

iMVR & VIVE Pro Eye Reduces Accidents and Lowers Costs in Trucking Industry With VR



Trucking students starting their careers and professional truck drivers experience a fully immersive VR training environment that streamlines the process and improves learning retention.

Simply put, trucks move the economy. The old maxim, “If you bought it, a truck brought it.” is more true today than ever. Experts have estimated that if commercial trucking fleets and their professional drivers stop running, consumers everywhere would feel the negative impact in as little as eight hours. Within two weeks, the economy would grind to a halt.

As important as trucking is to the world, demand for professional drivers is increasing. Over the past year, the trucking industry in the U.S. and Canada lost 30 percent of its drivers according to the [Bureau of Labor Statistics](#). The first key to bridging this gap is to understand the difference between drivers and

professional drivers. Professional drivers have to meet training requirements far beyond having a commercial driver’s license. Their job is a demanding one, given the many regulations involved, time away from home, long working hours, and challenges of the road.

Despite all the challenges, the vast majority of professional drivers are upbeat, funny people with kind hearts who want to pass on their trade to the next generation. For them, it’s not just a job; it’s who they are. Knowing this, the industry is continually working to improve professional education and training.

But this aspect, too, poses roadblocks. With traditional training, trucks must be taken off the road, resulting in

lost revenue. Someone must pay for fuel and insurance. Drivers need to travel to testing centers, which limits the number of trainees who can be assessed simultaneously. Training can also be dangerous in the presence of less-experienced drivers and the threats of inclement weather and road/traffic hazards.

Technology is available to help streamline professional training, but legacy virtual platforms that use 2D screens, either on a monitor or via projection, are both expensive and far from truly immersive. They fail to simulate the actual experience of being in and around a truck. They lack the flexibility to offer full training capabilities, including conducting a vehicle circle check or ensuring a load is secure with the safety chains in place.

Both in-person and 2D training regimens lack the ability to track where a professional driver is looking; whether they're checking their mirrors, gauges, and blind spots effectively; and if they are being distracted by a phone or radio in the cab. These problems with traditional training essentially mean that certification is more costly, time-intensive, and not as analytically rigorous as it should be. This leads to more driving incidents, which leads to higher insurance premiums for the trucking carriers.

Delivering the virtual reality solution

Virtual reality (VR) has the potential to solve most or all of these problems when it comes to professional driver training. HTC VIVE is leading the way in the field through an innovative partnership with a Canadian company, iMVR. The firm, which also happens to be one of a growing number of female-led players in the professional trucking sector, has developed a groundbreaking VR solution designed around the HTC VIVE Pro Eye head-mounted VR unit to enhance driver safety and skills and surpass industry-standard certification requirements. iMVR is headed by CEO and Founder Vickie Devos, who has worked in the transportation industry for 30 years, including collaborating with regulatory agencies in the U.S. and Canada, as well as insurance and carrier profiles.

The iMVR technology platform, dubbed IRIS, replaces traditional simulators and complements expensive on-road driver training to decrease accident rates, which will ultimately decrease expensive insurance premiums. IRIS immerses students and professional drivers into a VR environment, enabling trainers to track drivers' eye movements with the HTC VIVE Pro Eye PC-VR system. It's essential to track both the



location of the driver's head and where their eyes are focused. Based on real-time data, an instructor can give feedback such as, "Look a little bit lower on the side mirrors when you're backing up – lowering your gaze by just one or two inches will provide better exposure to hazards."

Prior to incorporating the tethered HTC VIVE Pro Eye system, iMVR attempted to use mobile headsets from another company for training. However, drivers experienced significant lag time between their eyes moving and what they experienced in VR, causing them to become nauseous. The HTC VIVE Pro Eye headset solved this problem with its dual-OLED displays offering a combined resolution of 2880 x 1600 pixels and 615 PPI, as well as Foveated Rendering, which optimizes graphic fidelity in a driver's line of sight.

"We have experienced so many benefits using the HTC VIVE Pro Eye," said Devos. "The fact that it's tethered supports low latency and no lag with an excellent refresh rate. The eye tracking is outstanding, and HTC VIVE's customer service is great."

Bringing to life every aspect of the job

IRIS was built by professional truck drivers for professional truck drivers, whether they are new students looking to begin a career or veteran road warriors at a trucking company focused on maintaining a high level of proficiency. The platform – which utilizes

the VR engine from Unity, the leading platform for content creation for virtual and augmented reality applications – stimulates engagement between trainer and driver because it enables them to discuss and then experience different variations of a situation through VR. Unity enables appropriate simulation rapid-prototyping tools, enabling the IRIS content modules to be customized to a wide range of driver training scenarios. Unity's unique and versatile VR hardware abstraction layer also empowers iMVR to achieve quick and efficient deployment across the entire spectrum of HTC VIVE headsets.

iMVR's VR solution is centered on a day in the life of a typical professional driver. Students or drivers first don HTC VIVE headsets to conduct a circle check, or safety check, of the outside of their vehicle, then couple and uncouple a load from their virtual tractor. Through HTC VIVE's multi-user VR platform, up to five participants can experience this simultaneously.

When students or drivers take to the virtual road, they enter a one-on-one session with their instructor. This phase involves operating the vehicle, including reviewing vital safety aspects, backing into a loading dock, avoiding obstacles and people, understanding all protocols, and more. The experience is fully immersive, which is key to the training and review process. A student can sit in a virtual "cab." When the truck won't move forward, they can exit the cab and inspect the entire vehicle to possibly find that the wheel chocks were not removed. Instructors also



A driver, using the VIVE Pro Eye system, crouches to inspect the underside of a trailer in the iMVR virtual environment.

can select options including time of day, weather, task, and type of equipment to create individualized learning scenarios for each student or driver. These aspects give training a true experiential feel, as the driver is taught to behave in a manner consistent with interacting with the real world.

Muscle memory is another benefit of IRIS. Students and professional drivers can learn through repetition and review all sessions in a 360-degree panorama, with the instructor reinforcing both positive behavior and areas for improvement. Instructors can view a student's or professional driver's performance in real-time or track results for specific tasks over time. If an instructor notes a particular issue, they can identify and work with the driver to ensure complete understanding. This saves valuable time for instructors, who can quickly pinpoint problems and drill down on them in lieu of having to sit through entire training sessions with drivers.

Currently, IRIS is a comprehensive package created to offer a full solution out of the box. Along with software and an HTC VIVE Pro Eye kit with light stands, IRIS includes a Dell G7 or Alienware laptop, steering wheel, pedals, and the specifications for a certification program. A truck seat is available as an add-on.

Of course, IRIS is not built to completely replace proven classroom and on-the-road training. In fact, the VR solution is a key component of iMVR's traditional training framework, such as its two-day professional driver events that include instruction and competency tests required for standard industry certification.

Where the rubber meets the road

IRIS has enabled very impressive benefits, including increased driver retention, reduced accident rates, and lower overhead costs. A study by an IRIS user, Commercial Heavy Equipment Training (CHET), which used two custom iMVR modules for training, quantified the advantages.

CHET, a Canada-based leader in heavy-haul training, enrolled 78 students in an IRIS VR training session over an eight-month period. CHET found that only 1.28 percent of them required a second training to correct issues. Alternatively, 1.78 percent of students who underwent a standard non-VR training event needed another session. In other words, IRIS-trained drivers were 39 percent more likely to need only one session.

Moreover, Phil Fletcher, CHET's operations manager, added: "For us, IRIS paired with the HTC VIVE Pro Eye has supported a 10 percent reduction in insurance costs and a reduction in driver turnover rate to below 10 percent. It also has lowered accident rates to less than one in 1 million miles traveled, which puts CHET in the top 10 percent of fleets in all of Canada."

Resulting from the success of IRIS, iMVR is exploring other areas of training for professional and everyday drivers such as school buses, transit buses, construction vehicles, RVs, and more. Find additional information on iMVR and how you can use IRIS for professional driver training at imvrcanada.ca.

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