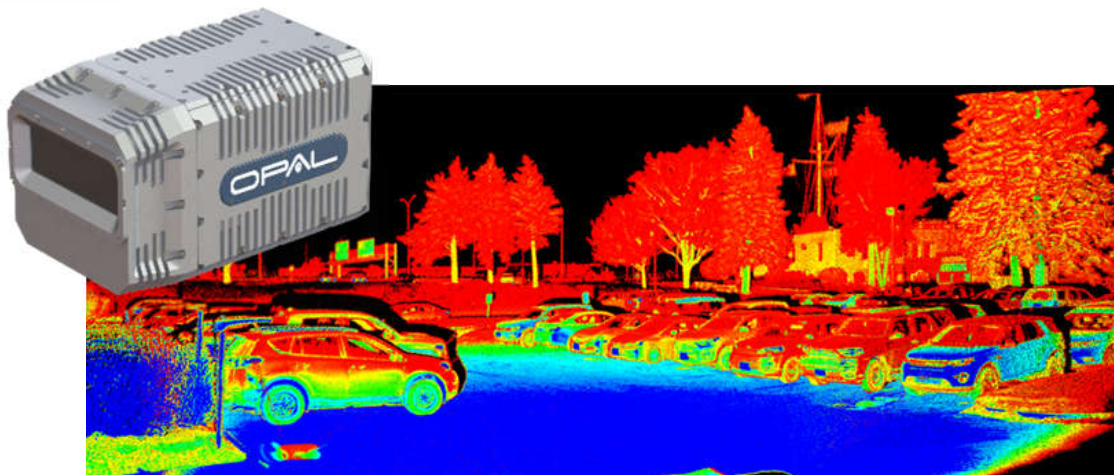


January 13, 2022

**LUMIBIRD CANADA, THALES AND LASSONDE SCHOOL AT YORK UNIVERSITY
WITH THE SUPPORT OF THE GOVERNMENT OF ONTARIO THROUGH THE
ONTARIO VEHICLE INNOVATION NETWORK,
SUCCESSFULLY DEMONSTRATE AUTONOMOUS RAIL VEHICLE RECOVERY**

- Lumibird Canada, Thales, and the Lassonde School of Engineering at York University announce the successful completion of the 30-month Ontario Train Autonomy Collaboration (OnTRAC) Project, furthering state-of-the-art technology in autonomous rail systems, with support from the Ontario Government through the Ontario Vehicle Innovation Network (OVIN).
- This project represents an important achievement for Canadian Industries and the Ontario Government, towards advancing the autonomy of rail vehicles, specifically in the areas of Obstacle Detection, Classification and Tracking (ODCT).
- This brand-new innovation contributes to the development of safe, autonomous urban rail systems, to make rail transport more efficient, less costly to operate, and capable of 24/7 functionality while minimizing accidents.



Ottawa, Canada – Lumibird Canada, an Ottawa-based designer and manufacturer of LIDAR systems; Thales, a global leader in digital technologies; and the Lassonde School of Engineering at York University, a Toronto-based research team with extensive expertise in 3D modeling of railway infrastructure, today announced the successful completion of the OnTRAC project, a 30-month program to develop, prototype, and validate the feasibility and functionality of a state-of-the-art sensor fusion system, built upon proven LIDAR technology. It is designed to be integrated with autonomous rail vehicles for the purpose of Obstacle Detection, Classification and Tracking (OCDT) in varying weather conditions.

Beginning in 2019, the partnership first performed an investigative study of the challenges and threats posed to autonomous rail vehicles, then developed a novel sensor architecture, resulting in a new prototype LIDAR system specifically designed for fleet (rail) vehicles, and finally concluded the project in 2021 with safety and operational assessment – by way of in-situ rail demonstrations – in typical and adverse weather conditions.



Leveraging the field-proven OPAL™ 3D LIDAR product family, the successful completion of this project resulted in an integrated suite of different vision sensors (especially a novel, scalable, 3D LiDAR design), with innovative deep learning and artificial intelligence (AI) algorithms for object detection, classification and tracking in a systems architecture that addresses the stringent safety needs and performance requirements for autonomous rail operation.

The novel system established in this project will support the development of safe, autonomous urban rail systems, to make rail transport more efficient, less costly to operate, and capable of 24/7 functionality while minimizing accidents due to lack of experience/training, fatigue, and other related effects which affect human operators. Furthermore, the ODCT technology and prototype developed and demonstrated under this OnTRAC project is also applicable to other connected and/or autonomous vehicle market segments including automotive, industrial (e.g. autonomous mining), and marine.

This project was made possible with support from the Government of Ontario, through the OVIN's R&D Partnership Fund.

Through OVIN, the project received \$1,130,000 in support from the Government of Ontario, with a further \$1,455,607 in industry contribution, for a total project value of \$2,585,607.

The results of this project provide the foundation for commercializing ODCT solutions as part of Canada's next-generation autonomous rail signaling and control products; and hence represent an important step in securing Canadian technology leadership and exports in the global autonomous systems market.

“The OnTRAC project is a great example of how Ontario is committed to supporting innovation and collaboration to accelerate the development of next-generation autonomous vehicle technologies,” said Vic Fedeli, Minister of Economic Development, Job Creation and Trade. “With support from our OVIN program, OnTRAC will help develop safe, autonomous urban rail systems which will strengthen economic growth and job creation across the province’s mobility sector.”

“Autonomous technologies have the potential to improve safety and make rail travel more efficient and reliable in varying weather conditions. Ontario is pleased to support this innovative project by OnTRAC through OVIN.” – Caroline Mulroney, Minister of Transportation

“Lumibird Canada, part of the Lumibird LIDAR Division, is pleased to have had the privilege to work with Thales, Lassonde School of Engineering at York University, and the OCI to not only advance autonomous rail technologies, but also to foster the development and growth of Science, Technology, Engineering and Math (STEM) employees through investment in Research and Development (R&D) here in the nation’s capital. It is our hope that the systems and products developed here will enable commercialization activities by all partners in the autonomous rail and other autonomous systems markets (like automotive), which will in-turn support the creation of hundreds of new jobs at both the collaborators and in its suppliers throughout Ontario.” – Nick Cristello, Operations Director, Lumibird Canada



“The OnTRAC project demonstrates the significant value that partnerships with start-ups and small- and medium-sized businesses can create for Ontario. Thales is committed to collaboration across all of our markets in Canada, and we are proud to have achieved this important milestone toward train autonomy together with Lumibird and York University. By combining our unique technological capabilities, we are offering valuable made-in-Ontario solutions to our customers.”—Alcino De Sousa, Vice President and Managing Director, Urban Rail Signalling, Thales

“Through the OnTRAC project, my research team at Lassonde School of Engineering has a unique opportunity to collaborate with Thales and Lumibird Canada, for exploring the ways that Artificial Intelligence (AI) can be used safely and reliably in rail transportation by addressing various deficiencies in current autonomous rail control and signalling technology. This initiative directly supports generating new skills, capabilities and opportunities for highly skilled scientists and engineering in Ontario’s fast-growing AI and Autonomous Systems & Robotics (RAS) industries. These new skills and competencies are critical facilitators for Ontario’s future global competitiveness in these key strategic technologies. The OnTRAC project is a significant step toward Ontario’s leadership in global autonomous train systems. – Dr. Gunho Sohn, Associate Professor in the Earth and Space Science and Engineering department at the Lassonde School of Engineering at York University.

About Lumibird Canada

Lumibird Canada, having been created in only 2019, is a new division of Lumibird SA; a worldwide photonics group specializing in LIDAR systems, lasers of all types and photonic components. Operating out of a 10,000 sq-ft facility in Ottawa, with more than 25 employees, Lumibird Canada is responsible for designing, developing, manufacturing and testing both Doppler and Time-of-Flight LIDAR systems. Working with customers in the Academic, Environmental, Marine, Military and Wind Industries, Lumibird Canada has increased revenue from less than \$250,000 in 2019 to more than \$3,000,000 in 2020. Projects such as this have enabled Lumibird to continue to expand its R&D capabilities – in both resources and infrastructure – to provide innovative, cost-effective and reliable LIDAR solutions to the Canadian and International markets.

About Thales Canada

A Canadian leader in research and technology, Thales Canada combines over 50 years of experience with the talent of more than 2,200 skilled people located coast-to-coast. With revenues of over \$640 million, Thales Canada offers leading capabilities in the defense, urban rail, civil aviation, digital identity and security sectors, meeting the most complex needs and requirements of its customers across all operating environments.

About Lassonde School of Engineering at York University

Located in the heart of the multicultural Greater Toronto Area, the Lassonde School of Engineering at York University is home to engineers, scientists and entrepreneurs, representing a diverse community of students, faculty, staff, alumni and partners. Lassonde is shaping the next generation of creators who will tackle the world’s biggest challenges and devise creative solutions through interdisciplinary learning opportunities. The research team at Lassonde has multidisciplinary experts with broad knowledge in 3D modeling of railway infrastructure, power lines, roads and buildings using LiDAR point clouds and extensive experience with computer vision, machine learning and physical remote sensing. The group has independently developed libraries and patented IP relating to multiple object detection, tracking and modeling of railway objects that was instrumental in the completion of this project.



About OVIN

The Ontario Vehicle Innovation Network (OVIN) is an initiative of the Government of Ontario, led by the Ontario Centre of Innovation (OCI), designed to reinforce Ontario's position as a North American leader in advanced automotive technology and smart mobility solutions such as connected vehicles, autonomous vehicles and electric and low-carbon vehicle technologies. Through resources such as research and development (R&D) support, talent and skills development, technology acceleration, business and technical supports, and demonstration grounds, OVIN provides a competitive advantage to Ontario-made automotive and mobility technology companies.

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