CASE STUDY

# Antycip Simulation Brings Modular VR CAVE to Heudiasyc Laboratory

**Paris (France), 23rd April 2018** – Antycip Simulation, a European integrator of virtual reality solutions, 3D immersive rooms and a leader in simulation software, has installed a four-sided VR CAVE (Cave Automated Virtual Environment) for the Heudiasyc laboratory's Translife research programme. The completion of the VR CAVE will improve research of new technologies including automation, robotics and artificial intelligence. The new system enables the Heudiasyc VR team in particular to explore new models for adaptive feedback in virtual environments based on the Enaction theory, as well as decision modelling for informed interactions.

Housed in the Compiègne University of Technology (UTC), the Heudiasyc laboratory has been associated with France's National Centre for Scientific Research (CNRS) since its creation in 1981. Its mission is to conduct research in the field of information and digital sciences, including IT, automation, robotics and artificial intelligence.

The laboratory within the UTC carries out a number of tests for innovation projects, requiring the use of powerful technological platforms. The fields of research span intelligent vehicles to autonomous mini-UAVs, railway monitoring to 3D interaction between humans and systems.

The four-sided CAVE is an immersive system used for research on informed virtual environments. It was designed with the capability to offer both a closed configuration (U-shaped) and an open one (L-shaped). Antycip Simulation enabled the right side of the CAVE to open at a 90 degree angle, with the mechanically-integrated projection platform moving and adjusting automatically into its new position.

"We are now working with the L-shaped configuration to carry out tests on technical gesture training in a virtual factory environment," explained Indira Thouvenin, HDR (accreditation to supervise research) professor at Compiègne University of Technology (UTC). "We are planning to use the U-shaped capability in the near future as an augmented reality driving simulator with the new SyRI (Interactive Robotic Systems) research team from the laboratory."

**Antycip Simulation, from specification to implementation**

As the integrator of the system, Antycip Simulation was involved throughout all stages of the project, providing expertise on the CAVE's operation, choosing the equipment, installing the solution and commissioning it. As part of a three-year maintenance contract to ensure the best possible system quality over time, the integrator will check the system once a year.
For this project, Antycip Simulation recommended and installed four Christie Mirage 3-Chip DLP 3D projectors offering a WUXGA resolution (1920 x 1200 pixels) at 120Hz, capable of displaying 3D images on the walls and floor screening surfaces.

Mounted above the structure on a self-supporting platform, a vertically-angled projector displays images on a 7m x 3.5m surface on the floor when the CAVE is “open”, and 4m x 3m surface when the CAVE is “closed”.

Antycip Simulation created a high end bespoke mechanical system to allow users to open or close the fourth side of the structure, enabling the use of a three or four-sided CAVE with a single immersive system depending on the requirements. This opening and closing mechanism is coupled with a top quality floor surface covered with a highly resistant paint.

“We worked very closely with the team at Heudiasyc laboratory to deliver a modular, immersive system which can meet all their requirements in research and engineering,” said Johan Besnainou, Director, France & Spain, at Antycip Simulation. “This CAVE makes it possible to extend the reach of the laboratory in its work, thanks to a fully immersive environment.”

The Christie Mirage 3D projectors are paired with a powerful HP Z840 3D rendering station equipped with two NVIDIA M60000 graphic cards and two Intel Xeon processors to cope with the image processing. A tracking system consisting of ten infrared cameras detects user movements within the CAVE, while the active 3D glasses and a joystick associated with detection sensors allow users to move around the virtual environment and interact with the content. A 5.1 audio surround system completes the installation for a fully immersive and realistic feel.

“The user friendliness of this CAVE is remarkable, thanks to its ergonomic layout” enthuses Indira Thouvenin. “We can work on the entire surface of the room, the floor projection is automatically adjusted to the room, and the length of the “L” moving shape is great. Since its commission, we have had many visits and the feedback is beyond positive. The CAVE will allow us to explore new areas for informed interaction and intelligent systems. We are indeed very happy with the result. Antycip Simulation managed to solve all the challenges linked to this project and was always listening to our requests.” concludes Indira Thouvenin.

Watch the KIVA video showing training on technical gesture here:
https://vimeo.com/255942814/47035720a1

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