MTS works with rFpro to develop innovative new vehicle driving simulator

Proven low latency software complements high performance all-electric platform to provide a turnkey simulator solution with next-generation performance

Hertfordshire, UK, 2nd October 2015... MTS Systems Corporation has engaged UK simulator software specialist, rFpro, for its new vehicle driving simulator (VDS). rFpro’s low latency and high bandwidth technology, combined with its high definition road modelling, provides the necessary engineering quality and immersion for realistic evaluation and testing, by a human driver, of ADAS (Advanced Driver Assistance Systems) and vehicle dynamics. MTS’ new, state-of-the-art lightweight all electric simulator, combined with rFpro’s software, offers a cost-effective, turnkey solution for vehicle manufacturers and Tier 1 suppliers to re-introduce a human test driver into the model-based engineering process.

Vehicle development programmes no longer have to wait for a physical prototype before human test drivers can contribute to the engineering process. With this solution, test drivers can fully engage with the design, test and validation phases while the engineering is still model-based.

“The availability of a turnkey driving simulator solution with cutting-edge dynamic performance from a leading global supplier is a game-changer for vehicle development,” said rFpro’s technical director, Chris Hoyle. “It offers customers a low risk system fully compatible with existing vehicle modelling tools, such as Dymola, SIMPACK, CarMaker and CarSim, and extends the reach of real time ‘driver-in-the-loop’ simulators into key areas of active safety, vehicle dynamics and autonomous testing.”

One option available with the MTS VDS is mHIL, mechanical hardware-in-the-loop, which runs physical systems alongside virtual models in real time. This allows a human driver to
evaluate the feel of a steering system, or the ride and handling behaviour of different dampers, long before a prototype vehicle exists. Used in combination with the library of worldwide road surface models in rFpro’s Terrain Server tool, the effect of every bump, ripple and surface change at the contact patch of each individual tyre can be experienced.

According to MTS, the unprecedented speed of rFpro’s audio and visual cueing is a key contributor to overall system performance. “In order to bring to market the next generation of dynamic platform performance, we required software that was equally capable,” said Professor Mark Gillan, Director – MTS Motorsports Technology Group. “With rFpro, we found a proven solution with low latency, high bandwidth and exceptionally high definition graphics, essential for closing the loop through the driver quickly and providing the necessary realism.”

The importance of closing the loop quickly is underlined by some typical figures; the human ear can detect latency of as little as 7 msec and the eyes 20-25 msec. Traditional large-scale driving simulators typically introduce latency of between 100 and 250 msec. The combination of stiff, lightweight, all-electric platform hardware and rFpro software delivers the virtual testing experience faster than the threshold at which humans can perceive latency for the audio, visual, haptic and vestibular cues.

By working with rFpro MTS’ VDS customers benefit from out-of-the-box integration with their existing vehicle models and a large library of off-the-shelf digital road models and proving grounds.

About rFpro

rFpro is a specialist software company that has developed driver-in-the-loop simulators for vehicle dynamics applications, offering the fastest video and audio pipelines, an architecture for soft-real-time model execution and an optically correct off-platform vision system optimised for motion profiles suited to ride and handling development. This specialised area of driver-in-the-loop simulation is all about closing the loop through the driver and the vehicle model as quickly as possible while delivering a high quality and immersive environment.

To deliver complete DIL simulators for the engineering development of vehicle dynamics, and the control systems and active safety systems that affect vehicle dynamics, rFpro
works with the world’s leading motion platform providers. The company’s products can wrap around vehicle models from all the popular modelling environments, including Dymola, SIMPACK, Simulink, AVL-VSM, CarSim, CarMaker, LMS AMESim, VI-Grade and C/C++.

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MTS Systems is working with UK simulator software specialist, rFpro, for its new vehicle driving simulator (VDS).

rFpro’s low latency and high bandwidth technology, combined with its high definition road modelling, provides the necessary immersion for realistic evaluation by a human driver of characteristics such as ride and handling.

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