

BACKGROUND

Funding from the Province of Ontario through the Ontario Centres of Excellence (OCE) supporting the Autonomous Vehicle Innovation Network (AVIN) is helping to drive innovation and collaboration within the Windsor-Essex Region and across Ontario. The establishment of the Virtual Reality (VR) CAVE is an example of how innovative thinking combined with partners leads to access of specialized equipment and services.

“The Windsor-Essex Region has a unique position in the province, both as an automotive hub and a cross-border city. The regional capacities made the Windsor-Essex Region an ideal choice for one of AVIN’s Regional Technology Development Sites, which will support and enable small and medium-sized enterprises to develop, prototype, test and validate new technologies, access specialized equipment, and obtain technical and business advice. This will lead to the creation of high-quality jobs and economic development opportunities.” – Raed Kadri, Ontario Centres of Excellence

SimuTech Group is proud to be a part of bringing this immersive technology to the Windsor-Essex Region. Not only will the CAVE provide opportunity for advancing the autonomous vehicle industry, but many other sectors as well. Anyone that needs to visualize, check operations, or collaborate on design can utilize this 3D technology.
– Alan McKim, SimuTech Group

The following is a listing of the key partners that helped make the VR CAVE a reality:

About Ontario Centres of Excellence (OCE) Inc. - www.oce-ontario.org

OCE drives the creation of high-quality jobs by accelerating the commercialization of cutting-edge research across key market sectors to build the economy of tomorrow and secure Ontario's global competitiveness. In doing this, OCE fosters the training and development of the next generation of innovators and entrepreneurs and is a key partner with Ontario's industry, universities, colleges, research hospitals, investors and governments. A champion of leading-edge technologies, best practices and research, OCE invests in sectors such as advanced manufacturing, digital media and information communications, advanced health, cleantech, automotive and ag-tech to drive economic growth and foster made-in-Ontario solutions.

About SimuTech Group Inc. - www.simutechgroup.com

SimuTech Group, is a simulation services company specializing in ANSYS finite element analysis (FEA), computational fluid dynamics (CFD) and electromagnetic (Emag) simulation software as well as turbomachinery, wind turbine, and testing services. SimuTech Group is the largest full-service provider of ANSYS FEA, CFD, and Emag engineering simulation software in North America. Their offices across the US and Canada provide sales, technical support, training, and consulting services for ANSYS simulation software.

About ANSYS - www.ansys.com

If you've ever seen a rocket launch, flown on an airplane, driven a car, used a computer, touched a mobile

device, crossed a bridge or put on wearable technology, chances are you've used a product where ANSYS software played a critical role in its creation. ANSYS is the global leader in engineering simulation. Through our strategy of Pervasive Engineering Simulation, we help the world's most innovative companies deliver radically better products to their customers. By offering the best and broadest portfolio of engineering simulation software, we help them solve the most complex design challenges and create products limited only by imagination. Founded in 1970, ANSYS is headquartered south of Pittsburgh, Pennsylvania, U.S.A.

About Barco - www.barco.com

Barco designs technology to enable bright outcomes around the world. Seeing beyond the image, we develop visualization and collaboration solutions to help you work together, share insights, and wow audiences. Our focus is on three core markets: Enterprise (from meeting and control rooms to corporate spaces), Healthcare (from the radiology department to the operating room), and Entertainment (from movie theaters to live events and attractions). In 2018, we realized sales of 1.028 billion euro. We have a **global team of 3,600 employees, whose passion for technology is captured in 400 granted patents.**

Windsor-Essex AVIN RTDS Virtual Reality CAVE: Ribbon-Cutting **www.wavin.ca**

BACKGROUND

The Windsor-Essex Regional Technology Development Site (RTDS) is proud to officially unveil the completed state-of-the-art, fully-immersive Virtual Reality (VR) CAVE¹ for Connected and Autonomous Vehicle (C/AV) Technologies. Funded and supported through the Autonomous Vehicle Innovation Network (AVIN) which is managed by the Ontario Centres of Excellence (OCE) and funded by the Province of Ontario. This facility will help drive innovation in the Province of Ontario. The Windsor-Essex AVIN Regional Technology Development site is located at the Institute for Border Logistics and Security (IBLS) - a department of the WindsorEssex Economic Development Corporation.

The objectives of Windsor-Essex AVIN Regional Technology Development Site are to:

- Provide access to specialized equipment, hardware and software to spur greater innovation.
- Provide business advisory services to assist in the commercialization of technologies developed to move goods, people and services within Canada and abroad efficiently, effectively and safely.

Why is virtual reality useful to industry?

- Virtual testing is now a standard practice of large product development programs in the auto, consumer products to aerospace systems.
- VR facilities are useful because they enable the evaluation of a multitude of design and procedural alternatives, safely and rapidly and at much lower cost than the construction of functional physical prototypes.
- With VR technology, prototypes and products can be tested virtually (or virtual prototyping) before final verification with physical prototypes is performed. Additionally, users can 'virtually' test and train the use of products before they exist, which can lead to improved usability and better ergonomic design.

VR CAVE Partners:

- SimuTech Group: Located in 14 offices throughout North America, all SimuTech Group offices have a proven and long-term record of providing engineering simulation software products and services to its customers and clients.
- Barco: Is a technology company that develops visualization and collaboration solutions to help professionals work together, share information, and project images in cinemas and elsewhere.
- ANSYS: Headquartered in Canonsburg, Pennsylvania, ANSYS develops and markets engineering simulation software, including its automotive suite of software.

¹ A **cave automatic virtual environment (CAVE)** is an immersive virtual reality environment where projectors are directed to between three and six of the walls of a room-sized cube.

VR CAVE Specifications:

- The system is based on four (4) projectors covering a front wall, two side walls and the floor;
- Each of the screens has an image size of 15.5 ft x 9.68 ft.
- The full-size side screens produce a large horizontal field of view which is critical for an immersive environment, even when moving around.
- This is the largest public VR CAVE display in Canada, and the only one being used for C/AV testing. The lab creates a multi-sided immersive environment that will foster collaboration. Contrary to Head-Mounted Displays (HMDs), multiple people have access to the same 3D image in the same space (so not in a personal virtual environment), it is a lot easier to communicate and collaborate.

Expected Benefits:

- Testing capabilities within a VR CAVE facilitate the development of C/AV sensor software system that cannot easily be done in a physical environment. VR testing allows for safe and cost-effective testing of new technologies like C/AVs.
- Industry Participation: Partner with major companies and industrial associations to raise awareness of VR technologies and their benefits.
- Partnership with the University of Windsor and St. Clair College: Provide access to professors and students to industry-leading technology to help spur innovation and entrepreneurship.
- Supporting the Local Ecosystem: Provide public access to specialized equipment, hardware and software that is not currently available in the Windsor-Essex area to SMEs and others to develop, commercial and deploy new technologies.
- Partnership with Physical Test Sites: ANSYS has been given privileged access to MCity (located in Ann Arbor) to develop a virtual MCity track. Discussions are underway with other physical C/AV test sites in Ontario to develop digital twins.

For more information, to schedule a visit or to discuss how your company can leverage the Virtual Reality CAVE contact:

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