

Antycip Simulation Claims World-First in Virtual Reality for the University of Lille

Paris (France), 20th June 2018 - Antycip Simulation, a French integrator of virtual reality solutions and 3D immersive rooms has recently completed the installation of the first virtual reality room of its kind in the world. Located in La Plaine Image (Tourcoing, France), The Open Reality Experience (TORE) takes immersive experience to new levels, providing users with the opportunity to collaboratively explore 3D environments without any viewing disruption, at 180° and with consistent user distance.

Designed, built and installed by Antycip Simulation, TORE is a one-of-a-kind, immersive tool for those who are working and conducting research in the area. The platform brings together social sciences, design and history and the digital world in a unique, innovative space which advances the capabilities of scientists and researchers at the University of Lille.

TORE was inaugurated in February by the University of Lille in the presence of French ministry representatives, senior regional politicians, and researchers in Visual & Cultural Sciences from the University of Lille. This new facility completes the Images economic excellence hub, which gathers more than a hundred companies dedicated to the cultural and creative industries.

Hosted within the Imaginarium building - a hybrid place which aims to foster convergence between innovative companies, research laboratories and artistic projects - TORE has already become paramount to the university's Visual & Cultural Sciences centre, which brings together the iCAVS (Interdisciplinary Cluster for the Advancement of Visual Studies) cluster and the Equipex IrDIVE (Innovation-research in Digital and Interactive Visual Environments) technological platform.

An exceptional immersive space

Under the tutelage of Lille University and the CNRS (the French National Center for Scientific Research), TORE was led as a project by the UMR SCALab French laboratory for cognitive and affective sciences in partnership with the CRISAL laboratory (Research centre in Computer Science, Signal and Automatic Control of Lille), whose engineers developed the device.

With the aim of developing 3D immersive experiences in virtual environments for breakthrough research, particularly in the field of Visual Sciences and Culture, TORE was co-financed by the ANR (PIA-Equipex IrDIVE) and the European Fund for Regional Economic Development (FEDER).

TORE's unique characteristics lie in its screen shape, bent in all dimensions to free up users from any sharp edges, thus providing an unprecedented technological breakthrough compared with any other immersive systems.

"Imagine a screen in a half-sphere shape, flattened at both poles. Place it on a two-floor superstructure; pair it with 20 high-brightness stereoscopic projectors; add immersive sound and ... voilà! TORE is a world's first that propels users in a fully immersive 3D virtual space," enthused Yann Coello, director of the SCALab laboratory and coordinator of the Equipex IrDIVE.

Olivier Colot, the CRISAL laboratory director added, "TORE represents a major scientific breakthrough for both scientists and technologists, enabling them to benefit from a totally innovative visualisation space that goes beyond the capacities of an immersive CAVE; it is also a fantastic tool for SMEs who are working on consumer VR applications as it provides them with a new technology tool to experience VR beyond traditional VRH devices."

The dimensions of the room in which TORE sits allow for optimal visual comfort and effective collaboration work for prototyping, architectural visits, training, artistic creation and simulation alike.

A multidisciplinary team of scientists specialised in computer sciences (from the CRISAL and LISIC laboratories), historical sciences (IRHIS laboratory) as well as 3D computer graphics professionals has already developed an 18th century rendering of the Notre-Dame bridge, the most famous inhabited bridge in the history of Paris, making it possible to explore it virtually. TORE allows them to better assess the spaces, the materials and the volumes of this historical piece of architecture.

The SCALab and CRISAL laboratories are also working on a VR interface to test the effect of implementation intentions on motor productions in interaction with a human avatar. TORE will help research workers to better understand the outcomes of this "if-then plan" self-regulatory strategy, which can lead to better goal attainment, as well as help with habit and behaviour modification.

Apart from the immediate benefits in IT, human and social sciences, the immersive capabilities of TORE also open opportunities for the University of Lille in the design and digital interfaces field, as well as industrial and architectural innovation.

A perfect example of where innovation can lead

TORE sets itself apart from any other CAVE (Cave Automatic Virtual Environment) by annihilating the visual disruption caused by cubic shapes. It is currently the only solution in the world with such visual characteristics.

The Equipex IrDIVE laboratories were looking for an immersive solution that would overcome the many challenges of traditional CAVE environments and called in the expertise of Antycip Simulation. The French integrator was instrumental in this project, applying its know-how from design to delivery. Antycip developed a custom-made screen structure and selected all AV technologies and products to bring this unique facility to life, including computers, projectors, tracking-systems and 3D glasses.

After delivering the proof of concept (POC), Antycip Simulation worked closely with the University of Lille to validate every step in the conception phase, before handling the extensive manufacturing process.

“We were facing a number of extremely complex challenges - from the sheer size of the structure to its shape form and rigidity, not to mention the homogeneity of the end result - it took all our experience and expertise as a company to be able to deliver the project with the quality specifications expected by the client,” recalled Johan Besnainou, Antycip Simulation director for France & Spain.

Indeed, the TORE screen itself boasts impressive dimensions. Measuring 4 meters high, 8 meters wide and 8 meters deep, the projection surface is made of eight 30 mm thick curved acrylic elements and two flat ones which had to be delivered on site before being assembled using liquid acrylic; once the material cooled down, the structure was sanded to obtain an even projection surface.

The team at Antycip Simulation had to design specific tools in order to assemble the elements. Different coatings were then tested before opting for the one that would offer the best visual performance.

With the conception and manufacture of such a unique and complex rear projection screen, Antycip Simulation’s expertise reached new heights in VR solutions integration. “TORE gave us a unique opportunity to demonstrate our R&D, and our capacity to source, manufacture and implement the best materials to create a world’s VR first. We are extremely proud to have been involved in a project of this scope, and thankful for the trust from the teams at the University of Lille,” commented Johan Besnainou.

TORE sits on a three-storey structure, also designed by Antycip. On the back of the screen and also rigged to the structure are 20x Christie Mirage WU7K-M WUXGA 3-Chip DLP projectors.

Content wise - in order to deal with such a large surface and multiple sources, Antycip worked closely with its partner Scalable Display Technologies to create dynamic eye-point warping and blending.

Additionally, Antycip evolved its real-time image generation software, MyIG, to provide the highly detailed, multi-channel images for the university to use in TORE, and work with the cutting-edge dynamic eye-point view, to maintain viewer’s immersion within the scene. Antycip also selected active 3D glasses and a tracking system capable of handling high resolution and high frequency content. Completing the immersive feeling is a spatial surround sound system.

With this new facility, the University of Lille is equipped with an innovative and unique solution, positioning the university and its laboratories at the forefront of Visual Sciences and Cultures, while reinforcing Antycip Simulation’s leadership as a major partner and integrator for immersion solutions.

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Since 1996, Antycip Simulation has supported customers across the globe, in defence, academia, commerce and industry, to become better at what they do. As an expert provider of simulation, analysis, modelling, display and virtual reality solutions, Antycip Simulation combines its in-house technical expertise with an unrivalled range of products from software and hardware providers. Antycip Simulation is a subsidiary of ST Engineering Electronics. For more information visit www.antycipsimulation.com.