

Testing Lidar Technology on a Real-world Rail System in Canada



Canadian start-up Lux Modus has tested its Lidar technology as an affordable and easy-to-use 3D data collection platform on a real-world light rail system by participating in the city of Calgary's Living Labs.

A number of years ago, the city's Living Labs helped Calgary-based [Lux Modus](#) successfully test its Lidar technology built for pipeline construction in a real-world,

non-pipeline 'lab' environment along Calgary's downtown 7th Avenue transit corridor. Fast-forward a few years and Lux Modus is now leveraging this technology to break down the barriers to entry of collecting, processing and using 3D mapping by creating an affordable and easy-to-use 3D data collection platform. In 2021, it was looking for the opportunity to collect data on a light rail system to get a real-world dataset, so it was a natural fit to participate in the city's Living Labs once again.

"From the beginning it was very clear the [Living Labs](#) environment was designed to be easy to access for a business. This was very attractive. As a start-up, we do not have a lot of time or resources, so having access to city facilities for free, with limited paperwork, was

great," says Joseph Hlady, president of Lux Modus. "The city has truly made this an easy-to-use programme."

Rail-specific Software Algorithms

This particular lab brought in colleagues from [Calgary Transit](#) for coordination, with data captured along several lines of the extensive light rail transit (LRT) network. The Lidar trial included the use of an omnidirectional laser system which could be mounted in various configurations to collect just the data desired. The lab provided the opportunity to learn how to mount the collection system to a train and collect real data to try out new, rail-specific software algorithms, providing considerable value to product development and testing.

Monitoring the technology in action and gathering and storing large amounts of data and high-quality images during the trial also enabled the team to explore potential future use case scenarios. For example, from a rail infrastructure management perspective, the ability to analyse track or platform shifts over time with centimetre-level accuracy and to monitor changes along the right of way (ROW) could support safer and more efficient ongoing maintenance management in the future, both for the rail industry and for municipalities such as the city of Calgary.



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"Working with the Living Labs and being able to capture real-world data on the CTrain line has advanced our product development by about a year," says Hlady. "It has also saved us hundreds of thousands of dollars in simulation and product development research."

Breaking down Geospatial Data Barriers

Lux Modus is a Calgary-based, veteran-led company created in 2017 to disrupt the 3D mapping industry by breaking down the barriers to entry of collecting, processing and using 3D data. Developed out of the autonomous vehicle (AV) mapping industry, Lux Modus leverages advanced AV mapping technology to create an affordable and easy-to-use 3D data collection platform.

The city of Calgary's living lab ecosystem offers start-ups like Lux Modus a great way to test and trial their technology outside of the lab, with reduced costs and risks. The Living Labs programme continues to look for ways to break down local barriers to innovation, helping businesses and researchers achieve real-world testing to move their ideas to the next stage of development in a safe and effective way.



Calgary's Living Labs brought in colleagues from Calgary Transit for coordination, with data captured along several lines of the extensive light rail transit (LRT) network. (Image source: Calgary.ca / Calgary Transit)

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