

Prepared for



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P H O T O N I C S

Scan | Detect | Navigate

Meeting the future needs for safe automated mobility with SingleChip FMCW LiDAR





The **needs** for a **future** of **safe** and **automated** mobility

AT SPEED

Reach 130kph

ALWAYS ON

All-weather immunity

AT COST

Minimize Cost and Size

Scantinel Photonics

integrates **FMCW LiDAR** on a
Single Chip

FMCW LiDAR

SILICON
PHOTONICS

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FMCW Sensing: The Added Value to Autonomous Mobility

FMCW
LiDAR

AT SPEED
Reach 130kmh

Long Range Detection

Detect objects at **>300m** to enable **130kmh** speed

Instant Velocity and Resolution

Detect **small objects** and enables **faster object detection** via instant velocity

Immunity to Interference

Ensures **signal fidelity** also in **adverse environments** (all weather, blooming, glare)

ALWAYS ON
Bad weather immunity

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FMCW Range & Resolution supports in meeting the "Lost Cargo" Use Case



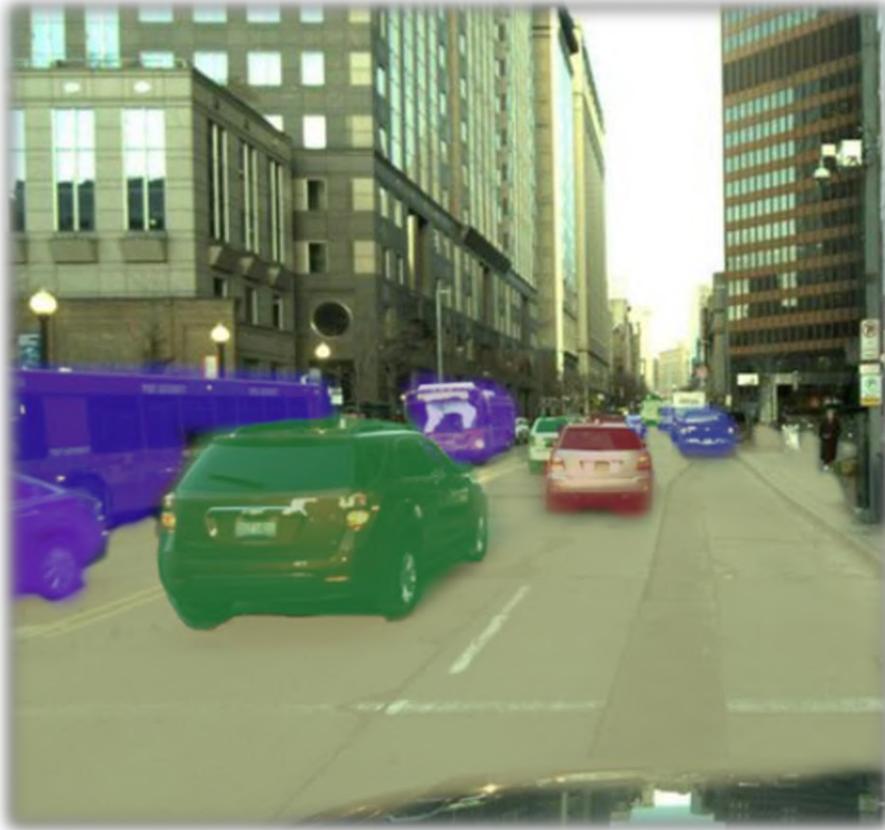
See and
UNDERSTAND
a TIRE

~180m

@130kph



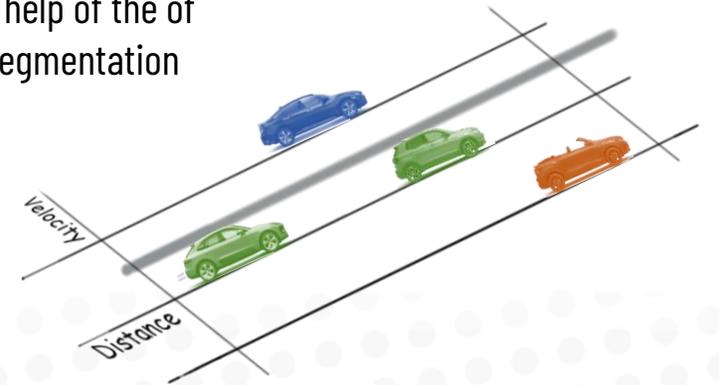
Example for an Added Value of Instantaneous Velocity: Instance Segmentation



Instantaneous (rel.) velocity is returned by the vehicles on every pixel. Moreover, the road plane returns the instantaneous velocity coincident with the ego motion.

Instance Segmentation / Clustering:

Detected / segmented objects (different vehicles, road plane...) can be clearly separated with the help of the of instant velocity, supporting the instance segmentation





The future of autonomous mobility looks for always-on and all-weather solutions

RAIN

FOG

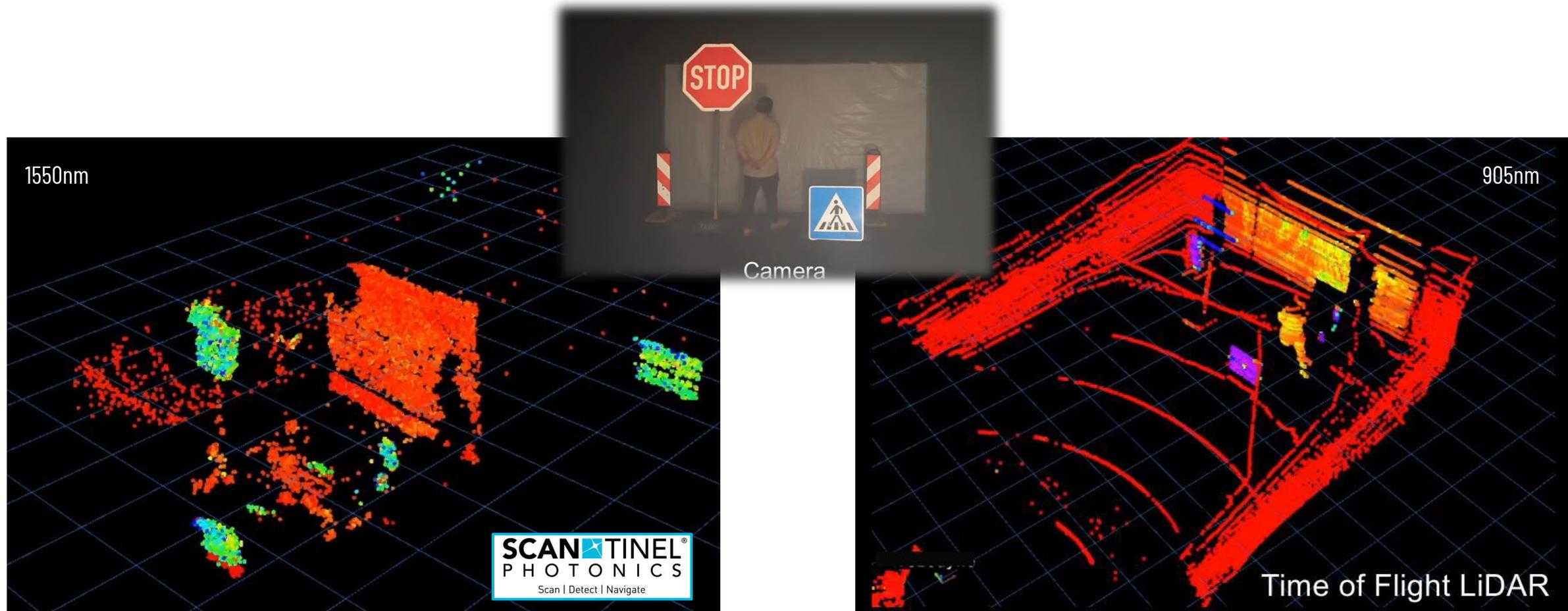
ALWAYS-ON

ALL-WEATHER

SUN GLARE



Fog Test: Scantinel A-Sample compared to 905nm ToF technology

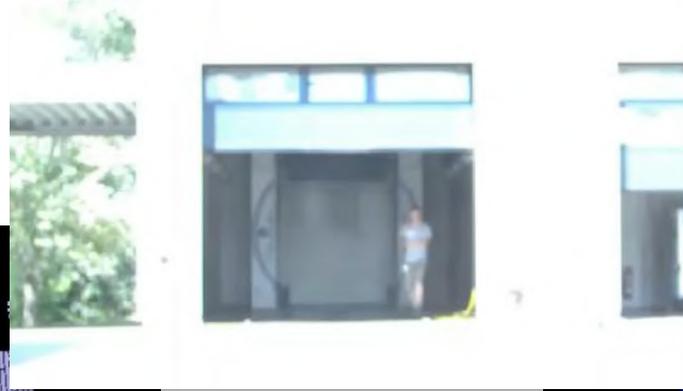


Impact from fog on pointcloud is **marginal**

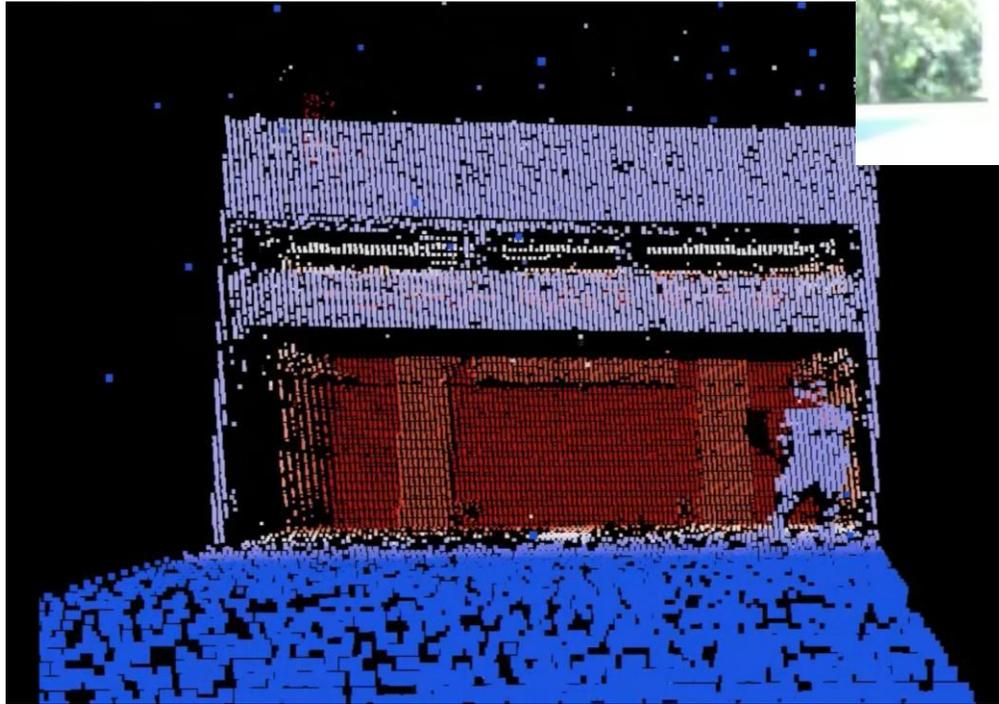
Strong impact from fog on pointcloud (Fog Wall)



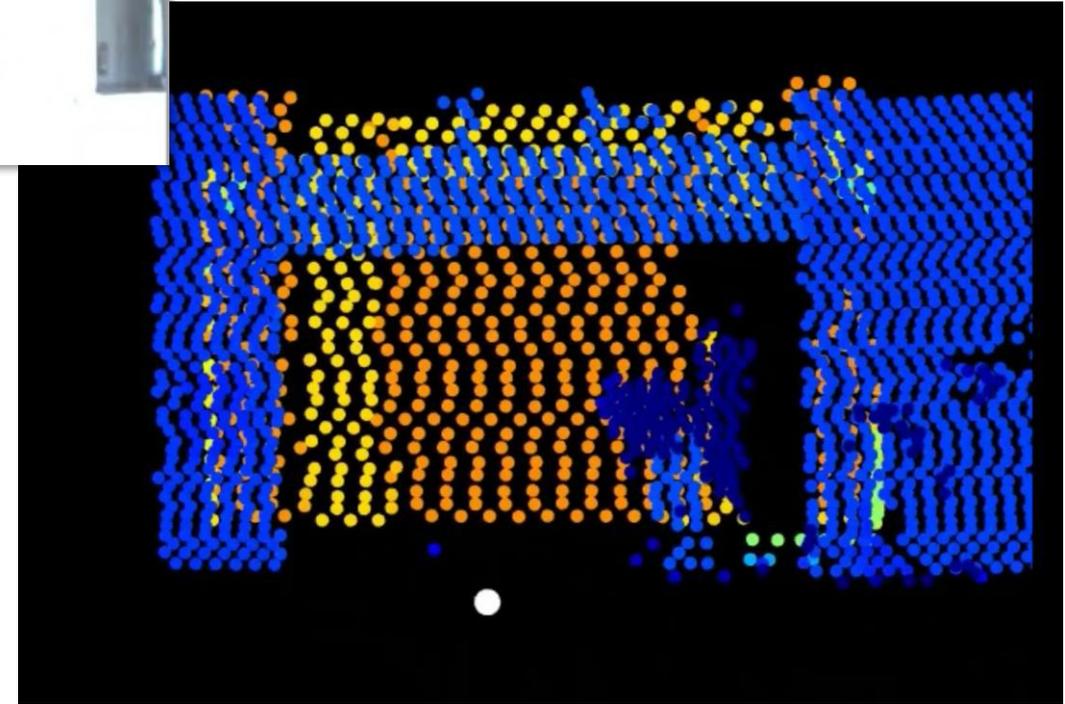
Spray Test: Scantinel A-Sample compared to 1550nm qualified ToF technology



1550nm ToF
reference LiDAR



Spray rain has **less impact**
on pointcloud

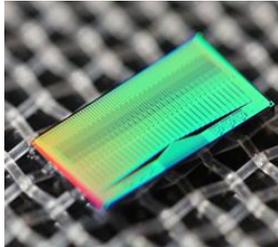


Pointcloud is **destroyed**
by spray rain

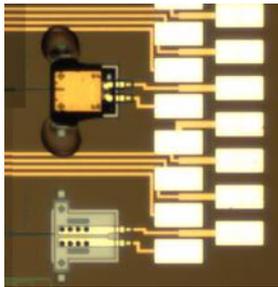


SILICON PHOTONICS

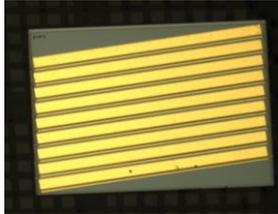
Our approach to Photonic Integration



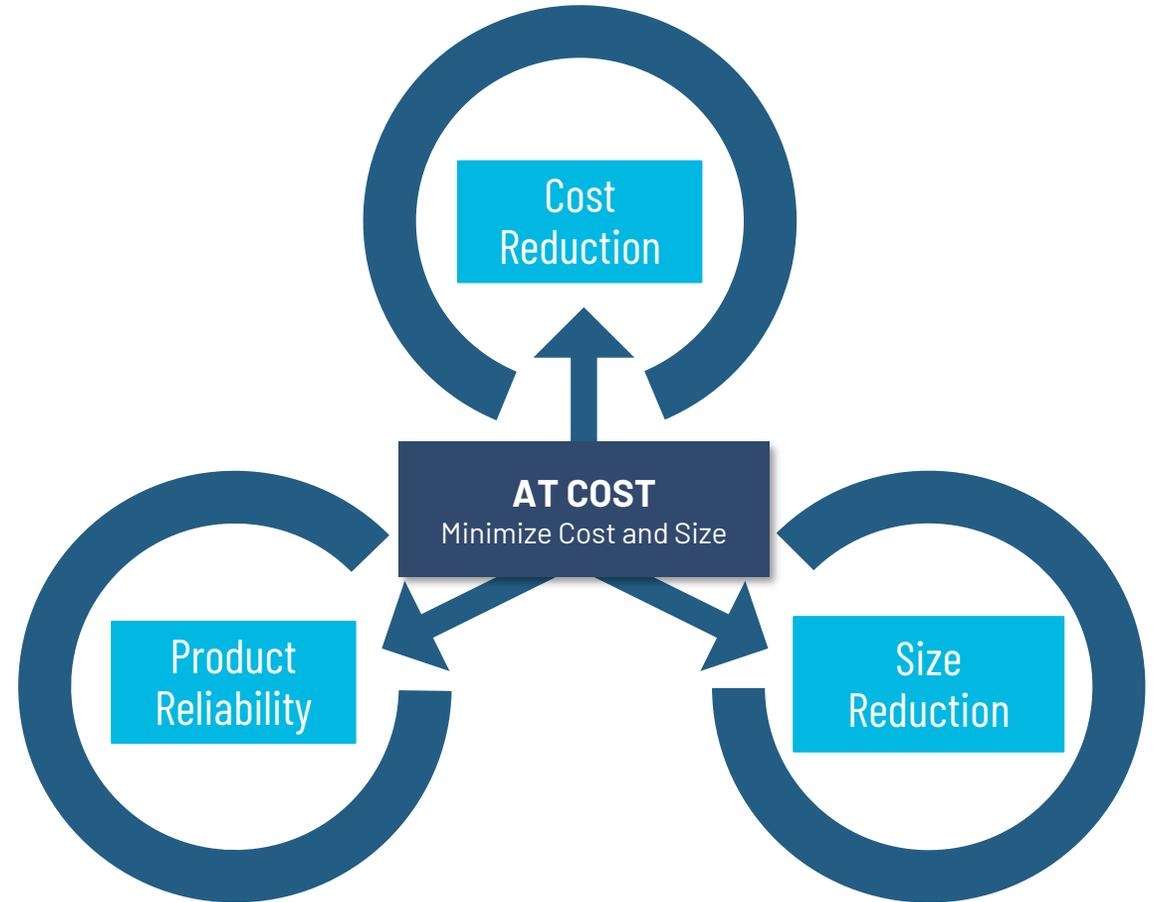
Scanner &
Detector PIC



Hybrid
integrated
Laser



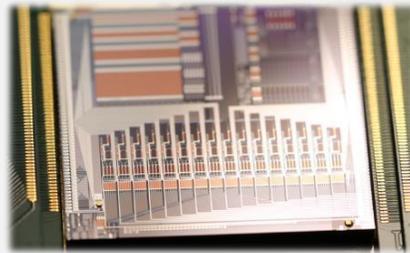
SOAs, hybrid
integrated
(power amplifiers)





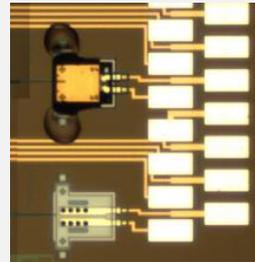
Scantinel has achieved groundbreaking advancements in FMCW LiDAR photonic integration

Integrated scanning



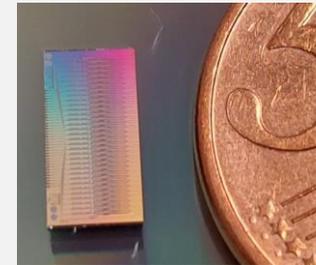
Built into customer systems

Integrated Light source



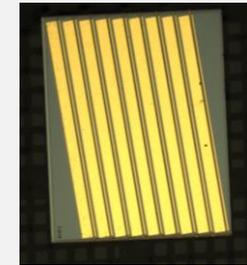
Hybrid integrated III-V on SiN

Integrated Scanner-Detector



Monolithic SiGe detector on SiN

SOA array



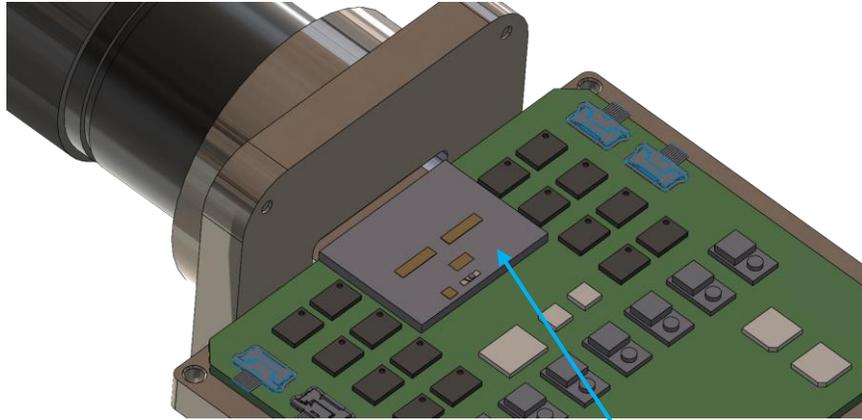
Manufacturing feasibility proven

Scantinel Achievement by 2023

Single chip integration is paving the way for High Volume Manufacturing

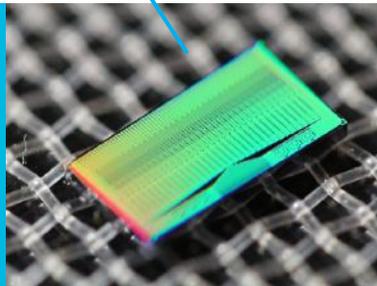


Scantinel's leap building a groundbreaking FMCW LiDAR Engine

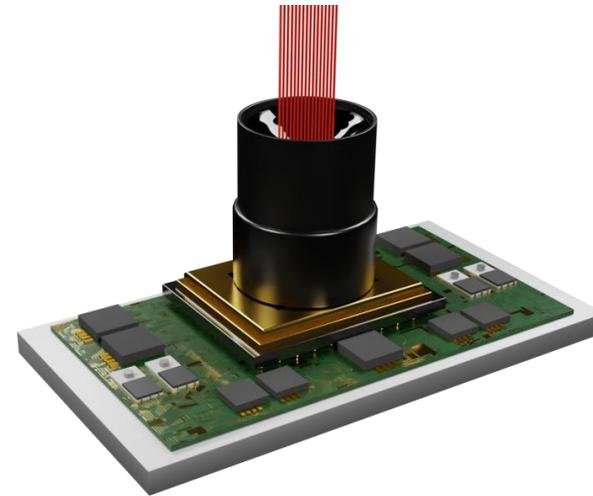


High Integration of components in one tiny chip includes:

- Laser
- Amplifier System
- Detection System
- Optical System



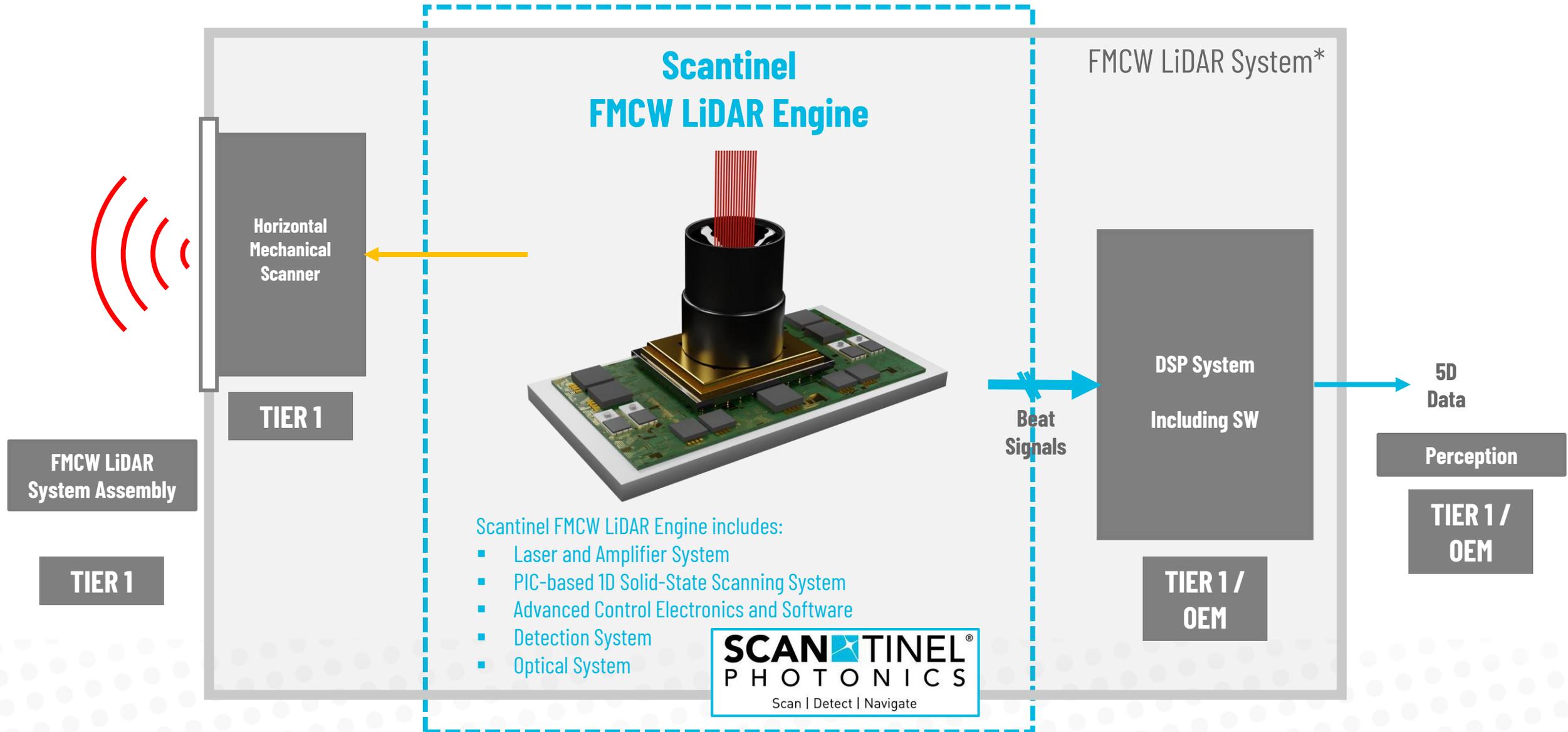
Scantinel FMCW LiDAR Module



Scantinel is leveraging maximum integration on Silicon Photonics



Scantinel's highly integrated Photonic LiDAR Engine (OCM™) provides highest level of flexibility





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2019

Creation Date



51

Employees



\$>20M

Funds Raised



2027

SOP Ramp-up

We are backed by



SCANIA



Running Projects

2

Undisclosed **Industrial** Partners

2

Undisclosed **Automotive** Tier-1s

1

Undisclosed **Truck OEM**

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Let's stay in touch!

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