FORUM8 worked with its French Partner BMIA from Bordeaux to deliver and install the eventual chosen full vehicle Driving Simulator system comprising of:

- Full Mercedes Smart Car with its dashboard, seats (2) and belts
- Active force back professional steering wheel with direction indicator
- On/Off button & Hand Brake
- Professional adjustable 2/3 pedal system
- Manual / Automatic selectable gearbox lever
- 500W RMS 5.1 sound system
- Electronic card interface between PC and dashboard, buttons, switches
- Full Stereo / CD Player and audio system
- Force feedback steering rack with tilt capability
- Automatic transmission gear select
- Complete dashboard with speedometer & tachometer etc
- Accelerator and brake pedals
- Driver response input buttons & vent fan control
- Adjustable driver seat and a functional seatbelt
- Windscreen wipers
- Full digital sound system providing real car driving sounds with subwoofer & stereo speakers

- Four D-Box motion actuators mounted on a skid under the car
- An overhead 3 x projection system and 180° screen (6.1m x 1.5m)
- A network of clustered PCs and Control desk
- Master PC, 27" LCD, mouse & associated cables
- Six Clustered Client PCs for the projection system and mirrors
- Three 7" LCD screens to simulate the mirrors
- DVI extenders, network switch and associated cables

- VR-Design Studio interactive 3D VR driving simulation software (also known as UC-win/Road in the East)
- Projector interface software
- Sharing software for common KVM system
- Software plug-ins including:
  - Log Export
  - Driver Diagnosis
  - Cluster
  - Cluster client
  - FORUM8 VR data Library

FORUM8 Background

FORUM8 is the leading Japanese producer of state-of-the-art 3D VR Engineering software. It's premier product in the west, VR-Design Studio (*formerly known as UC-win/Road*), is at the forefront of Real-time Interactive 3D VR Simulation & Modeling technology.

VR-Design Studio is the ideal solution for many different interactive simulation applications, including urban / transport planning & design, consensus building and driving simulation. It is used either on its own or to add value to other industry standard third-party 3D design & analysis, micro-simulation & modeling software, as well as civil engineering, flood modeling and LiDAR data.

FORUM8 Driving Simulators benefit from the comprehensive 3D visual and interactive attributes of VR-Design Studio. The software allows users to create multiple driving scenarios and re-create them with complete control of all environmental conditions, as well as being able to set individual vehicle dynamics from either within VR-Design Studio or in collaboration with other industry standard software.

FORUM8 Drive Simulators are used widely for human factors research, vehicle development and research, driver training and many other aspects of road safety research and training.

Driving Simulators range from basic desk-top units (VR-Drive), to multi-million-dollar hexapod systems, with up to 8 degrees of freedom. In addition, FORUM8 can supply other hardware systems including both metro, tram, rail and ship interactive 3D VR simulation systems.

Established in 1987, this award-winning company has offices and partners on every continent and is a member of the US ITE, is an associate of the TRB visualization group and a member of the MIT Industrial Liaison Program (ILP).

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