"ROADS", A NEW RENAULT DRIVING SIMULATOR

FOR AUTONOMOUS VEHICLE

TAG: INNOVATION

To improve the development of autonomous driving, Groupe Renault teams up with A. V. Simulation to host a brand new simulator named ROADS.

CHAPO – Groupe Renault teams up with A. V. Simulation to prepare a new 25M€ facility at Renault Technocenter (near Paris) for autonomous vehicles. It will host one of the most advanced dynamic driving simulators in the world, in a 2000 m² brand new building and aims to set the industry standard to a new level.

The development of autonomous vehicles requires not only thousands of kilometers of road tests but also millions or even billions in simulation. It can be done 100% virtual on computers, but also in a real simulator similar to those that have long existed for aviation.

Thanks to a partnership with A. V. Simulation*, Groupe Renault will benefit in early 2019 of a brand news simulator, which will be placed at the heart of a new 25M€ and 2000 m² facility at Renault Technocenter. Named ROADS (for *Renault Optimization Autonomous Driving Simulator*) this new simulator will consist of fast electric linear power systems for the 30 meters long rails in two directions, a ± 180 yaw-table for urban driving, a complete 360° dome with ultra-high 3D definition, as well as a complete car cockpit equipped with head and eyes tracking systems.

Adding to this impressive list of features the ability of the simulator to reuse energy stored during deceleration phases in order to minimize the overall electric consumption. For sure ROADS will be one of the most advanced driving simulators in the automotive industry and in the world!

HOW THE SIMULATOR WORKS?

ROADS consists of a fiber carbon dome mounted on a high-performance motion rendering system, which is composed of an electric hexapod motion system combined with a ± 180° yaw-table, mounted on a motion table providing X-Y-axis movements. This high-performance system can reproduce accelerations up-to 1 g and speeds up-to 9 m/s in both longitudinal and lateral directions. ROADS will be the first driving simulator in the world capable of rendering such high accelerations in both directions.

Inside the dome is installed Renault's vehicle which can be changed according the ongoing test. The driver sits inside the vehicle and is immersed in virtual reality (traffic scene, moving pedestrians, and buildings) thanks to a 360° eye resolution 3D display showing photorealistic images and specific systems reproducing soundscape and force feedback.
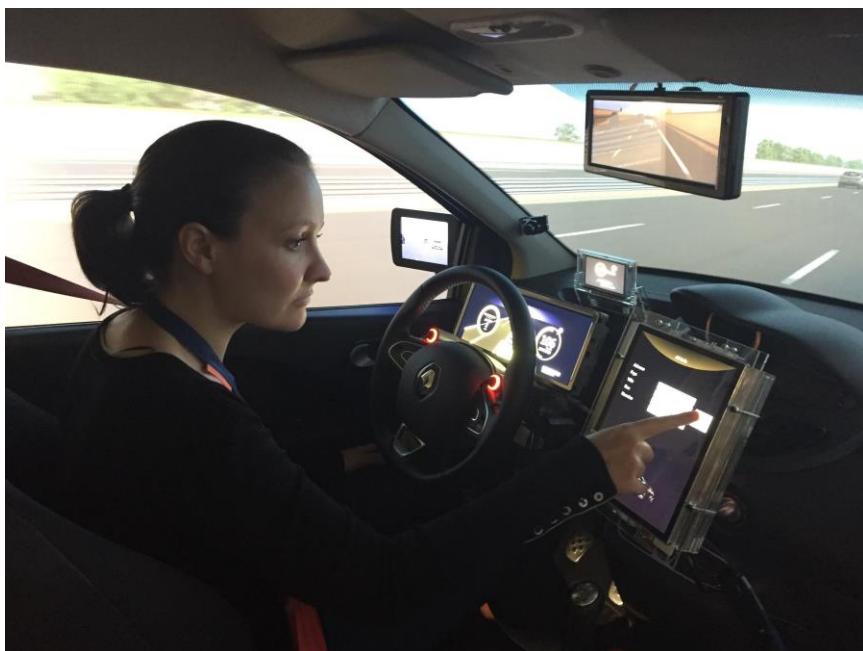
WHAT IS THIS SIMULATOR USED FOR?

This step will allow Groupe Renault and the Renault-Nissan Alliance to continue delivering a menu of advanced technologies by furthering autonomous vehicle development testing in a virtual environment. This expenditure on cutting-edge technology is a visible demonstration that Renault is not cutting back on strategic investments. This is how the company safeguards its innovative ambitions.

"For a safe autonomous vehicle product for all, we need to validate on billions of kilometers. To complete physical tests, the only way is the massive simulation, with a large number of driving scenarios. One of the worst case scenario is the handover between manual and autonomous mode in different traffic situations. The new high performance dynamic driving simulator will help Renault to test all these cases in the most efficient and realistic way with real drivers in the loop (DIL) and design the best experience for the final client (simple & secure)."
Olivier COLMARD, Integrated CAE & PLM VP Renault Engineering

This simulator will run thanks to SCANeR Studio© driving simulation software from AVS, managing of course the computing of vehicle motion, engine and traffic sound, traffic behavior and managing also all the supervision and data analyzing tools. A comprehensive tool to develop our autonomous vehicles faster.

*About A. V. Simulation
A. V. Simulation (Autonomous Vehicle Simulation) is a new joint-venture formed together with Groupe Renault and Oktal, a subsidiary of Sogeclair, a French aerospace and simulation company based in Toulouse, France. Groupe Renault will acquire a 35 percent stake in this new joint venture including the SCANeRTM software, a worldwide leader in driving simulation software already used across Renault and Nissan and various OEMs, Tier1 manufacturers and Research Centers.
Groupe Renault supports A. V. Simulation development by delegation of Pr. Andras Kemeny, Automotive International simulation Expert, as Senior Scientific Director and by ordering the high performance ROADS driving simulator, as well as news developments and software maintenance.