



Austin Russell

Founder & CEO

Please see Legal Notices at the end of this presentation for explanation of Forward-Looking Statement and important cautions.



American drivers spend
93 billion hours driving over
3 trillion miles per year



1.2 million

Annual fatalities from vehicle collisions globally.



1 in 100

of us will tragically lose our life in a car crash.



Vehicles with current camera and radar-based
ADAS systems experienced collisions in

70%

of pedestrian Automatic Emergency Braking
scenarios.



\$1.4 trillion

Estimated annual value of societal harm
from motor vehicle crashes in the US.

Safety Standards: Other Forms of Transportation

The shocking Boeing 737 Max incident, briefly explained

A door plug falling mid-flight has renewed scrutiny of air travel and of Boeing's planes.

By Li Zhou | @lizhou.com | Updated Mar 13, 2024, 5:40pm EDT

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Boeing CEO Dave Calhoun to step down in wake of ongoing safety problems

By Chris Isidore, CNN
7 minute read · Updated 2:04 PM EDT, Mon March 25, 2024

f X e o



MORE FROM CNN

- Opinion: How Boeing lost its way
- Former JetBlue CEO Robin Hayes to lead Airbus in North America
- Hertz CEO out following electric car 'horror show'

Transportation Fatalities Last Year

Global Automotive Fatalities: 1,190,000

Global Airline Fatalities: 72

AV Industry: How Replacing Drivers Was Promised



The Reality

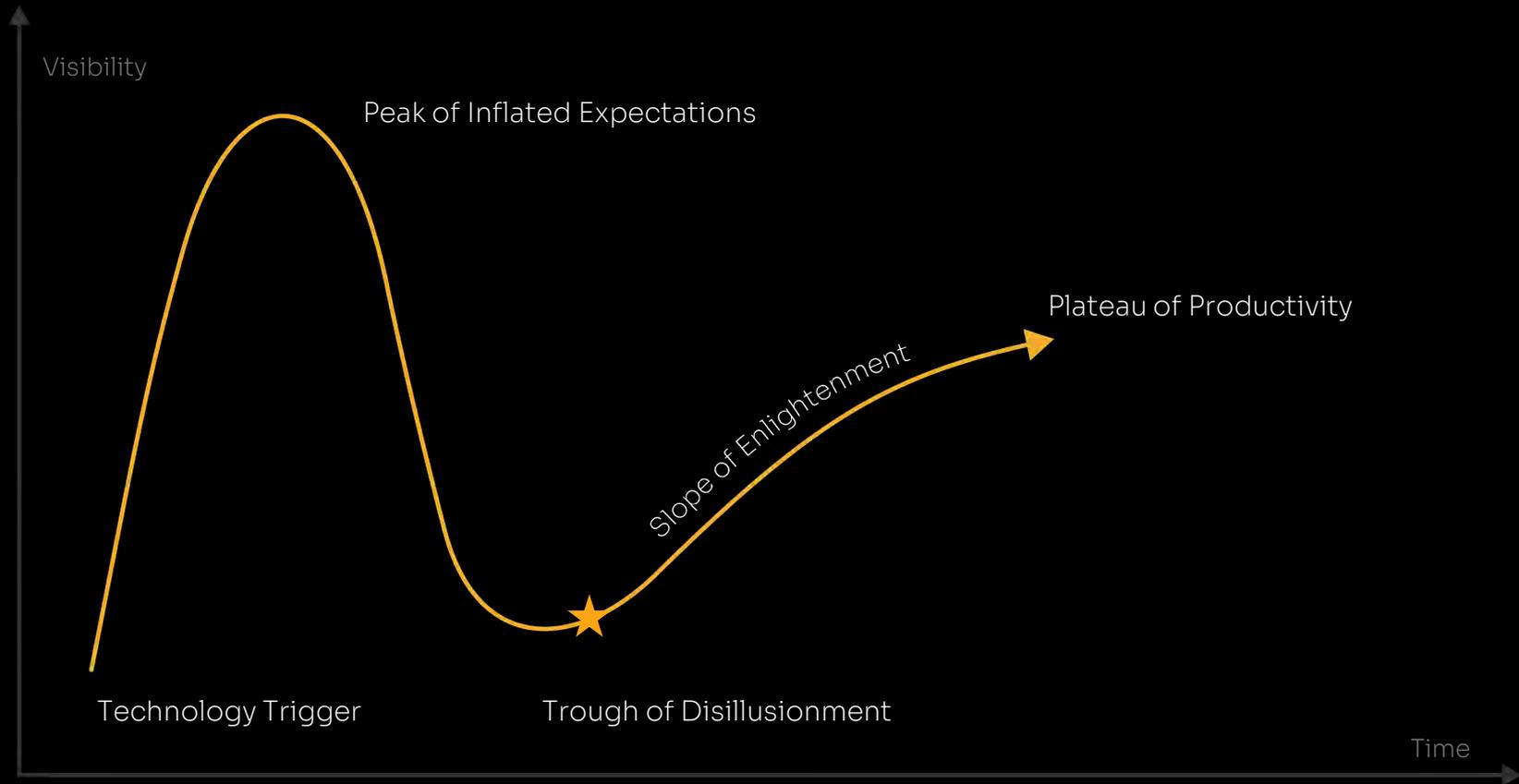


INSIDEEVs



The San Francisco Standard

Gartner Cycle for Autonomous Vehicles



Source: Gartner; Star indicates current estimated position of industry; Estimated timeline by Gartner to Plateau = 5-10 years, not to scale



Luminar: **Enhancing** the driver

Next Generation Safety and Autonomy





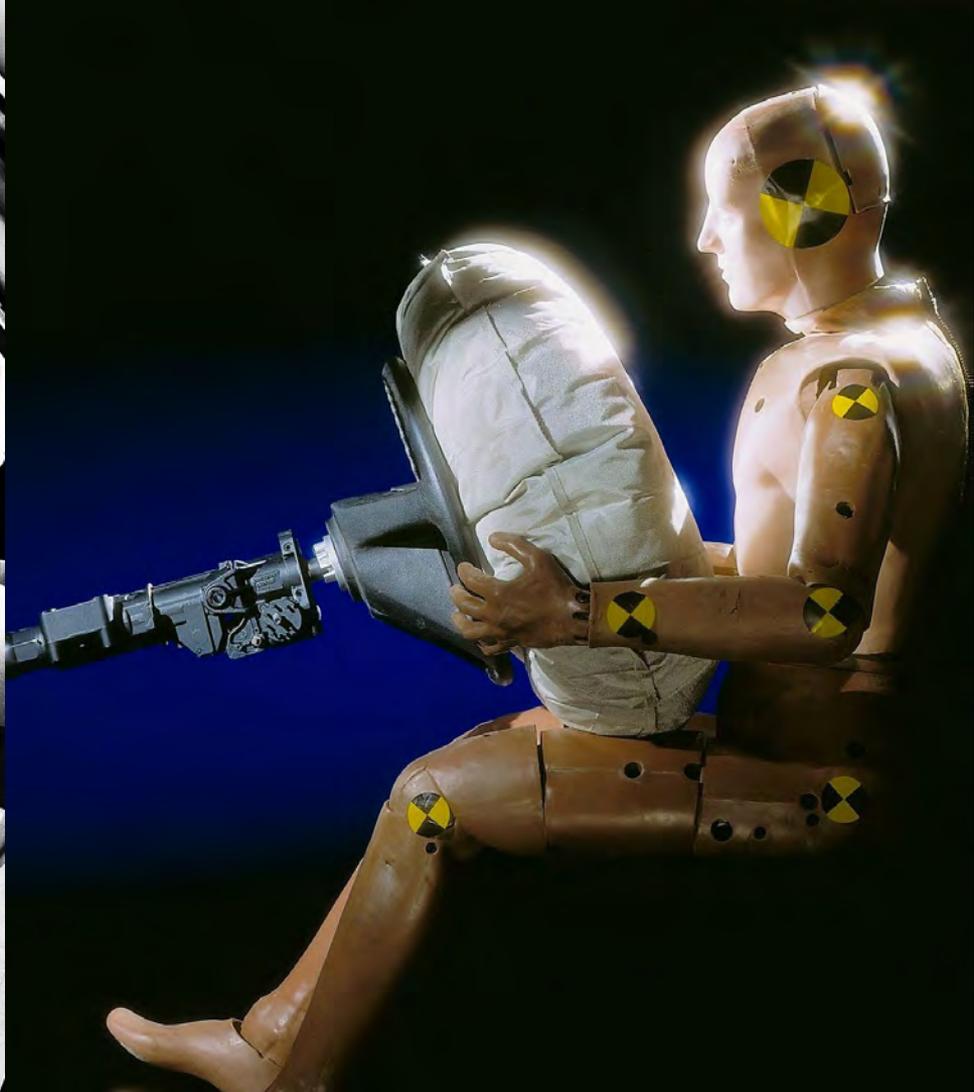
Enhancing safety = **Lives saved**



Enabling autonomy = **Time saved**

The New Era begins with **Volvo.**





ALL CARS HAVE SAFETY FEATURES. VOLVO PUTS SAFETY FEATURES ON ITS SAFETY FEATURES.

When it comes to safety, no one demands more of Volvo than Volvo. For example, all cars are required by law to have two brake circuits, so if one circuit fails, you have another.

Volvo designed two triangular circuits controlling three wheels. So if half your car you still have about 80% of your stopping power. If a headlight or taillight burns out, Volvo's your car should be the first to tell you. A warning light on the dash.

All car seats have head rests to reduce the chances of whiplash. Volvo's head rests have openings to increase your chances of seeing what's coming up behind you. Rear door locks are a standard safety item. Volvo's beyond the standard and makes them child-proof.

When you consider these, and all of Volvo's other features—4-wheel power-assisted disc brakes, 3-spoke belts front and back, window defoggers front and rear ends, a passenger compartment surrounded by six steel pillars designed to support seven tons—you may decide that Volvo is the most secure place to invest your money. That's easily understood. Safety always appeals to people who think.



VOLVO
The car for people who think.

WE DESIGN EVERY VOLVO TO LOOK LIKE THIS.

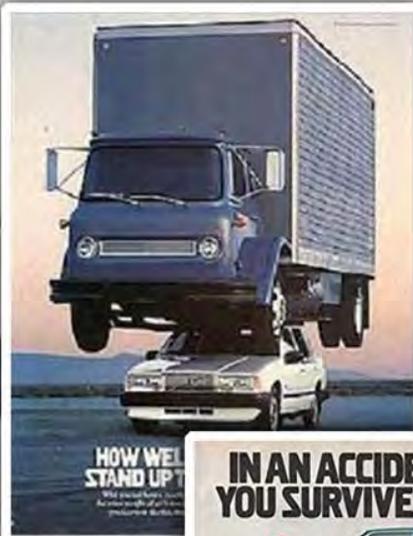


You're looking at a perfect Volvo. A Volvo that performed exactly as our safety engineers designed it to. Its front and rear ends, for example, collapsed on impact. As a result, much of the crash energy was absorbed instead of being passed on to the passengers. The car's middle section, however, didn't collapse. That's because the entire passenger compartment is surrounded by Volvo's unique "safety cage." Made of six box section steel pillars, this protective housing is strong enough to support the weight of six Volvos.

But the passengers of this car were also protected in ways you can't see. Because inside are such standard features as a driver's side Supplemental Restraint System, a collapsible steering column and, of course, 3-point seat belts, front and rear. Every Volvo is designed to help protect its passengers in all these ways. And, as a result, will look remarkably similar to this one after being in the same type of accident. If you're concerned about safety, you can't find a more beautiful car.

VOLVO
The car for people who think.

CALL TOLL FREE FOR DEALERSHIP OF THE VOLVO 1-800-433-0000. © 1986 VOLVO NORTH AMERICA CORPORATION.



HOW WE STAND UP TO
Wild wind gusts. Crushes the average weight of an 18-wheeler. Produces 100 lbs. of force.

IN AN ACCIDENT, COULD YOU SURVIVE YOUR CAR?



WHEN'S THE LAST TIME YOU HEARD A SALESMAN TALK ABOUT SAFETY?

You'll hear a lot of gushing about gas economy. And expensive talk about smaller-size cars. But rarely will you hear the man who's trying to sell you, tell you what happened when his car was test-crashed into a barrier.

But in our showroom, you will. Our people sell Volvos and their living is based in good measure on explaining to people like yourself the protection built into every Volvo they show you.

So your salesman will explain why Volvos come with four, not two, power disc brakes. And how the two independent braking circuits each work on a total of three wheels. (The U.S. government is aware of Volvo's crash-worthiness too. They've bought 24 Volvos for a crash-testing program that will help establish safety standards for cars of the future.)

He'll even point out a little thing like the defoggers/defrosters that help clear the front side windows. Because when you have traffic thundering to the right and the left of you, it isn't a little thing.

So whether you come in to inspect the luxurious new Volvo 260 series or one of the new 240s, he has a lot of explaining to do. And it won't hurt you.

VOLVO
The car for people who think.



Always wear your seat belt and use the Volvo safety cage. **VOLVO**

Volvo – A History of Safety Firsts

Three Point
Safety Belt

Side
Impact
Airbags

Inflatable
Curtain

Blind Spot
Information
System

First
Introduction
of Mobileye

**Luminar
LiDAR
Introduction**

1959

1991

1998

2003

2007

2024

A dark blue Volvo SUV is shown in a studio setting. Two men are standing next to it. The man on the left, who is bald and wearing a dark sweater, is pointing towards the roof of the car. The man on the right, who has red hair and is wearing a green jacket, is pointing towards the hood of the car. The background consists of vertical wooden slats.

Volvo Cars

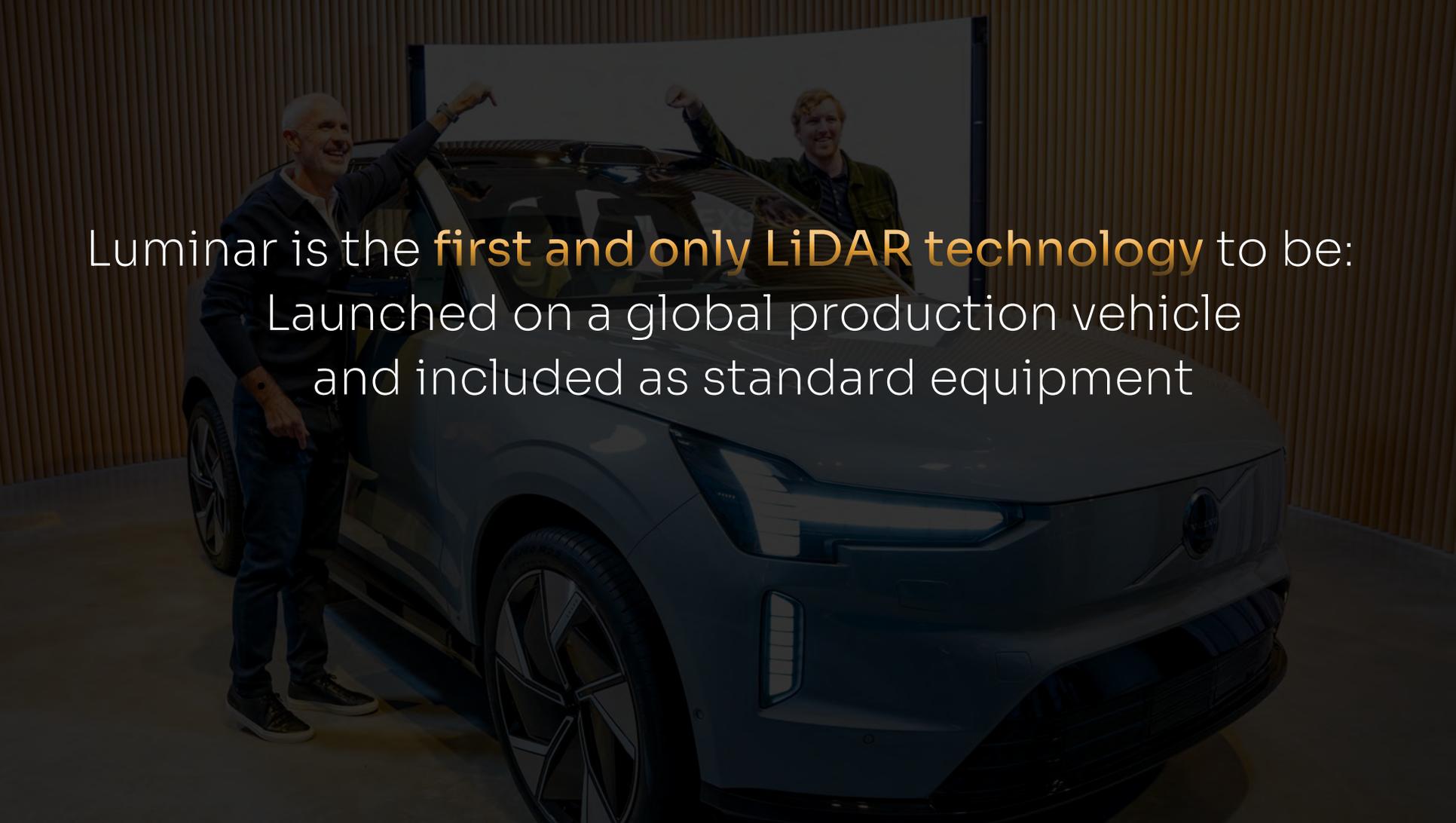
Began working with Luminar in 2017



In 2020, Volvo Cars officially decided to put
Luminar technology on **production cars**
in low volume

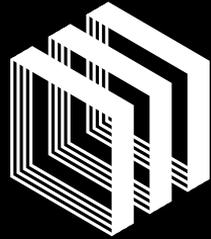


By 2021, **Volvo Cars** had selected **Luminar** as
standard for the EX90

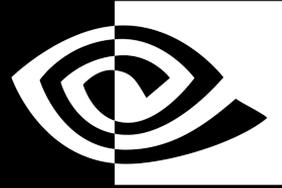
A dark blue Volvo SUV is shown in a studio setting. Two men are standing next to the car, both with their arms raised in celebration. The man on the left is older with grey hair, wearing a dark jacket and pants. The man on the right is younger with red hair, wearing a green jacket. The car is a modern SUV with a sleek design. The background is a wall with vertical wooden slats. The overall lighting is dim, with a spotlight effect on the car and the men.

Luminar is the **first and only LiDAR technology** to be:
Launched on a global production vehicle
and included as standard equipment

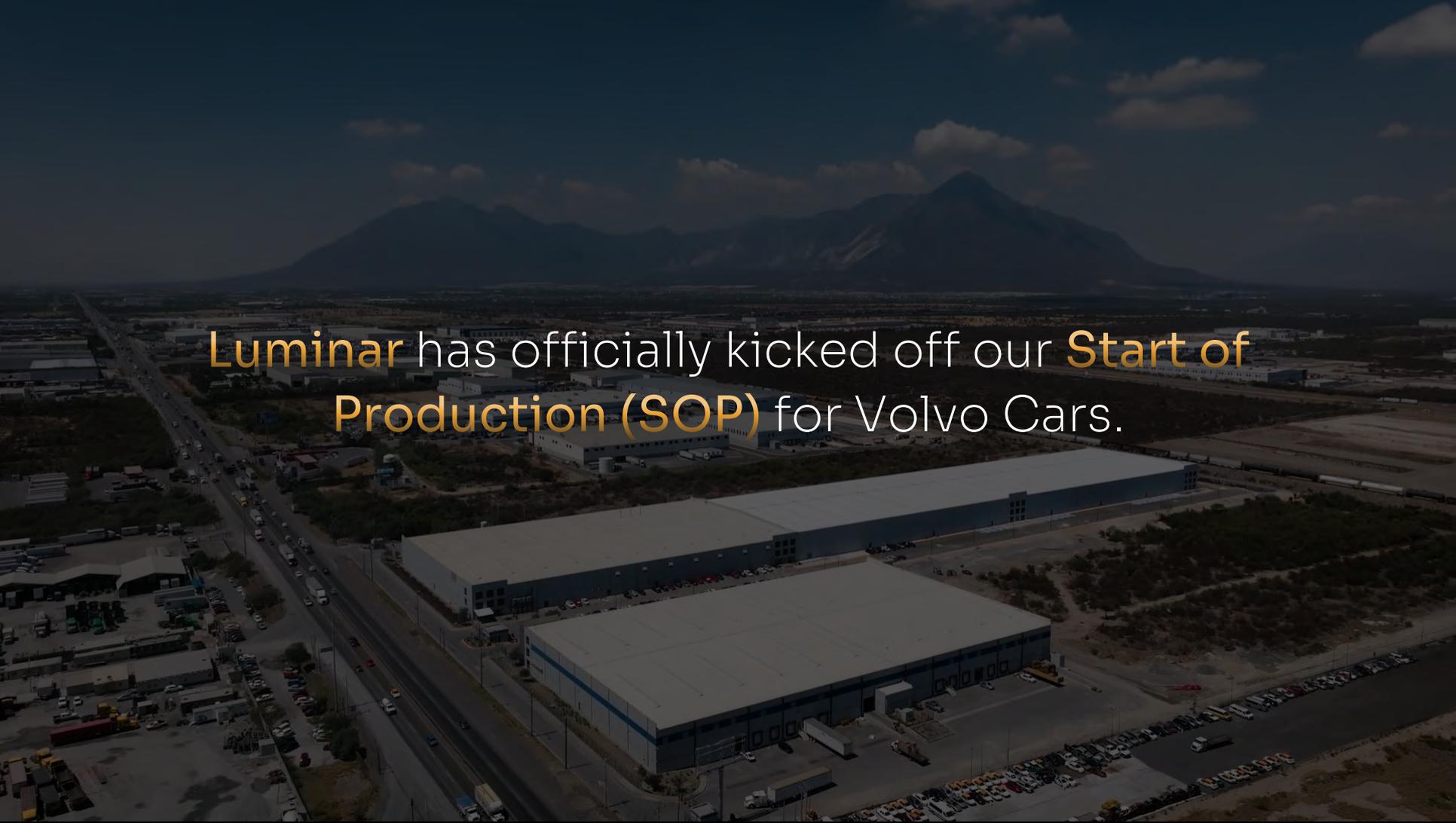
Volvo EX90 integrating NVIDIA and Luminar



LUMINAR



NVIDIA

An aerial photograph of a large industrial complex, likely a car manufacturing plant, with several large blue and white buildings. The facility is situated in a valley with mountains in the background under a cloudy sky. A multi-lane highway runs along the left side of the complex. The text is overlaid on the image in a white and gold font.

Luminar has officially kicked off our **Start of Production (SOP)** for Volvo Cars.

This is the first time our **multi-billion-dollar**
Order Book will begin to
massively convert into revenue.



Going Global

Deploying across **North America, Europe, & Asia**
over the **next year**.

A photograph of a modern, single-story office building with large glass windows and a concrete sidewalk. The building is illuminated from within, and the sky is a deep twilight blue. The Luminar logo is visible on the upper part of the building's facade. The text is overlaid on the image in a white and gold color scheme.

Luminar expects to ship **>5x more product** in
the 2nd half of this year
than in our **12-year history combined**.

2020

>100

Estimated number of
LiDAR efforts¹

Now

<10

LiDAR companies that
successfully developed
and delivered

1

LiDAR industrialized,
launched & standardized
for global production



Established a **global supply chain network**
to enable **mass adoption**

Diversified global contract manufacturing partners



Assembles and calibrates LiDAR and completes final testing.



Assembles transceiver based on design and components from Luminar.



Will assemble and calibrate LiDAR and completes final testing.



Luminar now awarded on **25+ commercial programs.**



Note: See most recent 10-K filed with SEC for more details on awarded commercial programs

EX90 kicks off a domino effect for vehicle launches



Powertrain Landscape

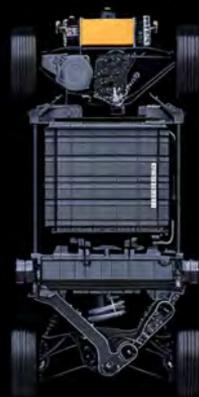
ICE



Internal Combustion
Engines

71%

EV



Electric
Vehicles

16%

HEV



Hybrid Electric
Vehicles

13%

Powertrain Landscape

ICE

EV

HEV

Luminar is powertrain agnostic.

Planned into programs across all major powertrains.

Internal Combustion
Engines

71%

Electric
Vehicles

16%

Hybrid Electric
Vehicles

13%

Automotive Adoption Cycles

3pt Safety Belt



Airbags



Electronic
Stability Control



Traction Control



Automatic
Emergency Braking



1960s

1970s

1980s

1990s

2000s

2010s

2020s

Note: Gradient shading indicates introduction to standardization of technology





Ali Shahkarami

Global Head of
Property & Casualty Solutions
Swiss Re

The **Swiss Re** accidents database is based on accidents statistics with **1 billion** vehicle years of exposure and **70 million insurance claims**.

The results of safety testing with Luminar technology:

Up to **27% reduction** in frequency of **accidents**

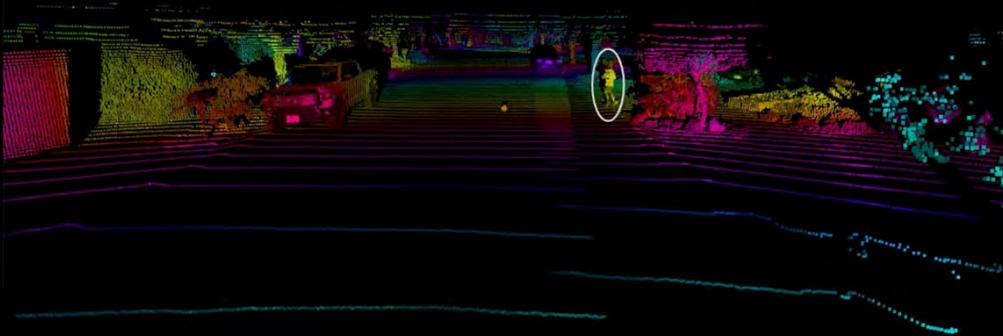
Of the accidents that still happen, **reduction in severity by up to 40%**

LiDAR is critical not just for enabling autonomous capabilities and higher-level assisted driving functions, but also helps **the most basic levels of vehicle active safety.**

Camera



Luminar Lidar



Luminar LiDAR can accurately sense where objects are in 3D, compared to cameras that 'guess' from 2D data

Luminar can also see clearly at night, and inclement weather where cameras cannot

Substantial Value Creation from Insurance Savings

\$2,500

Average US annual vehicle insurance premium, including insurance loss

\$25,000

Average cost of insurance to consumer over 10 year vehicle lifetime

Up to

\$900

Insurance savings per annum based on safety efficacy study by Swiss Re¹

Up to

\$9,000

Average insurance savings to consumer over 10 year vehicle lifetime

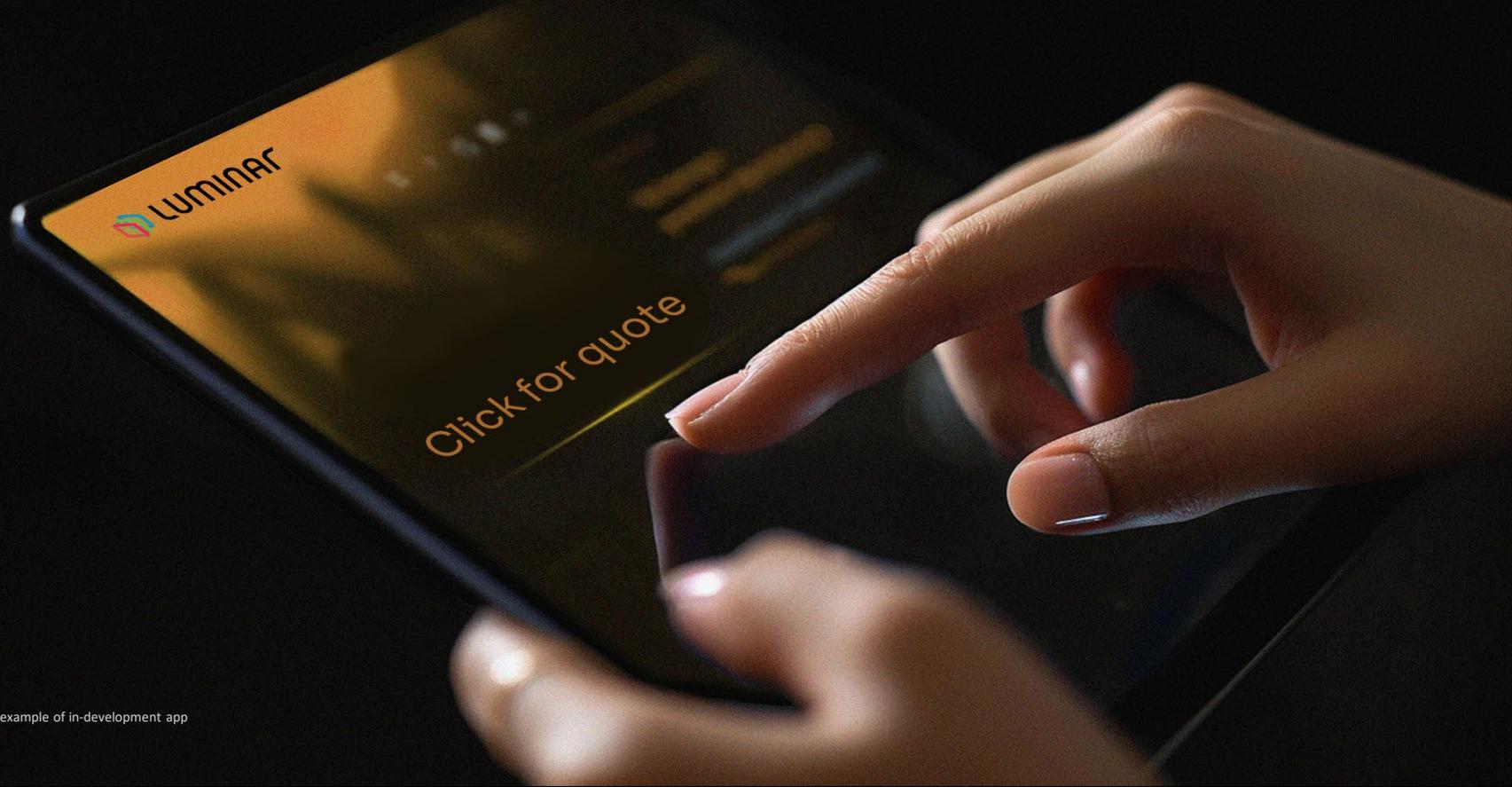
Based on Swiss Re risked-based testing of Luminar's LIDAR & software driving system. Assumes 27% reduction in relative frequency of collisions for Luminar-equipped vehicles and 40% reduction in severity of collisions when occurring. Calculation = $27\% + (73\% \times 40\%) = 56\%$ implied insurance savings of collisions for Luminar-equipped vehicles. $\$2,500$ average insurance premium \times 65% average insurance loss = $\$1,625$. $\$1,625 \times 56\% = \910 implied annual insurance savings for Luminar-equipped vehicles.

Luminar is a **licensed insurance agent** in **12 states** today¹, with plans to expand nationwide and internationally next year



Footnote: ¹12 states currently cover ~40% of US population

Partnered with our first two digital platforms to distribute Luminar insurance



Note: Illustrative example of in-development app

Regulatory **headwinds** versus Regulatory **tailwinds**

Waymo's autonomous car up in flames: vandalism sparks debate over self-driving safety

Social media videos showed the EV catching fire and emitting a mass



 **REUTERS** World Business Markets Sustainability Legal Breakingviews Technology

Driverless car problems are outpacing liability laws

← NEWS

NHTSA Proposes Automatic Emergency Braking Requirements for New Vehicles

Technology would significantly reduce fatalities and injuries

☰  **NEWSROOM** 🔍 ♿ > 📄

🚗 Automotive

Braking Bad: Automatic Emergency Braking Absent When You Need It Most

AAA research reveals AEB is better at spotting stationary vehicles, but speed poses challenges

The New York Times

Cruise Says Hostility to Regulators Led to Grounding of Its Autonomous Cars



Unions Call for Federal Crackdown of Automated Vehicles

NOVEMBER 9, 2023

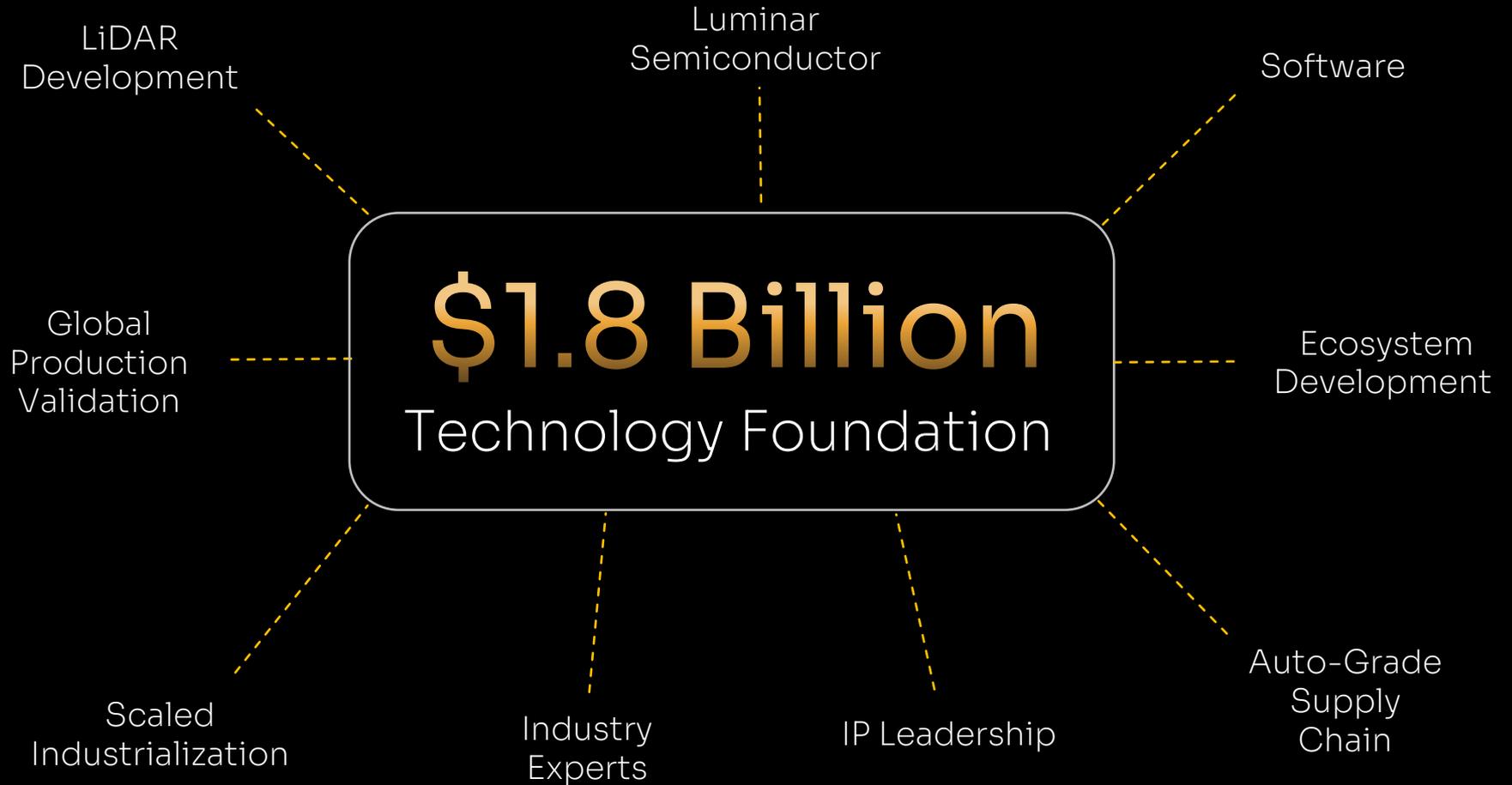
← NEWS

NHTSA and FMCSA Propose New Safety Standard Requiring Automatic Emergency Braking Systems in Heavy Vehicles

Proposed rule could prevent over 19,000 crashes, save 155 lives, and prevent thousands of injuries every year

4 Factors Driving Standardization: A Summary

1. Consumer Demand for Safer Cars
2. Automaker Adoption Cycles of New Technologies
3. Regulatory Pressure & Mandates
4. Insurance Savings to be Captured





Insurance



Swiss Re



Consumers



OEM Partners



Platform Partners

Qualcomm



mobileye

ecarX



Software Stack



scale



Series Production



fabrinet



touching tomorrow, today



LiDAR Systems



Transceiver



Semiconductors



Luminar
end-to-end
ecosystem
stack

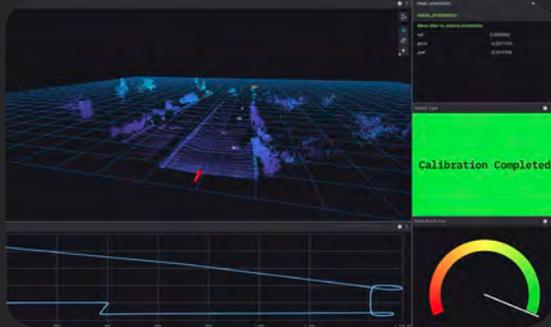


Aaron Jefferson

VP of Product

Software translates the 3D data from Luminar LiDAR's 3D point cloud into **safety benefits**.

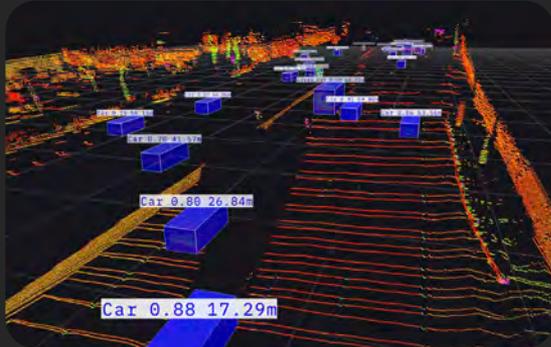
Sentinel™



Core Functions



Tools & Simulation



Perception & Mapping



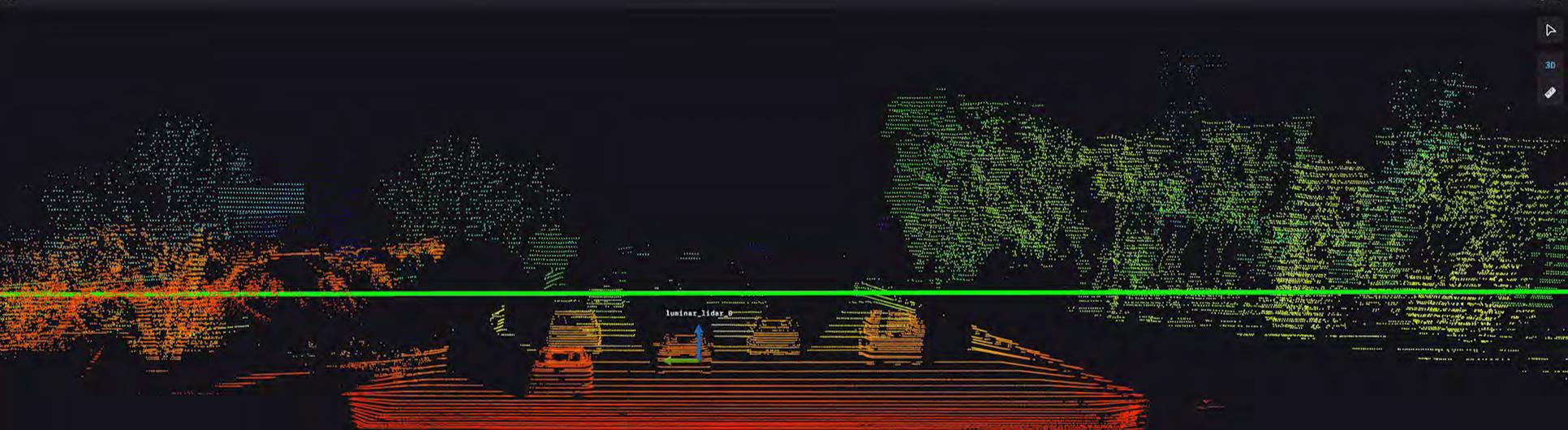
Proactive Safety

Compensation Angle



Core Functions

3D



⚙

⚙

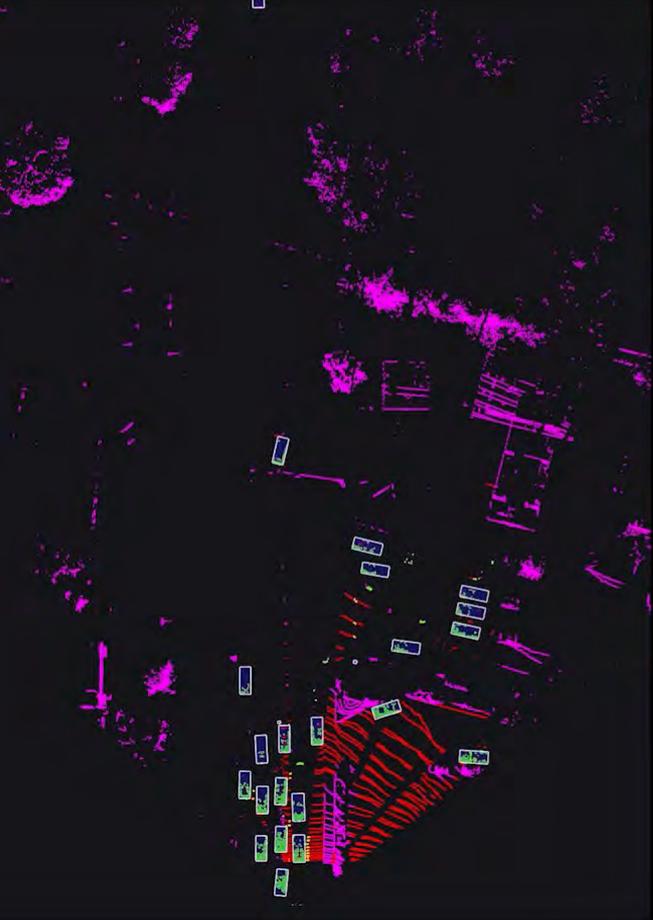
▶

3D

🗑

Perception

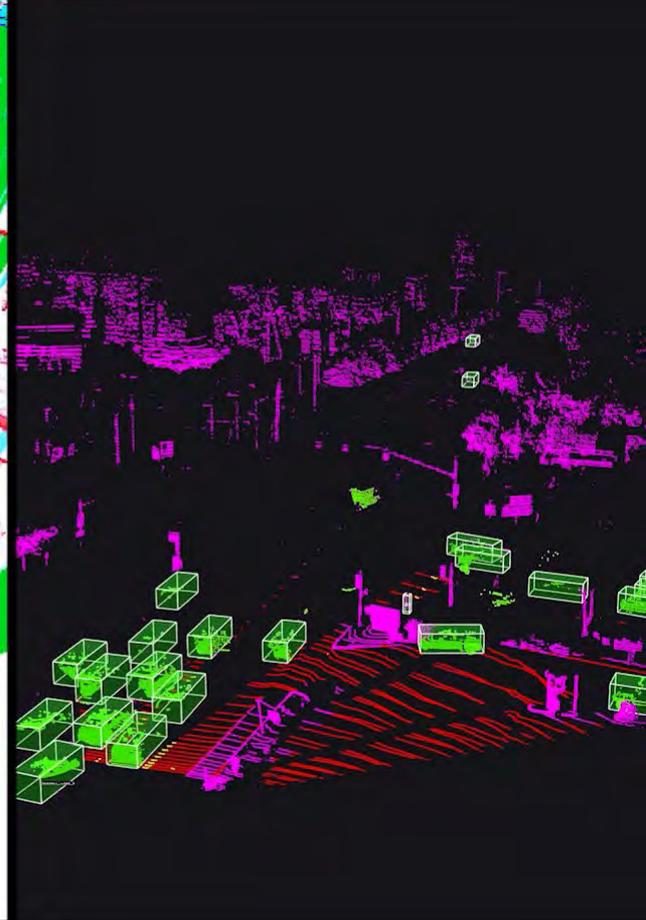
Luminar AI/ML Detections



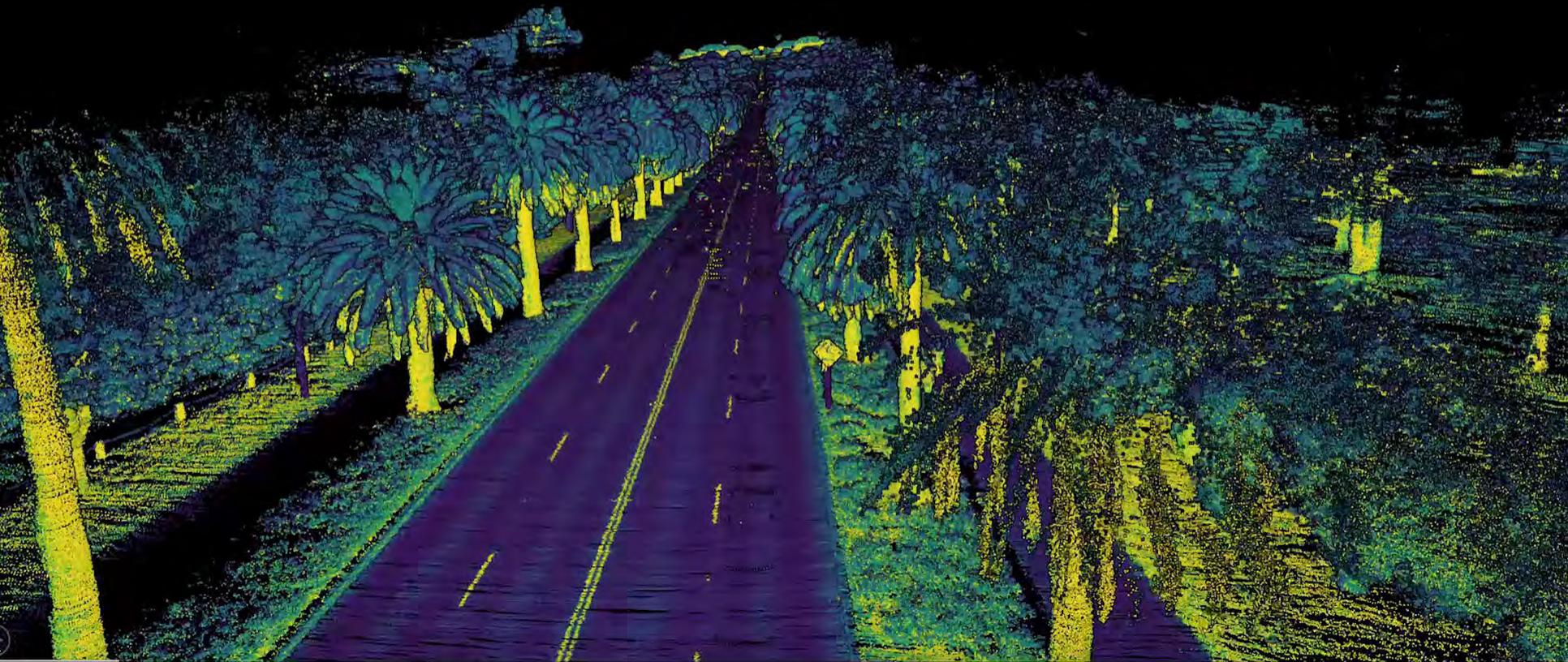
Luminar Geometric Detections



Fused



High-Definition 3D Maps and Localization

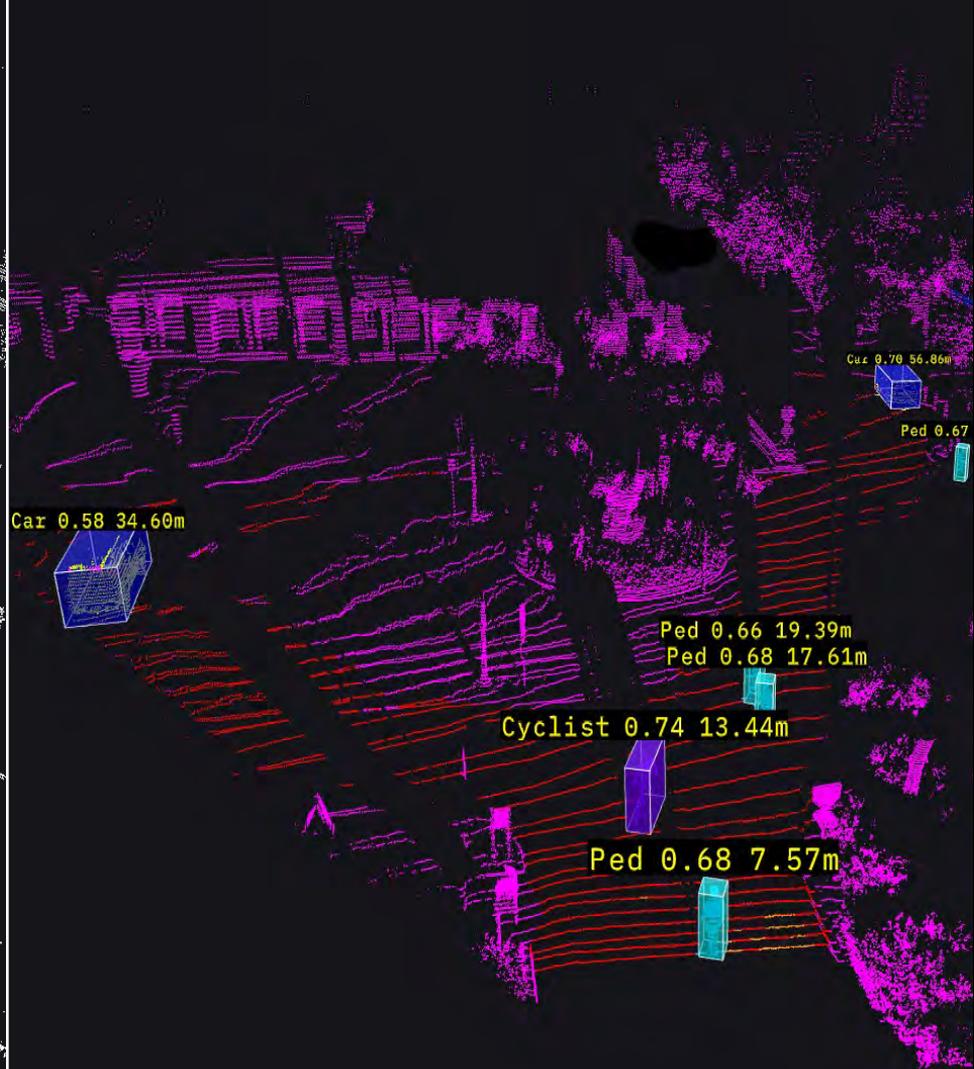


Proactive Safety™

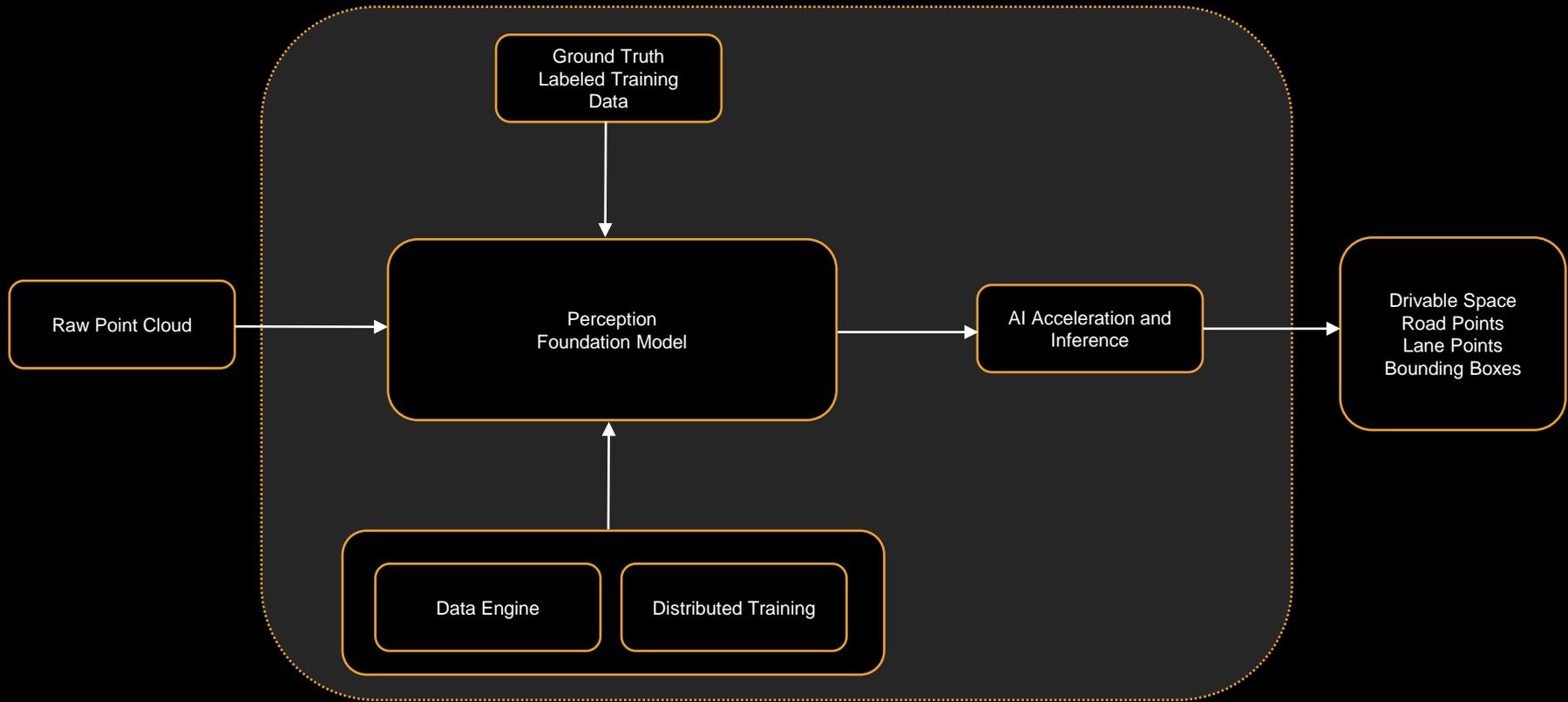


Annie Guan

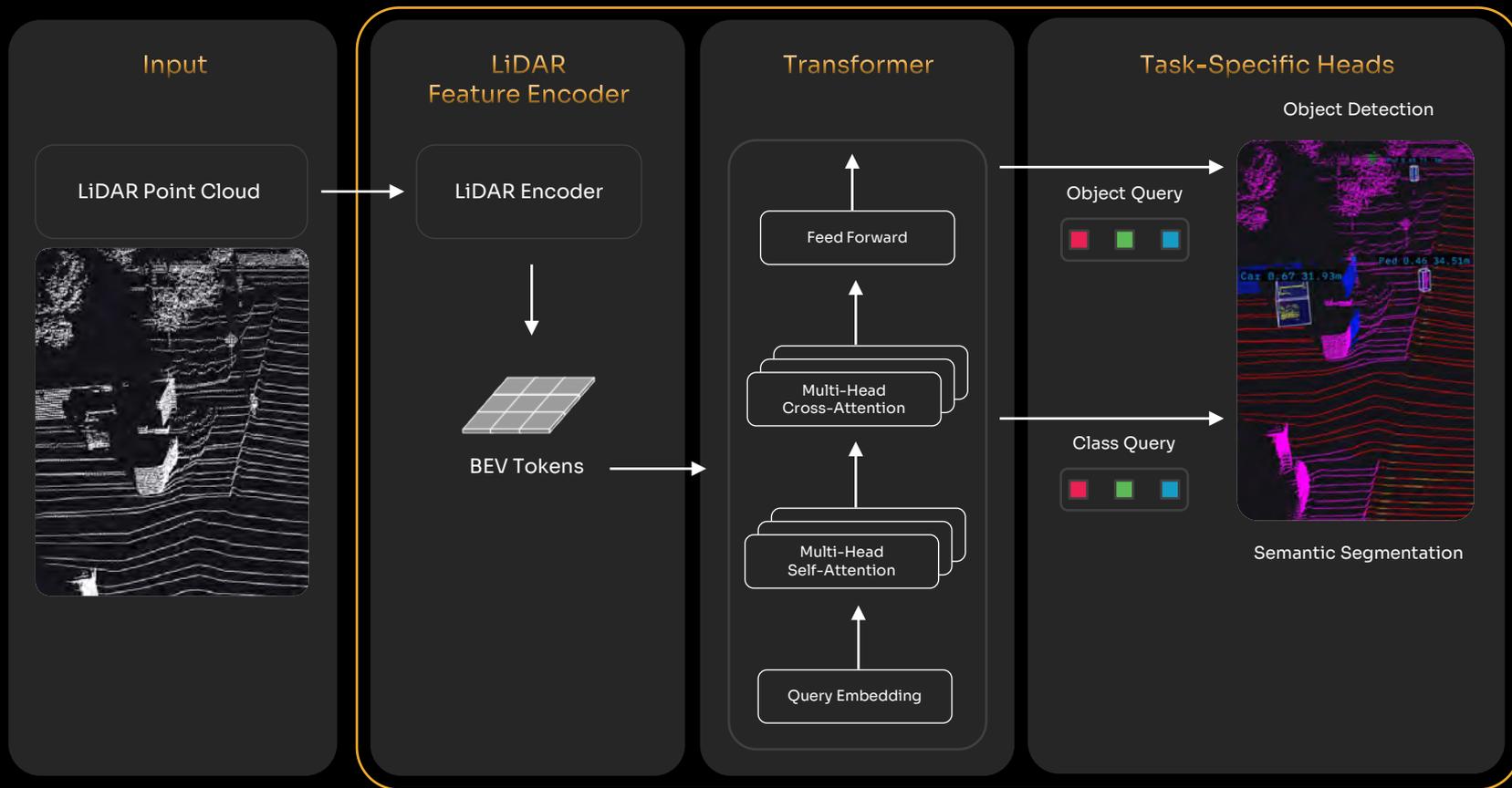
Director, AI and Machine Learning

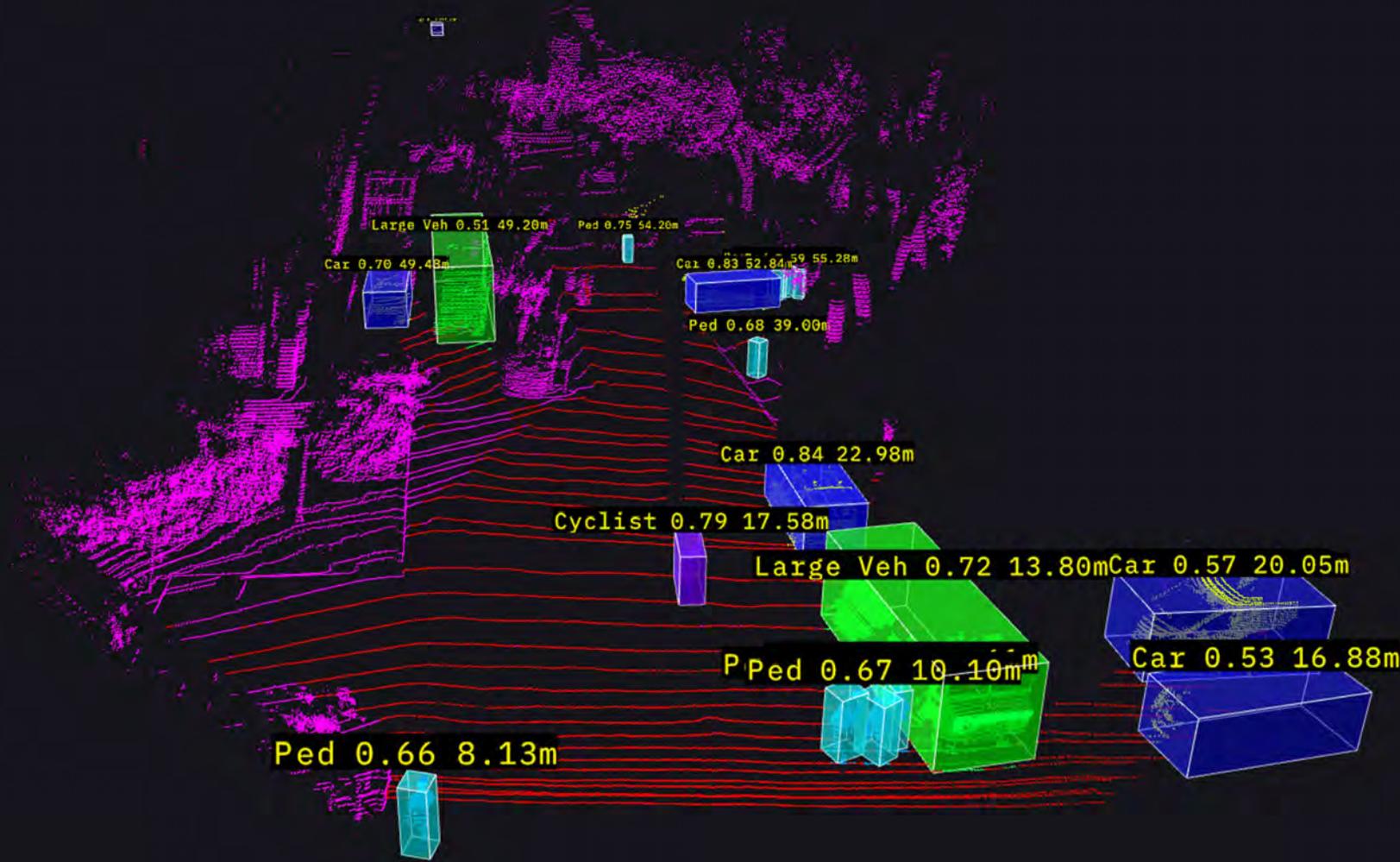


Luminar AI Engine



Perception Foundation Model





LiDAR x GenAI: Luminar AI Agent

Our Roadmap: Tools For
Training with Synthetic Data

AI Agent



AI Agent

LiDAR
Tokenizer

Transformer
Encoder &
Decoder

LiDAR-
Language
Alignment

Large
Language
Model



3D Contextual
Scene Understanding

Prediction

Planning

Human Vehicle Interactions

3D Contextual Scene Understanding

Camera

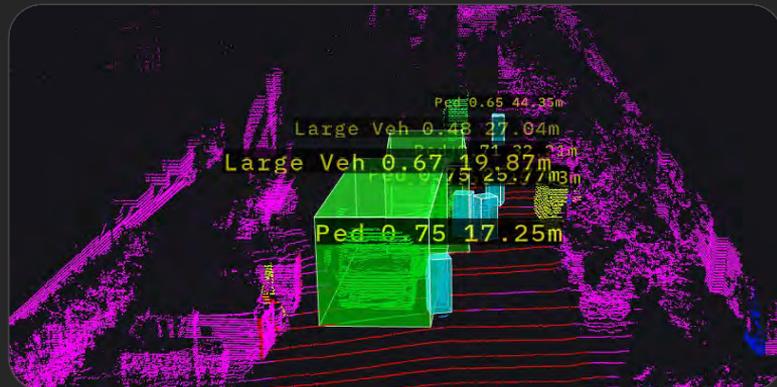


ChatGPT



A bustling urban street scene with trucks lined up and people bustling about, shaded by trees on a sunny day.

LiDAR



AI Agent



On an urban street, a truck with dimensions of 7.1 m long, 2.8 m wide, and 3.2m high is parked at location [19.9m, 3.0m, -0.5m]. Its presence obstructs the flow of traffic. Meanwhile, pedestrians, located at [17.3m, 1.5m, 1.2m], navigate around the trucks, bypassing traffic obstruction.

Prediction

Camera

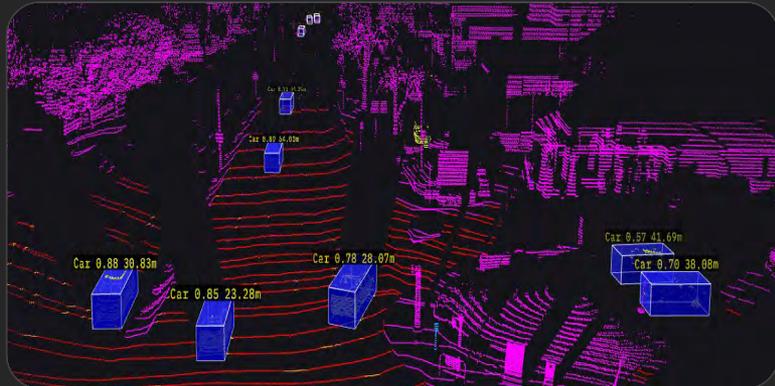


ChatGPT



Dusk descends on the city as traffic lights glow green, guiding commuters home under a twilight sky.

LiDAR



AI Agent



A pickup truck with dimensions [5.6m, 2.1m, 1.8m] at location [28.1m, -3.3m, -1.9m] is about to make a right turn.

Planning

Camera

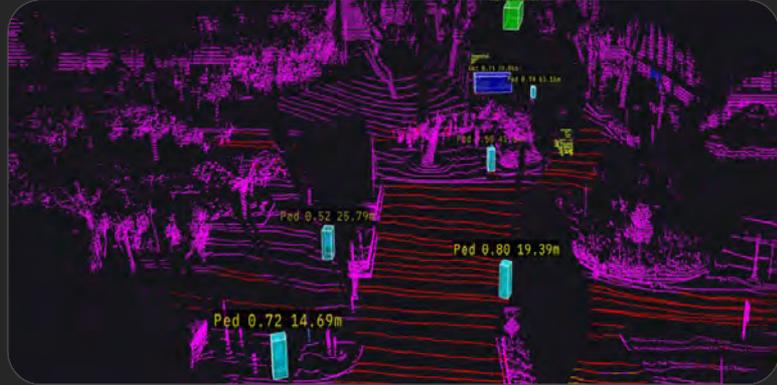


ChatGPT



Evening falls on a quiet suburban intersection, with a stop sign standing vigilant as a pedestrian crosses the street.

LiDAR



AI Agent



The pedestrian at [19.4m, -2.9m, 1.5m] is preparing to walk across crosswalk. Please brake and stop.

Human Vehicle Interaction

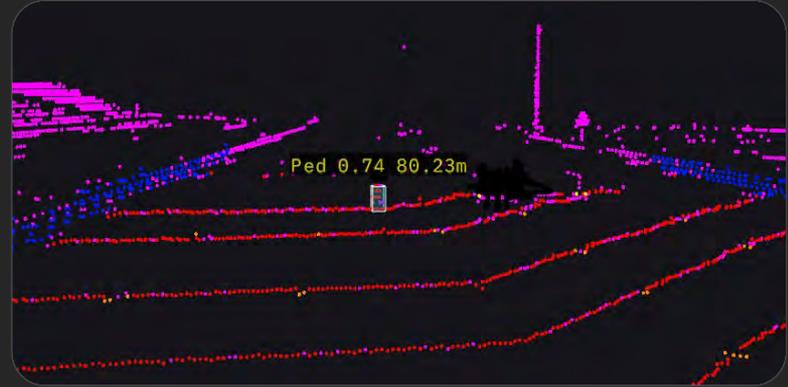
Camera



↓
ChatGPT

↓
A person tends to a black luxury SUV on a city street with vibrant curb markings under a clear blue sky.

LiDAR



↓
AI Agent

↓
Warning: A child is emerging from an obscured area 80 m ahead. Collision anticipated in 2.5 s. The vehicle will stop to avoid an accident.

Human Vehicle Interaction

Camera

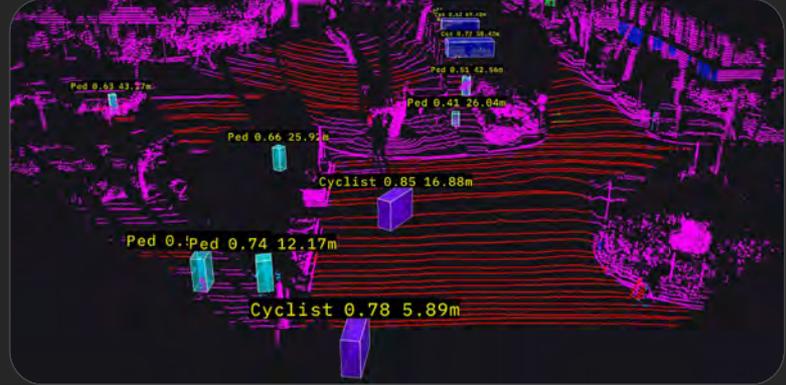


ChatGPT



Urban crosswalk scene with active cyclists and pedestrians.

LiDAR

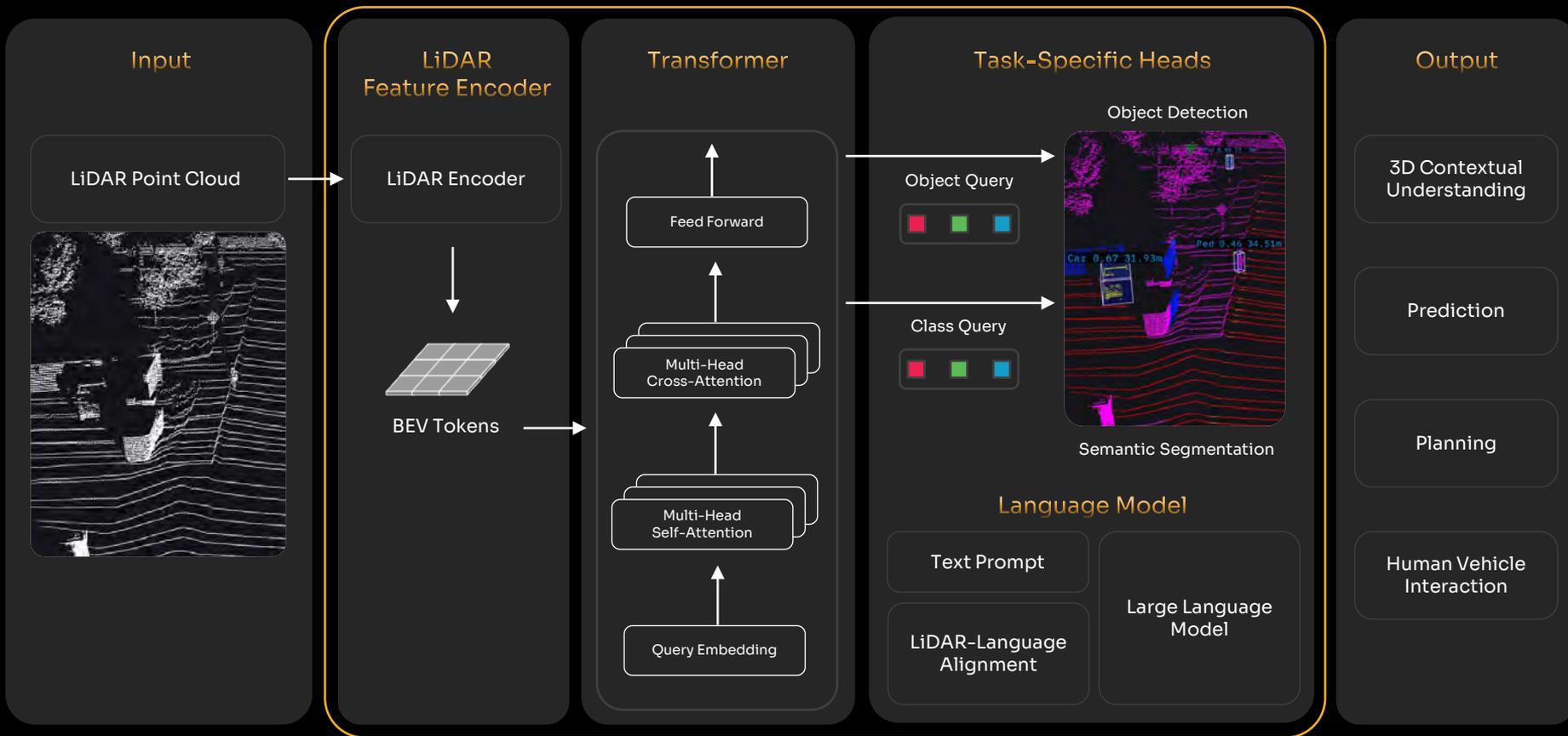


AI Agent



Q: Is there any safety hazard around my vehicle?
A: Yes, there is a bicyclist bypassing from the left at 6 m ahead you. Another bicyclist is 17 m passing through. Pedestrians are walking around nearby. Please decelerate.

AI Agent





LUMINAR



Applied Intuition



Qasar Younis

Co-Founder and CEO
Applied Intuition

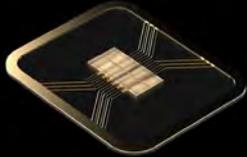


Jason Eichenholz

Chairman of Luminar Semiconductor, Inc.

Internal semiconductor powerhouse
developing
next-gen lasers, receivers, & processing ASICs
to achieve **high performance and low costs**
at a fundamental level

Designed and developed by
Luminar Semiconductor Inc.



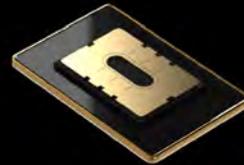
**Laser
IC**

Gen 4 laser chip(InP)



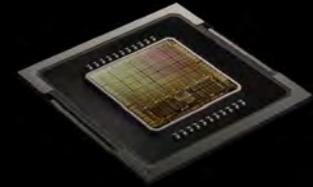
**Laser
Driver**

Laser driver chip(Si)



**Detector
IC**

New 5th gen receiver
chip(InGaAs)



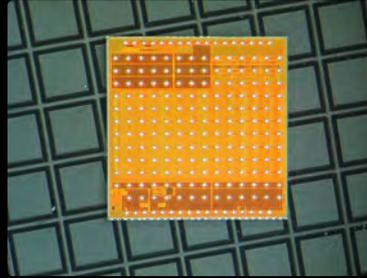
**Analog Processor/
Mixed Signal ASIC**

5th gen signal
processing chip(Si)

Laser IC and Laser Driver



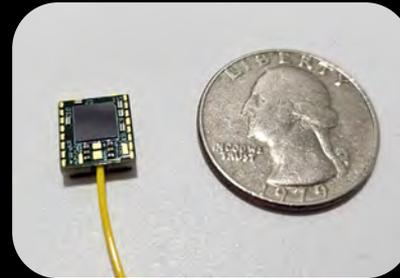
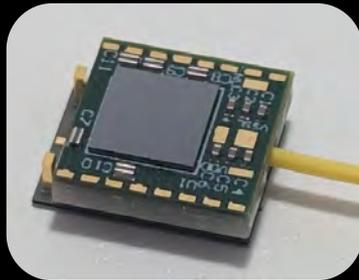
Gen 4 laser chip(InP)



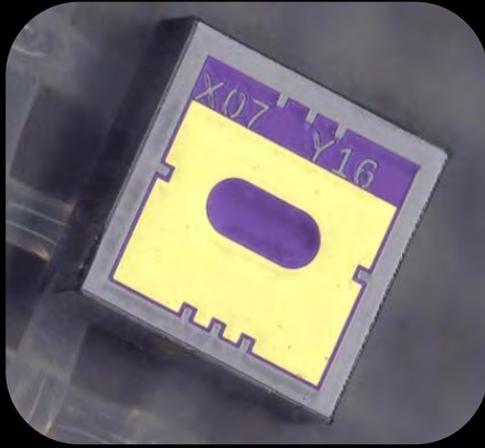
Laser driver chip(Si)



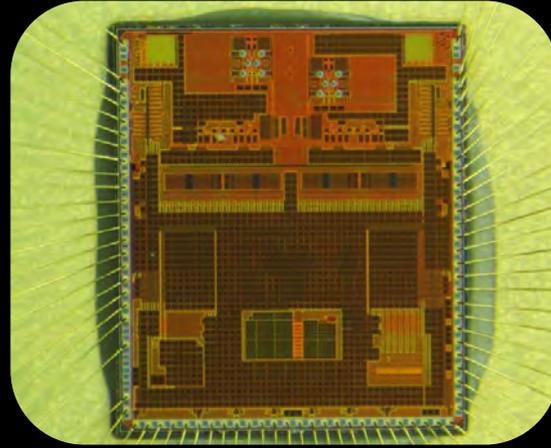
Integrated laser



Detector IC | Analog Processor



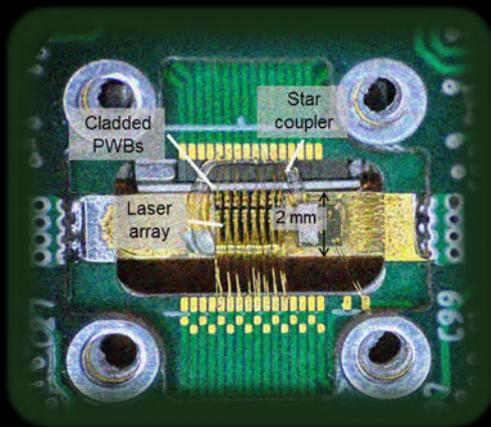
New 5th gen receiver
chip(InGaAs)



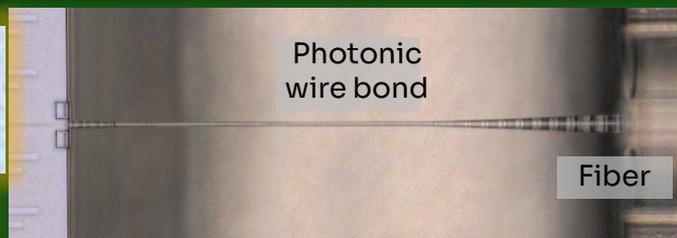
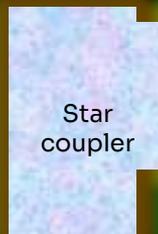
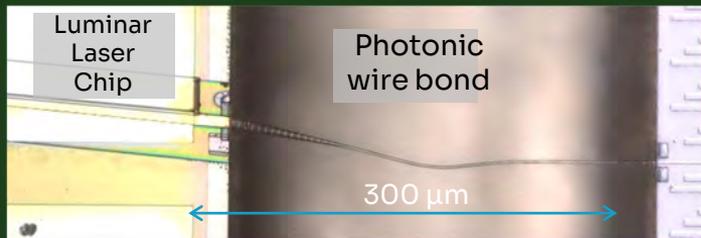
5th gen signal
processing chip(Si)

Leveraging Luminar Semi Laser for Photonic GPU Interconnects

Beginning Work With Top GPU Companies for AI Data Centers



Luminar Semi 16- λ Light Source





Dr. Matthew Weed
Senior Director of Product

Accelerating Mass Adoption



The classic automotive scale priorities

Cost

at all costs

Integration

where convenient

Performance

what's left

Inverting the classic automotive scale priorities

Performance

for desirable function

Integration

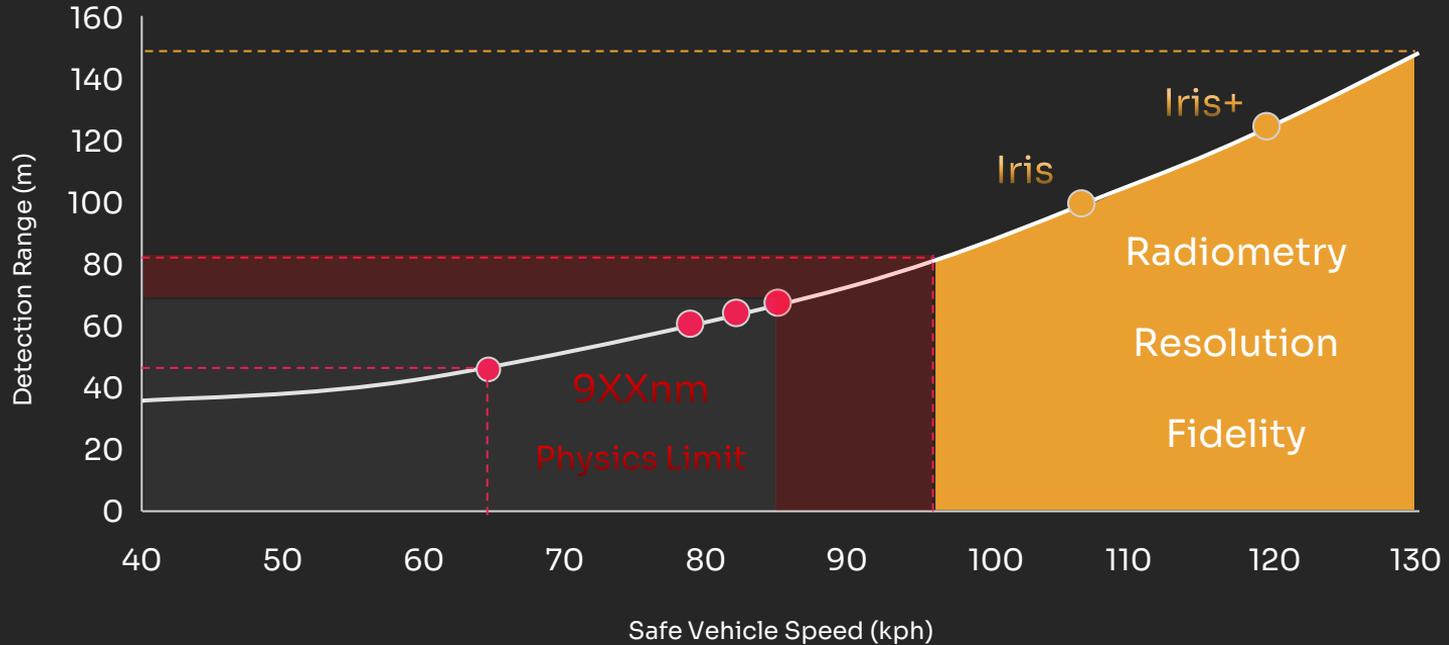
balancing function & design

Cost

to optimize value

Luminar has spent a decade developing technology that delivers **the best performance** against **the most valuable use cases.**

Enabling safe highway speed autonomy



Detection Distance Benchmarking

Distance from LiDAR [m]	# of Points Collected by LiDAR		
	Competitor 1	Competitor 2	Luminar Iris
25	12	30	12
50	0 to 5 (NOT stable)	0 to 10 (NOT stable)	24
75	-	-	11
100	-	-	6
125	-	-	-
Example Picture @ 50m			



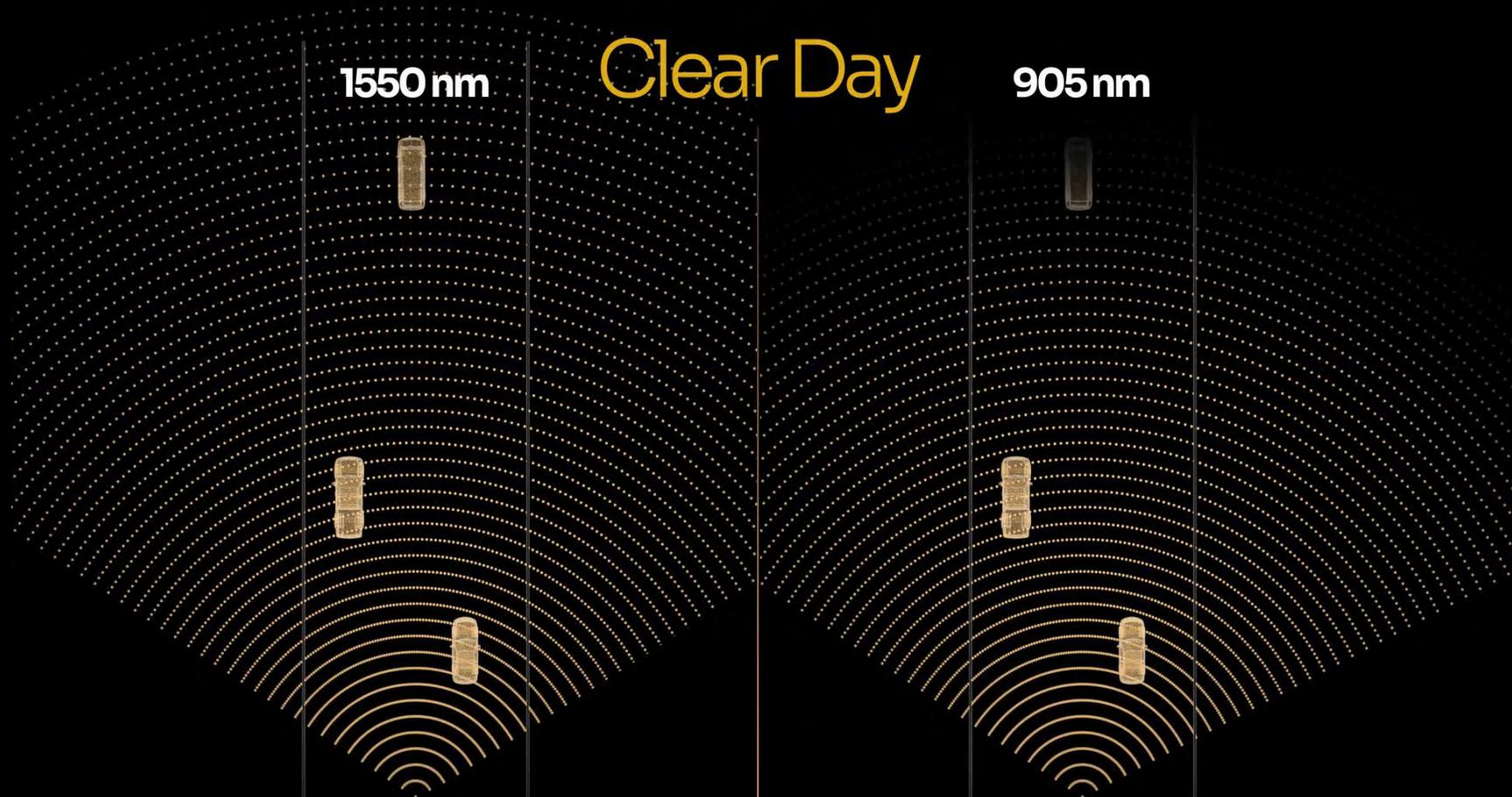
Availability

Clear Day

1550 nm



905 nm



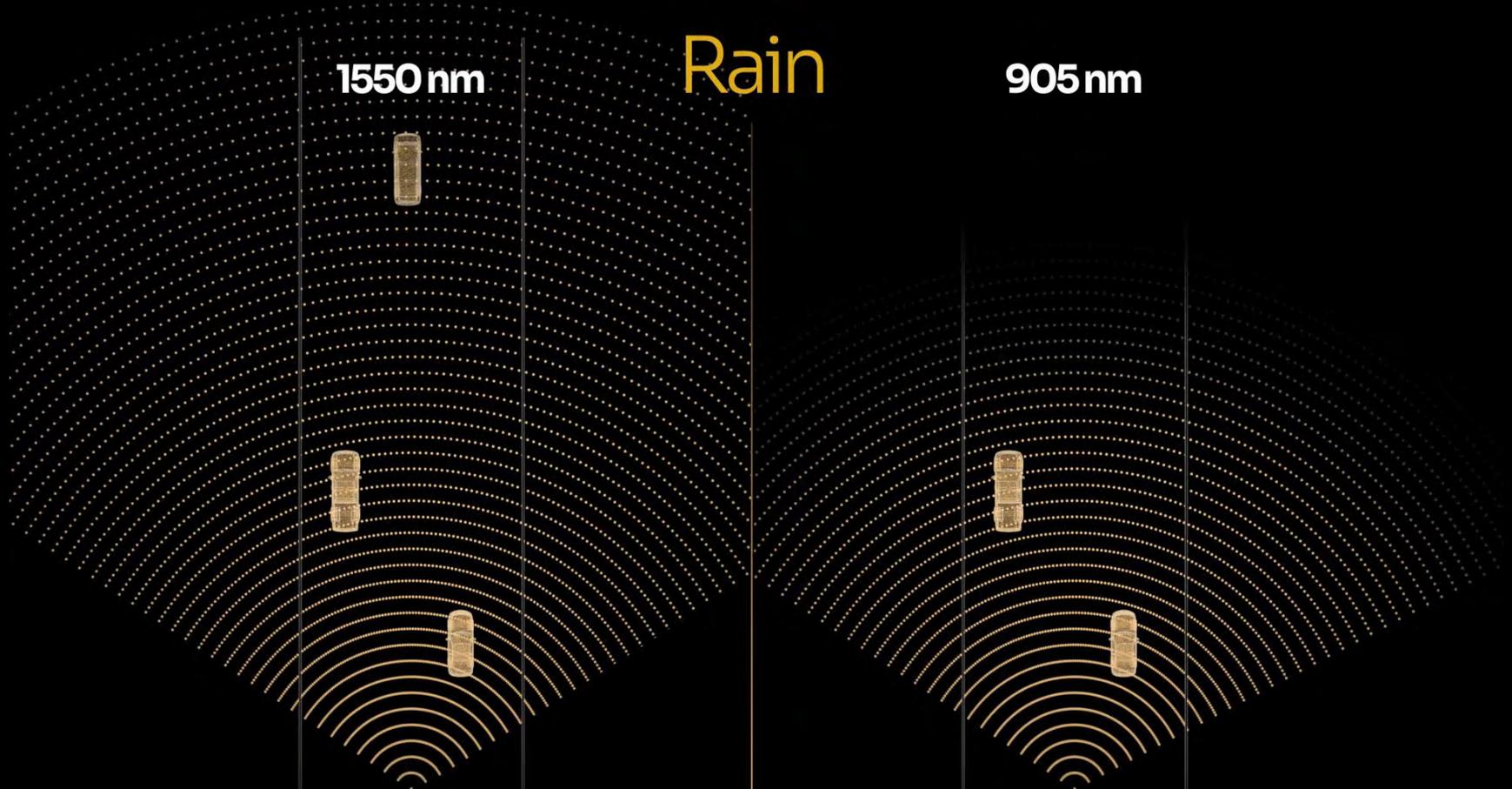
Availability

Rain

1550 nm



905 nm

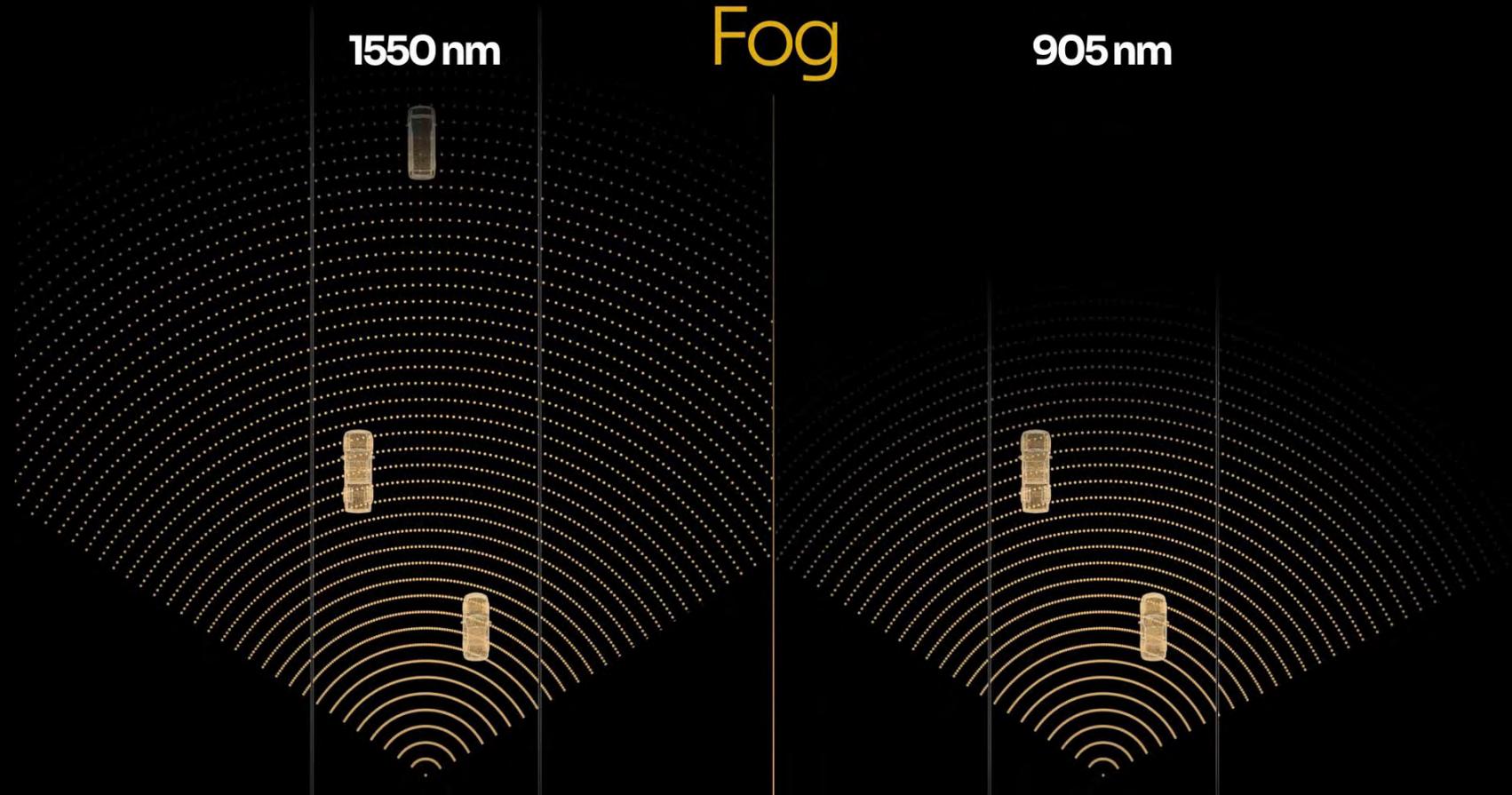


Availability

1550 nm

Fog

905 nm



Reducing **size and cost**, improving **performance**, preparing for **scale**



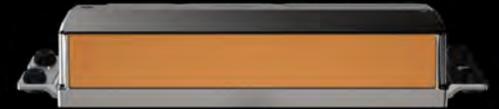
Model G-Series

Built for proof of concept



Hydra

Built for test and development



Iris

Built for series production



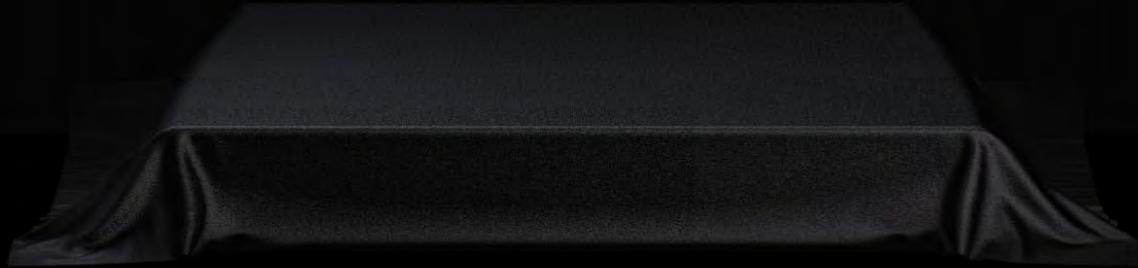


Leo Hsieh

President & CEO, TPK

Premium → Mainstream

Democratizing Safety



Our Next-Generation LiDAR

Simplified Elegant Architecture

Leveraging Luminar Semiconductor Breakthroughs

Step-Function Improvements: Performance, Integration, Cost

Automated Assembly & Integrated Supply Chain

SUPER

SMALL

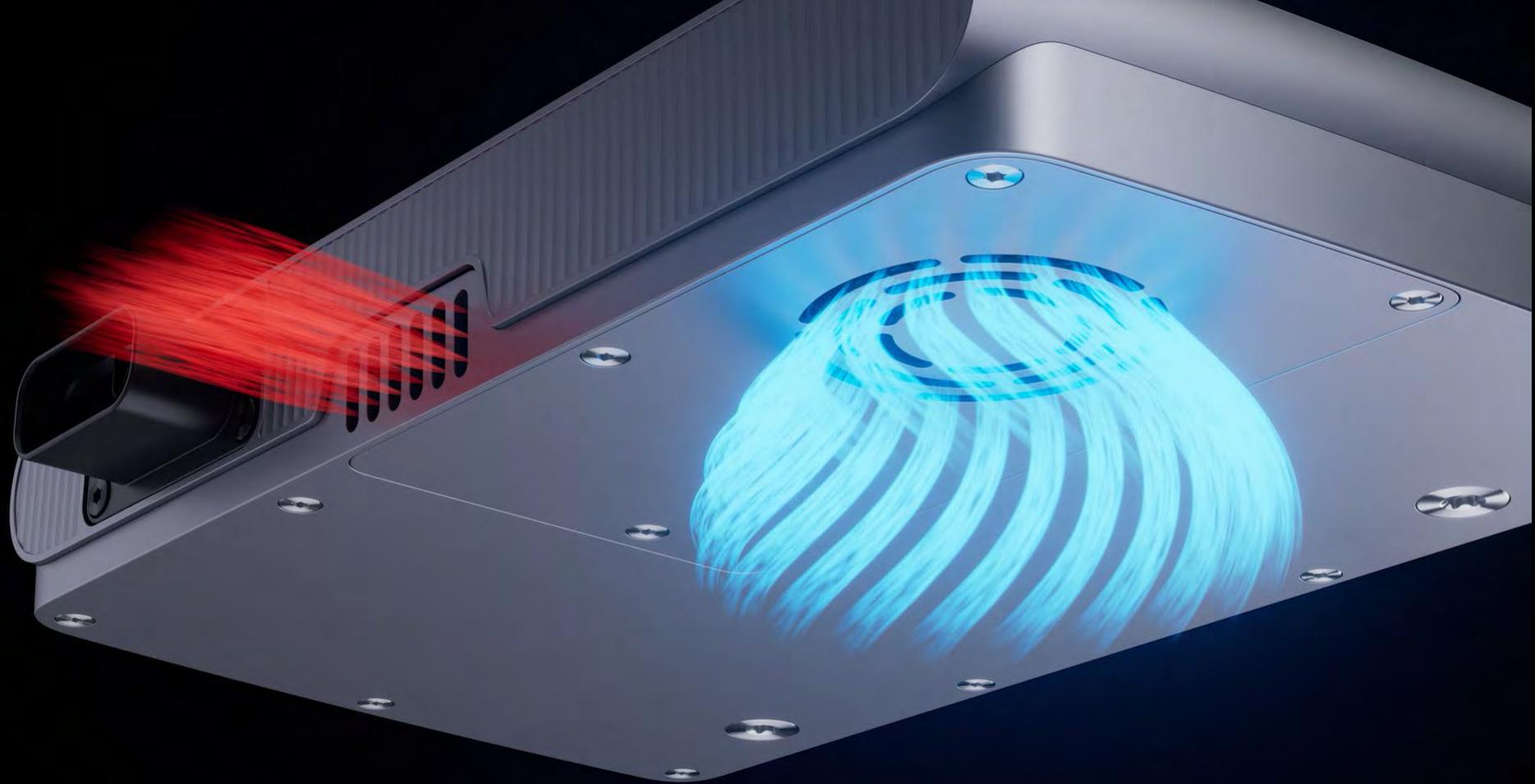


Nearly half the height of Iris
and 1/3 volume



ULTRA LIGHT

3x lighter than Iris



2x thermal efficiency



Aircraft grade aluminum
IP68 water resistant

Luminar Halo integration improvements Compared to Luminar Iris Family

3x

Smaller

3x

Lighter

2x

Thermal
Efficiency



about

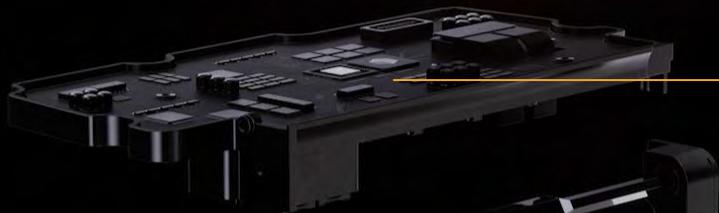
1 inch

1 kilogram

10 watts



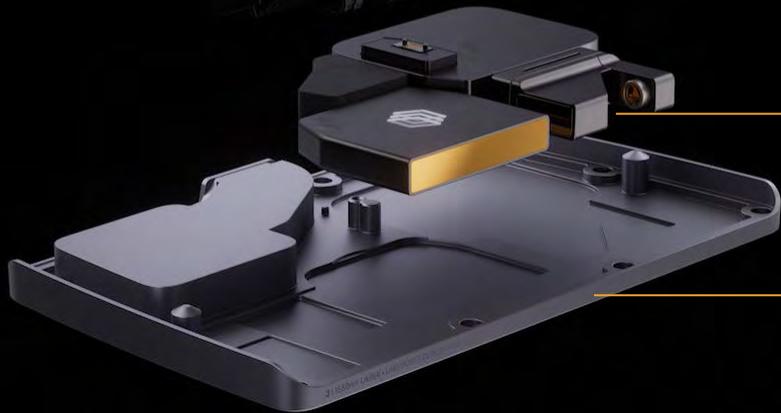
Advanced optical interface



Processors and ICs
designed in-house



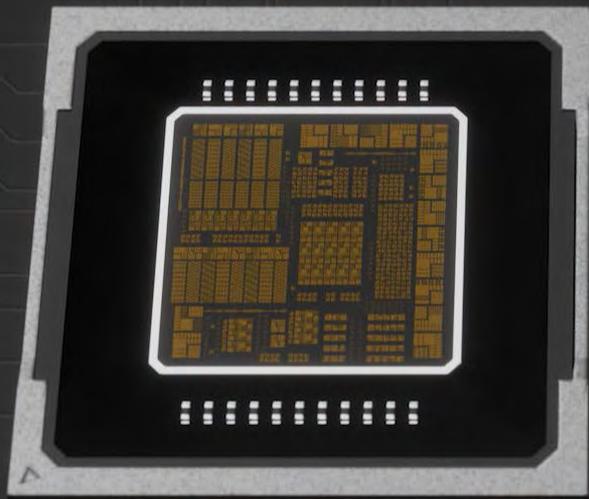
Elegant, integrated
architecture



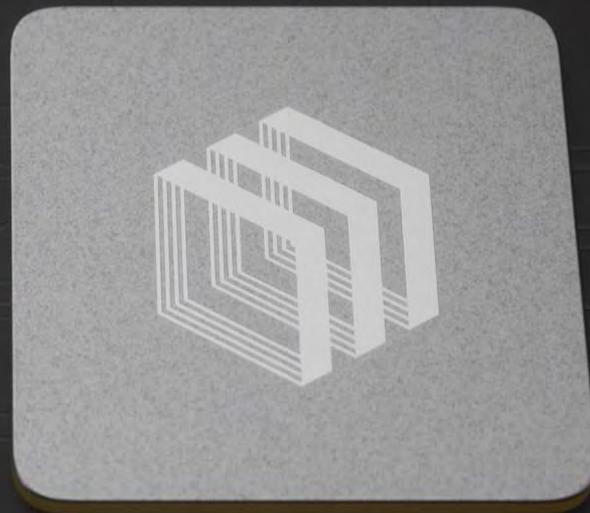
1550nm wavelength

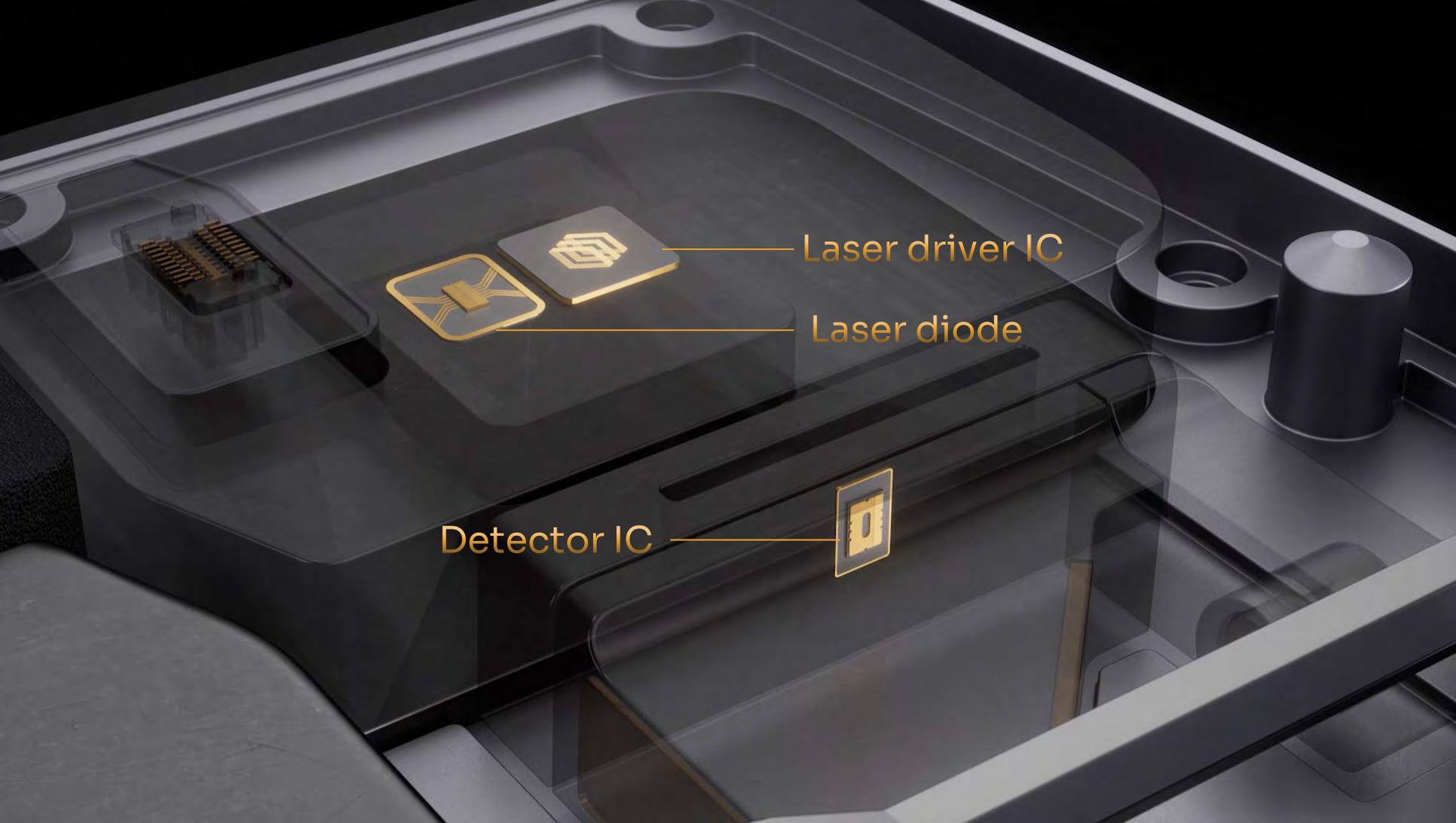
Aircraft grade aluminum

Analog Processor



Digital ASIC





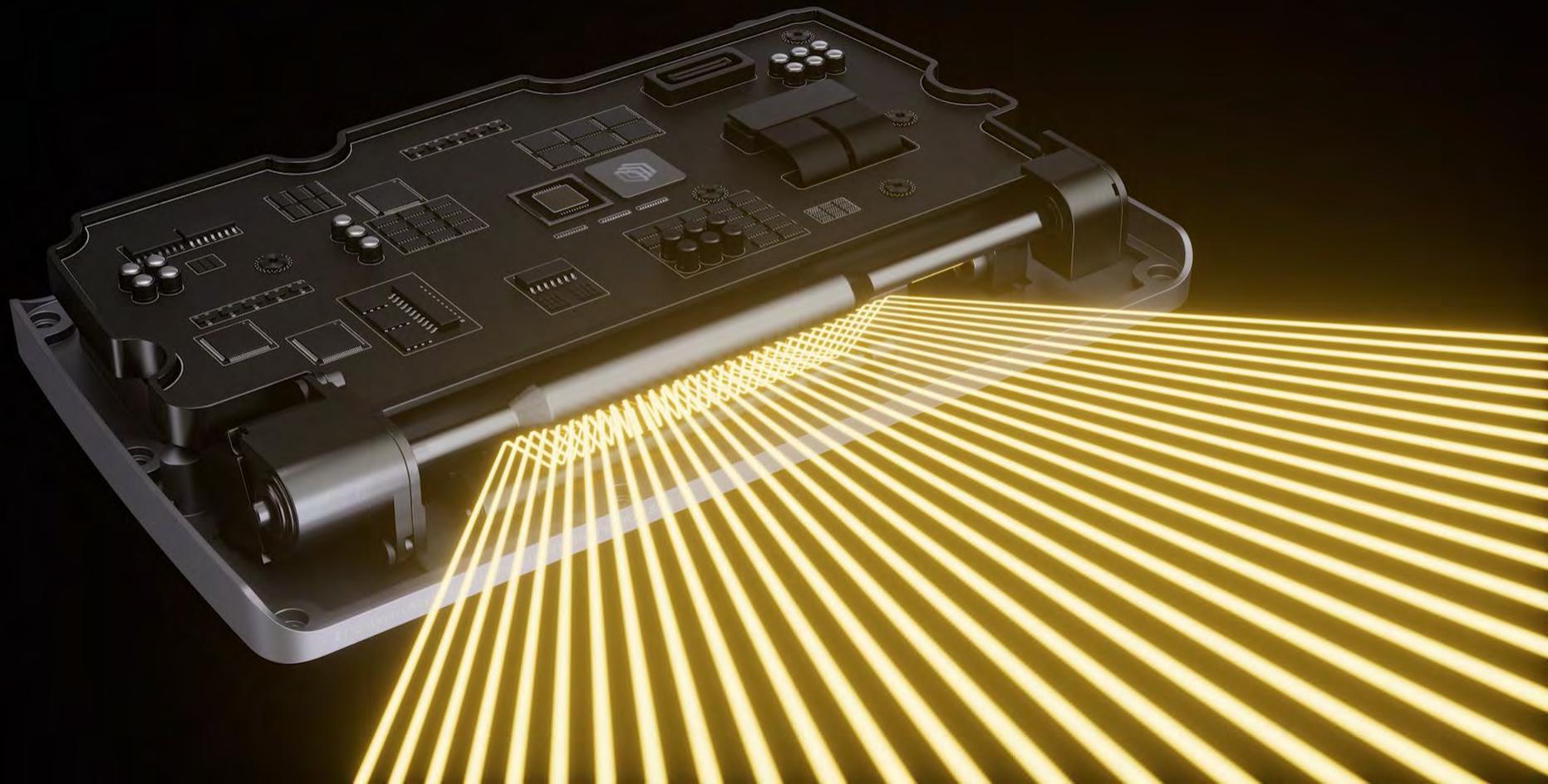
Laser driver IC

Laser diode

Detector IC

Designed and developed by
Luminar Semiconductor Inc.





40X

Photon SNR improvement

4X

Improved performance
compared to Iris

2x

Cost Improvement over Iris

Iris is designed for hundreds of thousands

Luminar Halo is designed for tens of millions

So sleek it can fit into all rooflines





Luminar Halo stands only **25mm** in height

and just **16mm** once integrated



And now can be integrated
seamlessly behind the windshield



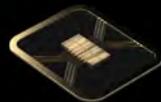
Integrated Camera Option

Zoom
Camera
(30° FOV)



Wide
Camera
(120° FOV)

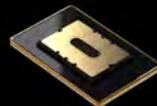
LUMINAR HALO



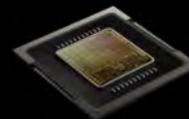
Laser
Diode



Laser
Driver IC



Detector
Diode



Analog
Processor



Digital
ASIC

3X

Smaller

3X

Lighter

2X

Thermal
Efficiency

2X

Cost Improvement
over Iris

4X

Improved
Performance

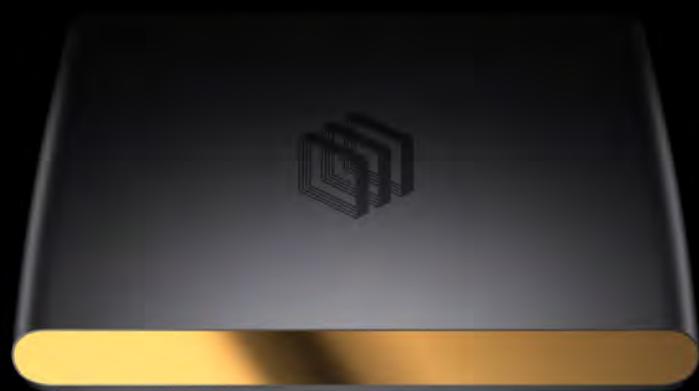


Roof Crown Lidar Integration



Windshield Lidar Integration

2026



This is just the start.

Saving
100 million lives and
100 trillion hours over the next
100 years.





Luminar Day

A New Era
Begins Today

Certain statements included in this presentation that are not historical facts are forward-looking statements for purposes of the safe harbor provisions under the Private Securities Litigation Reform Act of 1995. Forward-looking statements generally are accompanied by words such as “aims,” “believe,” “may,” “will,” “estimate,” “set,” “continue,” “towards,” “anticipate,” “intend,” “expect,” “should,” “would,” “forward,” and similar expressions that predict or indicate future events or trends or that are not statements of historical matters. These forward-looking statements include, but are not limited to, statements regarding Volvo’s start of delivery of the EX90 to customers and its successful launch, achievement of performance of the next-generation LiDAR currently in development, that software including in automaker vehicles will have similar performance at launch or in the future to Luminar’s software performance in testing for safety improvement and insurance reduction, that Luminar will be able to offer a registered insurance product in various markets and will be successful in attracting partners and customers, that Luminar will be offering and automakers will be interested in evaluating software development kits combined with hardware, and that new partnerships will result in cost reductions while improving industrialization and manufacturing. These statements are based on various assumptions, whether or not identified in this release, and on the current expectations of Luminar’s management and are not guarantees of actual performance. Forward-looking statements are subject to a number of risks and uncertainties that could cause actual results to differ materially from the forward-looking statements, including the risks discussed in the “Risk Factors” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” sections of Luminar’s most recently filed Form 10-K filed with the SEC. You are cautioned not to place undue reliance upon any forward-looking statements, which speak only as of the date made, and Luminar undertakes no obligation to update any forward-looking statement to reflect events or circumstances after the date of this release.