

Innovation – Automotive

“Helios” – Renault’s new ultra-realistic headlight simulator by Immersion



The French car manufacturer Renault is equipped with a headlight simulator of its vehicles. Having had this equipment for twenty years, Renault has to regularly develop its system to ensure it includes the latest innovations in technology.

Renault entrusted Immersion, the European expert in virtual and augmented reality and collaborative solutions, with producing this new display system. Named “Helios”, this headlight simulator is ultra-realistic.

◆ Why a headlight simulator?

For many years, Renault has understood the importance of Virtual Reality in reducing delays and costs while increasing competitiveness and agility... The headlight simulator meets that same demand.

Usually, the development of a new car projector requires the manufacturing of several physical prototypes. These prototypes are assessed through night tests and then modified according to the assessment of lighting experts.

Several long and costly prototype production iterations are necessary before obtaining a projector compliant with the specifications.

The aim of the headlight simulator is to reduce development costs and delays for a new projector, while enhancing its quality, thanks to computer assisted engineering techniques and real time immersive display.

Immersion, expert in Virtual, Mixed and Augmented Reality and Collaborative Solutions, has sharp technical expertise in simulation, still not very well known.

However, in addition to Renault, other big names have already called upon Immersion for its expertise in simulation: Groupe PSA, Airbus Helicopters, Dassault Aviation, DGA, (Directorate General of Armaments) ENAC (French Civil Aviation University),...

◆ Simulation: one expertise and several productions

Founded in 1994, which is very early in terms of Virtual Reality, Immersion has gradually imposed itself as an expert in Virtual, Mixed and Augmented Reality and Collaborative Solutions, both for industrial and academic clients. Immersion has successfully gained their trust thanks to its specialist expertise and multi-disciplinary team: mechanics, electronics, software, human factors, experimental design...

As a result, Renault, like many others, uses virtual reality rooms as a genuine work tool, many of which were produced by Immersion. But what is less known, is Immersion's expertise in terms of simulation, like "Helios", Renault's latest ultra-realistic simulator.

"Our teams are stimulated by technical challenges, it's in our blood!" says Christophe Charter, President and co-founder of Immersion. "I'm extremely proud of my colleagues, who are constantly overcoming technical and technological challenges to satisfy our most demanding clients," he admits.

As for "Helios", the challenge was no easy feat: designing a large field-of-view spherical screen, providing high contrast levels and brightness, allowing for night stereoscopic visualisation. One single system therefore had to include: the projection onto a spherical shape, eight projectors, a very high resolution, a very high contrast level, motion tracking (pretty rare for a simulator), low latency (essential for driving), and automatically calculated dynamic warping and blending.

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Technical specifications

- Mechanical structure and 225-degree spherical frontal projection screen
- 8 videoprojectors
- Automatic warping and optical blending system managed by software
- Motion tracking: 6 cameras
- Native 4K images: 4096 x 2160
- High contrast
- Laser technology: reduced maintenance cost
- Depth: Active stereoscopic 3D

ABOUT IMMERSION

Creating 3D experiences since 1994, Immersion is the European leader in virtual reality, augmented reality and collaborative solutions for industry and research. As a pioneer, Immersion has built its know-how around customised virtual reality solutions and is now developing its own innovative products through the "3i by Immersion" solutions. The company's solutions are at the crossroads of immersive 3D, collaborative technologies, and decision-making tools. Since being established, Immersion has proven itself by meeting the needs of major French companies listed on the most important Paris stock exchange, the CAC 40. In 2016, the company went public on the Alternext Paris stock exchange and evolved through a strategy aiming to reach a new market, that of SMEs and mid-sized companies. With its 48 employees, Immersion designs and manufactures all its products in France and more specifically in the region of Nouvelle-Aquitaine. The company has over 500 facilities worldwide and had a turnover of €8 million in 2017. www.immersion.fr

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