

LeddarTech®



Environmental Sensing
Solutions That Enable
Autonomous Vehicles
and Advanced Driver
Assistance Systems



A Leader in Environmental Sensing Solutions

LeddarTech is a leader in environmental sensing solutions for autonomous vehicles and advanced driver assistance systems.

Founded in 2007, LeddarTech has evolved to become a comprehensive end-to-end environmental sensing company by enabling customers to solve critical sensing and perception challenges across the entire value chain of the automotive and mobility market segments with its [LeddarVision™](#) sensor-fusion and perception platform.

LeddarTech delivers a cost-effective, scalable, and versatile LiDAR development solution to Tier-1 and 2 automotive suppliers and system integrators, enabling them to develop automotive-grade solid-state LiDARs based on the foundation of the [LeddarEngine™](#). LiDAR solutions based on this auto and mobility platform are actively deployed in autonomous shuttles, trucks, buses, delivery vehicles, robotaxis, and smart city/factory applications.

LeddarTech also offers technical consulting and R&D professional services in optics, electronics, and software to support its customers and partners product and system development leveraging Leddar sensing and perception technologies.

- Unique sensor fusion and perception solution for the automotive and mobility markets
- 14 generations of solid-state LiDARs based on the LeddarEngine™ platform
- Over 10 years of field-proven technology development and more than 40 000 sold
- Over 95 patented technologies (granted or pending)
- Scalable SoC and signal processing library as a platform for solid-state LiDARs
- Ecosystem partnerships to accelerate technology development and reduce risks
- Disruptive business model enabling faster widespread adoption
- Widely adopted LiDAR platform with Tier-1 and 2 automotive suppliers



Making a Difference Through Innovation

Our Mission

LeddarTech's mission is to improve safety and quality of life for travelers, commuters, workers, and mobility industry professionals by enabling applications that reduce traffic congestion, minimize the risk of road accidents, and improve the overall efficiency of road transport.

Our Values

Our corporate values set the roadmap for what we stand for, and are at the core of everything we do:

- **INTEGRITY:** We are guided by principles of fairness, honesty, and ethical conduct, and we hold ourselves accountable for our decisions.
- **PERFORMANCE:** We set ambitious goals and challenge ourselves to exceed them in meeting our individual and corporate objectives.
- **INNOVATION:** We challenge the status quo; we encourage creativity and thoughtful risk taking.
- **INSPIRATION:** We are passionate about what we do, and we encourage and cultivate inspiration through our behaviors and actions.
- **ADAPTABILITY:** We are agile and recognize change as an opportunity.

LeddarVision™ Sensor-Fusion and Perception Platform



Passenger cars



Robotaxis



Commercial vehicles



Autonomous shuttles

A Better Perception Paradigm for Autonomous Driving

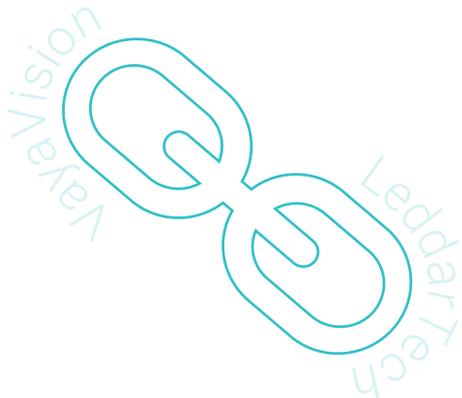
[LeddarVision](#) is a sensor fusion and perception solution that delivers highly accurate 3D environmental models for autonomous cars, shuttles, and more. The full software stack supports all SAE autonomy levels by applying AI and computer vision algorithms to fuse raw data from radar and camera for L2 applications and camera, radar, and LiDAR for L3-L5 applications.

Combining VayaVision and LeddarTech Technologies

Bringing together the technologies from LeddarSense™ and VAYADrive™ software, the [LeddarVision](#) software platform combines AI and computer vision technologies as well as deep neural networks with computational efficiency to scale up the performance of AV sensors and hardware essential for planning the driving path.

Raw Data Fusion with Upsampling

Combining the strengths of each sensor type, our state-of-the-art sensor fusion solution uses raw sensor data to enable the detection of the various objects in the scene, including vehicles, pedestrians, bicycles, drivable road, obstacles, signs, lanes, lane lines, and more. [LeddarVision](#) also detects very small obstacles on the road with better detection rates and less false alarms than legacy “object fusion” solutions. Unclassified obstacles are also detected, providing an additional layer of safety to the vehicle.



Creating the Only, Truly Open, Flexible, and Scalable Sensing Platform for All Automotive and Mobility Applications

LeddarTech[®]



VAYAVISION
A LeddarTech Company

LeddarSense[™]

- LiDAR sensor perception calibration
- Object detection & tracking
- Waveform-based classification

VAYADrive[™]

- Environmental perception software solution
- Raw data sensor fusion with upsampling
- State-of-the-art AI and computer vision
- Computational efficiency

LeddarVision[™]

- Best-in-class perception platform
- Custom embedded solutions
- Raw data fusion from multiple sensors
- LiDAR full-waveform analysis
- Context-aware algorithms



Detection of small objects absent in training sets



Depth data assigned to every pixel in camera picture



Accurate shape definition of vehicles, humans, and any other object

Automotive LiDAR Solutions

Powered by Leddar Technology

LeddarEngine

The Power Driving Automotive and Mobility LiDARs

At the core of our LiDAR platform, the LeddarEngine™ sets a new standard for integrated and customizable solid-state LiDAR solutions that are optimized for high-volume production. LeddarEngine consists of a suite of automotive-grade, functional safety certified SoCs working in tandem with proprietary LeddarSP™ signal processing software.

- Support of multiple LiDAR architectures
- Designed for functional safety (ISO-26262 ASIL-B)
- Automotive-grade (AEC-Q100)
- Multi-SoC capability
- Support of linear MEMS

LeddarEngine enables automotive Tier-1 suppliers and system integrators to design their own differentiated LiDAR solution by providing the technology, tools, and resources they need to meet the specific requirements of various advanced driver assistance systems (ADAS) and autonomous driving applications (AD).



Passenger cars



LeddarEngine LCA2

For short-to medium-range LiDARs

32 channels
1.6 billion samples/sec.
Up to 48,000 waveforms/sec.



LeddarEngine LCA3

For medium-to long-range LiDARs

64 Channels
5.12 billion samples/sec.
Up to 935,000 waveforms/sec.

Auto and Mobility LiDAR Platform

The [Auto and Mobility Platform](#) is at the heart of LeddarTech's business model. This versatile, scalable LiDAR platform for Tier-1 suppliers and AD system integrators enables the development and mass deployment of ADAS and autonomous driving solutions for automotive and mobility OEMs, in collaboration with the [Leddar Ecosystem](#) partners.

<p>LeddarVision™</p> <p>Perception software</p> 	<p>LeddarEngine™</p> <p>Core LiDAR software and hardware components: LeddarCore™ SoC and LeddarSP™ digital signal processing software</p>  <p>LeddarSP™</p>	<p>Leddar™ Modules</p> <p>LeddarEngine-based modules</p> 
<p>LeddarEngine™ Tier-1s</p> 		<p>Product Partner</p> 
<p>LiDAR Application and Sensor Development Tools and Services</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div data-bbox="126 730 277 828">  <p>Architecture, design files, and documentation</p> </div> <div data-bbox="327 730 466 828">  <p>Evaluation kits</p> </div> <div data-bbox="541 730 680 828">  <p>LiDAR development tools</p> </div> <div data-bbox="718 730 856 828">  <p>LiDAR development services</p> </div> <div data-bbox="869 730 1008 828">  <p>Perception software kit</p> </div> <div data-bbox="1020 730 1159 828">  <p>ADAS/AD development services</p> </div> </div>		
<p>Qualified Network of Key LiDAR Components, Tools, and Complementary Product Offering</p>  <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 10px;"> <div data-bbox="396 909 548 982"> <p>• APTIV •</p> <p>HAMAMATSU PHOTON IS OUR BUSINESS</p> </div> <div data-bbox="554 909 636 998"> <p>flex</p> <p>MARELLI</p> </div> <div data-bbox="642 909 737 998"> <p>OSRAM</p> <p>First Sensor[®]</p> </div> <div data-bbox="743 909 837 998"> <p>Valeo</p> <p>SUNNY OPTICAL TECHNOLOGY</p> </div> <div data-bbox="844 909 938 998"> <p>BlackBerry</p> <p>QNX</p> </div> <div data-bbox="945 909 1039 998"> <p>faurecia clarion</p> <p>ST life.augmented</p> </div> <div data-bbox="1045 909 1140 998"> <p>RENASAS</p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 10px;"> <div data-bbox="478 1006 573 1063"> <p>INTEMPORA</p> <p>TRILUMINA</p> </div> <div data-bbox="585 1006 680 1063"> <p>LASERTEC LIDAR SOLUTIONS</p> <p>POLYSYNC</p> </div> <div data-bbox="693 1006 787 1063"> <p>VIAYI New Solution</p> <p>EXCELITAS LIDAR SOLUTIONS</p> </div> <div data-bbox="800 1006 894 1063"> <p>ANSYS</p> </div> <div data-bbox="907 1006 1001 1063"> <p>db</p> </div> <div data-bbox="1014 1006 1108 1063"> <p>AKOIA LIDAR SOLUTIONS</p> </div> </div>		

Scalable, Versatile

- Software-based LiDAR solution
- Single architecture covers various use cases
- Architecture and software compatibility enables central architecture or local processing
- Meets high-volume production requirements
- Ecosystem partnerships support the rapid deployment of enabling technologies
- Compatible with a variety of LiDAR technologies

Optimal Cost/Performance

- Allows the selection of building blocks and components according to market needs
- Enables higher performance from lower cost, standard components

Automotive-Grade

- SoC architecture and software designed to meet ISO 26262 functional safety standards
- Roadmap supports multiple generations of automotive integration meeting AECQ-100

Mobility LiDAR Sensors

Powered by Leddar Technology

LeddarTech serves the mobility market by providing new designs of high-performance solid-state LiDAR modules for use in a variety of vehicles, including autonomous shuttles, trucks, buses, delivery vehicles, and robotaxis.

LiDAR modules such as the Leddar Pixell demonstrate all the power and possibilities of the LeddarEngine, the LiDAR core for automotive and mobility applications based on our patented signal acquisition and processing and highly integrated LiDAR SoC.



Robotaxis



Autonomous
delivery vehicles



Commercial
vehicles



Autonomous
shuttles



Industrial
vehicles

Leddar Pixell

The Most Robust LiDAR for Mobility Applications

The most robust LiDAR on the market, [Leddar™ Pixell](#) enables a complete detection “cocoon”, providing dependable object and vulnerable road user detection as well as exceptional robustness and durability. Designed from the ground up for operation in the harshest mobility environments, the heavy-duty Leddar Pixell complies with demanding industry standards for resistance to shock, vibration, and dust, delivering superior lifespan and reliability. As such, this 3D solid-state LiDAR represents the ideal solution for commercial, public transit, military, and industrial vehicles’ ADAS and AD applications.

- 100% solid-state design
- Fanless IP67 enclosure
- Best-in-class shock and vibration resistance
- Wide operating temperature range
- Impact-resistant windows
- Automotive-grade connectors



Mobility LiDAR Sensors

Powered by Leddar Technology



Autonomous
delivery vehicles



Commercial
vehicles



Autonomous
shuttles



Industrial
vehicles



Leddar Vu8

8-Segment Solid-State LiDAR Sensor Module

[Leddar Vu8](#) is an affordable, versatile solid-state LiDAR sensor module that delivers exceptional detection and ranging performance in a small, robust package. Leddar Vu8 modules provide the ability to detect and track multiple objects simultaneously over 8 distinct segments with superior lateral discrimination capabilities.

- Detection range up to 185 m
- Compact and lightweight
- Various beam options for optimized field of view



Leddar M16

16-Segment Solid-State LiDAR Sensor Modules

[Leddar M16](#) sensor modules are proven solid-state LiDAR solutions that combine wide-beam flash illumination with 16 independent detection segments to simultaneously deliver rapid, continuous, and precise detection and ranging for multiple objects along with excellent lateral discrimination.

- Detection range up to 165 m
- Proven reliability for indoor and outdoor operation
- Various beam options for optimized field of view

Specialty LiDAR Sensors

Powered by Leddar Technology



ITS



ITS



Drones



Industrial
automation

Leddar d-tec™

Above-Ground Stop-Bar Detection System

The [Leddar d-tec](#) is a LiDAR-based stop-bar detection system offering advanced sensing capabilities for traffic light management, representing the perfect alternative to legacy induction loop detectors. The Leddar d-tec provides accurate and reliable detection of all types of traffic (vehicles, bicycles, motorcycles, pedestrians) in all weather and lighting conditions.



Leddar T16

Solid-State LiDAR Traffic Sensor

Packaged in a weatherproof housing, the powerful [Leddar T16 Traffic Sensor](#) is specifically designed for traffic management systems—from city to highway applications. It offers cost-efficient and highly accurate vehicle detection for various Intelligent Transportation System (ITS) applications, such as free-flow electronic tolling, traffic monitoring, and law enforcement.



LeddarOne™

Single-Segment LiDAR Sensor Module

The [LeddarOne](#) sensor module is dedicated to single-point detection and precise distance measurements. This low-cost module integrates patented Leddar digital signal processing technology for reliable performance at distance ranges up to 40 m.



Leddar IS16

Industrial Solid-State LiDAR Sensor

Specifically designed for the industrial market, the [Leddar IS16](#) is a robust, multi-segment flash LiDAR sensor that delivers consistent performance and reliability in the harshest conditions. With its weather-resistant enclosure, this solid-state LiDAR is perfectly suited to both outdoor and indoor applications.



Leeddar Technology:

The Key Enabler for Mass-Market LiDAR Deployments

Leeddar is LeeddarTech's proprietary LiDAR technology which provides advanced LiDAR signal acquisition and processing to deliver significant and distinct cost and performance advantages. Its optimized light signal digitization and signal processing expands the sampling rate and time resolution, and recovers distance, reflectivity, and quality information of objects. Through mitigation of interference, environmental conditions, and other limiting conditions intrinsic to traditional LiDAR sensors, Leeddar provides highly reliable detection and ranging to the automotive and mobility market.

At the core of our LiDAR platform is the LeeddarEngine, which is supported by more than 95 patents (granted or pending). The technology stems from more than a decade of R&D by leading engineers and scientists in the field and has been validated and optimized through various commercial deployments in challenging environments.

Leeddar Benefits

Higher sensitivity and range, for unmatched performance

Leeddar's cleaner, digitized signal enables detection of weaker signals for significantly increased range using existing standard technology/components.



Less signal degradation, providing high robustness in inclement weather and changing light conditions

Multi-pulse measurement method statistically increases quality of measurements and full-waveform processing ensures high adaptability of sensors in all conditions.



No interference from sensors' overlapping fields of view or from other light sources

Multi-pulse measurement method combined with low duty cycle and spectrum spreading minimizes mutual sensor interference. Additional intelligent interference rejection enabled by full-waveform processing.



Enabling enhanced object detection, classification, and tracking

Detection segments provide complete sensing of the environment and better long-range object detection, classification, and tracking and with less data compared to point-based methods.



Affordable solid-state LiDAR suited to large-scale deployment

Leveraging affordable components and designed with no moving parts, Leeddar-based sensors are designed for large-scale automotive grade production and deployment.



The Leddar Ecosystem

The Leddar™ Ecosystem comprises a select group of world-class partners, suppliers, and collaborators that support the customer development of automotive sensing solutions for ADAS and autonomous driving applications.

In tandem with LeddarTech, The Ecosystem provides technical expertise, components, software, tools, and services, leveraging a hardware-agnostic platform that is both open and scalable.

Members are prequalified for integration with LeddarTech's LeddarEngine platform and LeddarVision sensor fusion and perception stack.

This collaborative approach maximizes design agility and reduces cycle time and costs, leading to a shorter time-to-market, reduced risks and a faster path to high-volume commercial deployments.



Leddar
ECOSYSTEM

“TOGETHER, WE CAN SCALE
THE MARKET THROUGH
COLLABORATION AND
HANDS-ON ENGAGEMENT”

STRATEGIC PARTNERS

RENESAS

• APTIV •

MARELLI

flex

OSRAM

SUNNY OPTICAL
TECHNOLOGY

STI
Authorized
Partner

First Sensor
is now part of

TE
connectivity

Valeo

STRATEGIC SUPPLIERS

BlackBerry QNX

clarion

HAMAMATSU
PHOTON IS OUR BUSINESS

RENESAS

ECOSYSTEM COLLABORATORS

INTEMPORA
AUTOMOTIVE SOFTWARE SOLUTIONS

LASERTEL
a LEONARDO company

EXCELITAS
TECHNOLOGIES

Anslys

VIAMI
Viavi Solutions

AKKA
SOLUTION FOR
TECHNOLOGIES

TRILUMINA

POLYSYNC

AUTONOMOUS
Driving together for the world's best technologies™

SEOUL
ROBOTICS

db
DRIVEABLES

Engage With LeddarTech – Virtually or in Person

Digital Events

-  **Move America**
September 1-2, 2020
-  **OSA Congress**
October 14, 2020
-  **Sensor & Radar Systems Europe**
Scale-Up 360/ October 14-15, 2020
-  **21IC webinar**
EETech/ October 20, 2020
-  **All about Circuits webinar**
EETech/ October 27, 2020
-  **Autonomous Vehicles-Global**
November 4-5, 2020
-  **Smart City Experience**
November 5, 2020
-  **The Autonomous Chapter Event-
Safety & Sensor Fusion**
November 5, 2020
-  **DVN LiDAR Conference**
November 17, 2020
-  **AutoSens Detroit**
November 18, 2020
-  **The Sensor Show**
December 8-11, 2020
-  **Virtual Sensor Week**
December 8-11, 2020
-  **CES 2021**
January 7-10, 2021
-  **Move America Virtual**
March 7-8, 2021

In-Person Events

-  **CES 2020**
Shenzhen, China/ September 9-11, 2020
-  **Auto Sensors & Electronics Summit**
Berlin, Germany/ February 17-19, 2021
-  **Tech.AD Europe**
Berlin, Germany/ February 24-26, 2021
-  **ADAS LiDAR Automotive Conference**
Detroit, USA/ March 10-11, 2020
-  **Smart Mobility**
Jerusalem, Israel/ April 29-30, 2021
-  **TU-Automotive**
Detroit, USA/ May 25-26, 2021
-  **SSI Conference**
Brussels, Belgium/ June 15-16, 2021
-  **PIC Conference**
Brussels, Belgium/ June 15-16, 2021
-  **Detroit Auto Show**
Detroit, USA/ September 24-26, 2021

Consult leddartech.com/events for complete listings

Associations and Memberships

APMA – Automotive Parts Manufacturers Association of Canada

AQT – Association québécoise des technologies

Autotech Council – Better and faster innovation

CCI – Council of Canadian Innovators

CCIQ – Québec Chamber of Commerce and Industry

CTA – Consumer Technology Association (USA)

FCCQ – Fédération des chambres de commerce du Québec

InnovÉÉ – Innovation in Electrical Energy (Québec)

INO – National Optics Institute

MIPI Alliance – Mobile Industry Processor Interface Alliance

Propulsion Québec – Intelligent and Electrical Transports

Québec Innove – Network for Acceleration of Innovation



SAI GLOBAL
ISO 9001
Quality

ISO 9001:2015 Certified Quality Management Systems certification

Since January 2019, LeddarTech's management system is certified to ISO 9001 by SAI Global, a leading global management systems certification body.

Awards & Recognitions



Specialized Expertise, Global Presence.



LeddarTech®

CANADA – USA – AUSTRIA – FRANCE – GERMANY – ITALY – ISRAEL – HONG KONG – CHINA

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