

A long-exposure photograph of a city street at night, showing light trails from cars and streetlights. The scene is dominated by blue and white tones, with some red and yellow light trails from cars. Tall buildings are visible in the background, and the overall atmosphere is one of a busy, modern urban environment.

Autoliv Electronics

Peter Rogbrant Head of Engineering ELE
Magnus Nygren VP Engineering ELE - EU

March 16, 2018

Road to Success

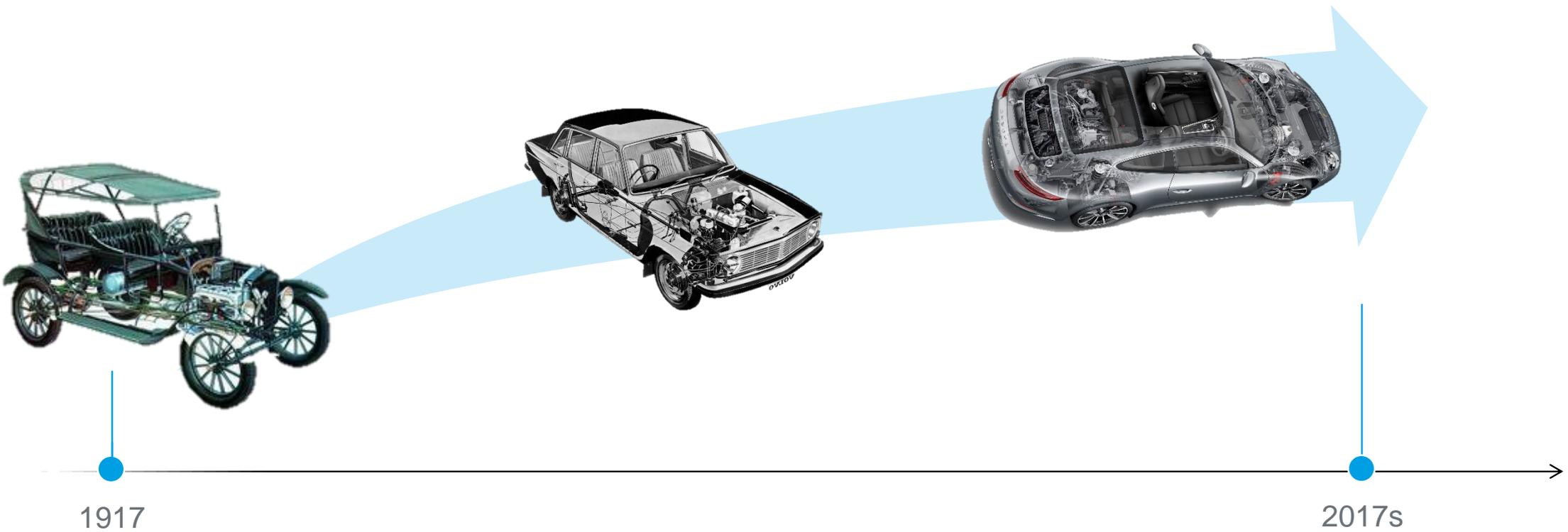
Autoliv

Safe Harbor Statement*

This presentation contains statements that are not historical facts but rather forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Such forward-looking statements include those that address activities, events or developments that Autoliv, Inc. or its management believes or anticipates may occur in the future. All forward-looking statements, including without limitation, statements related to the Company's strategic review of its operating structure or the terms, timing or structure of any such transaction as a result of such review, if any; the outlook for Passive Safety and Electronics as separate businesses; statements related to the future performance of the Company or of any such businesses if any such transaction is completed; other targets regarding the Company's performance as a single entity; management's examination of historical operating trends and data, as well as estimates of future sales, operating margin, cash flow, effective tax rate or other future operating performance or financial results, are based upon our current expectations, various assumptions and/or data available from third parties. Our expectations and assumptions are expressed in good faith and we believe there is a reasonable basis for them. However, there can be no assurance that such forward-looking statements will materialize or prove to be correct as forward-looking statements are inherently subject to known and unknown risks, uncertainties and other factors which may cause actual future results, performance or achievements to differ materially from the future results, performance or achievements expressed in or implied by such forward-looking statements. In some cases, you can identify these statements by forward-looking words such as "estimates", "expects", "anticipates", "projects", "plans", "intends", "believes", "may", "likely", "might", "would", "should", "could", or the negative of these terms and other comparable terminology, although not all forward-looking statements contain such words. Because these forward-looking statements involve risks and uncertainties, the outcome could differ materially from those set out in the forward-looking statements for a variety of reasons, including without limitation, changes in light vehicle production; fluctuation in vehicle production schedules for which the Company is a supplier, changes in general industry and market conditions or regional growth or decline; changes in and the successful execution of our capacity alignment, restructuring and cost reduction initiatives and the market reaction thereto; loss of business from increased competition; higher raw material, fuel and energy costs; changes in consumer and customer preferences for end products; customer losses; changes in regulatory conditions; customer bankruptcies, consolidations, or restructurings; divestiture of customer brands; unfavorable fluctuations in currencies or interest rates among the various jurisdictions in which we operate; component shortages; market acceptance of our new products; costs or difficulties related to the integration of any new or acquired businesses and technologies; continued uncertainty in pricing negotiations with customers; successful integration of acquisitions and operations of joint ventures; successful implementation of strategic partnerships and collaborations; our ability to be awarded new business; product liability, warranty and recall claims and investigations and other litigation and customer reactions thereto; (including the resolution of the Toyota recall); higher expenses for our pension and other postretirement benefits, including higher funding requirements for our pension plans; work stoppages or other labor issues; possible adverse results of pending or future litigation or infringement claims; our ability to protect our intellectual property rights; negative impacts of antitrust investigations or other governmental investigations and associated litigation relating to the conduct of our business; tax assessments by governmental authorities and changes in our effective tax rate; dependence on key personnel; legislative or regulatory changes impacting or limiting our business; political conditions; dependence on and relationships with customers and suppliers; the uncertainty as to which strategic alternatives may be available with respect to the Electronics business, whether any transaction will be commenced or completed as a result of such review, and the timing and value of any such transaction; risks related to the potential separation of the Electronics business; and other risks and uncertainties identified under the headings "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" in our Annual Reports and Quarterly Reports on Forms 10-K and 10-Q and any amendments thereto. For any forward-looking statements contained in this or any other document, we claim the protection of the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995, and we assume no obligation to update publicly or revise any forward-looking statements in light of new information or future events, except as required by law.

() Non-US GAAP reconciliations are disclosed in our regulatory filings available at www.sec.gov or www.autoliv.com*

More than 100 years of innovation – and a Car is still a Car



Automotive industry in its largest transformation ever

Automotive Mega trends



AUTOMATED DRIVING & CONNECTIVITY



NEW MOBILITY



CLEAN MOBILITY

GERMANY
35%

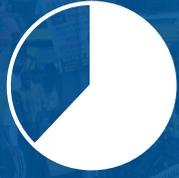


CHINA
65%



Consumers
are ready!

INDIA
62%



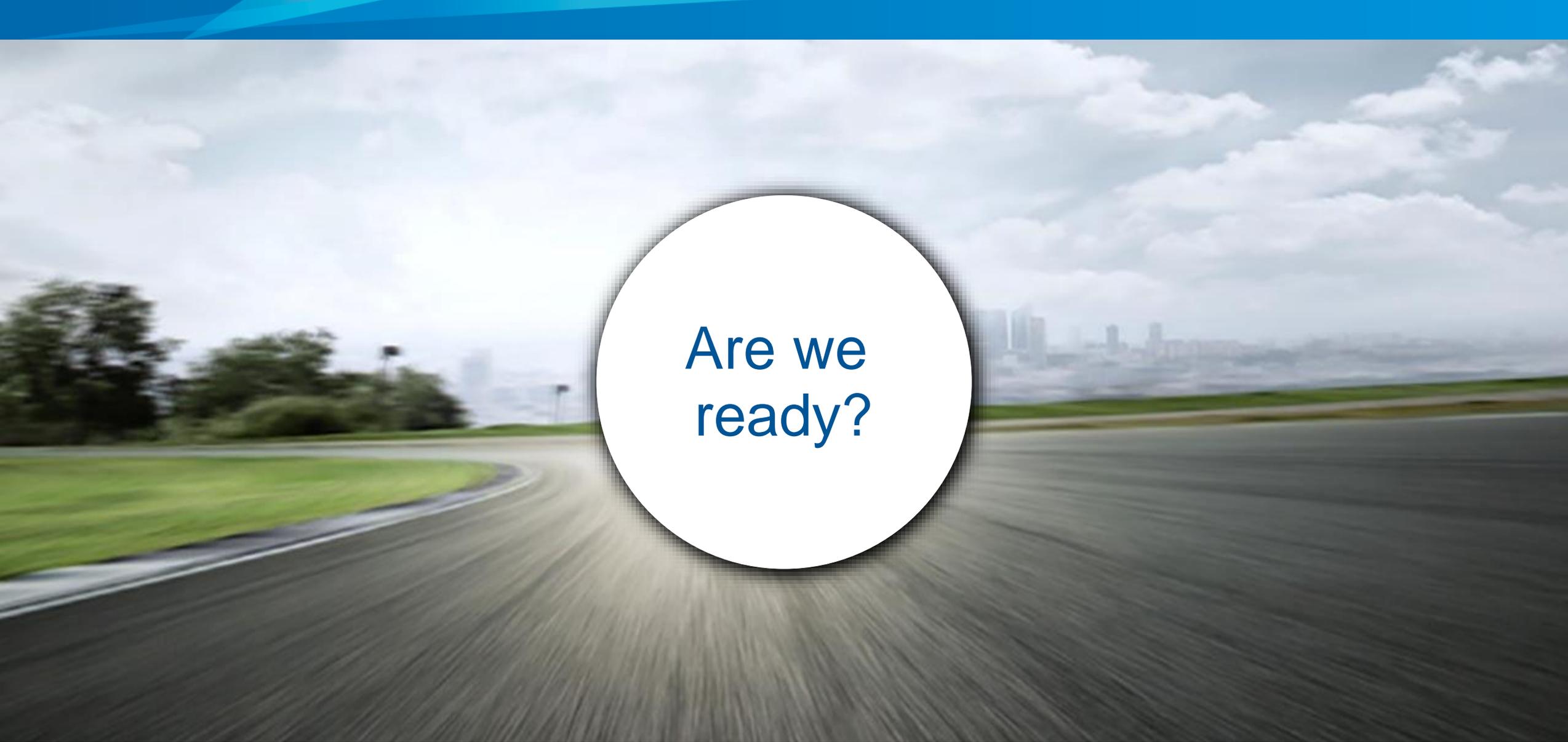
USA
45%



Self
Driving

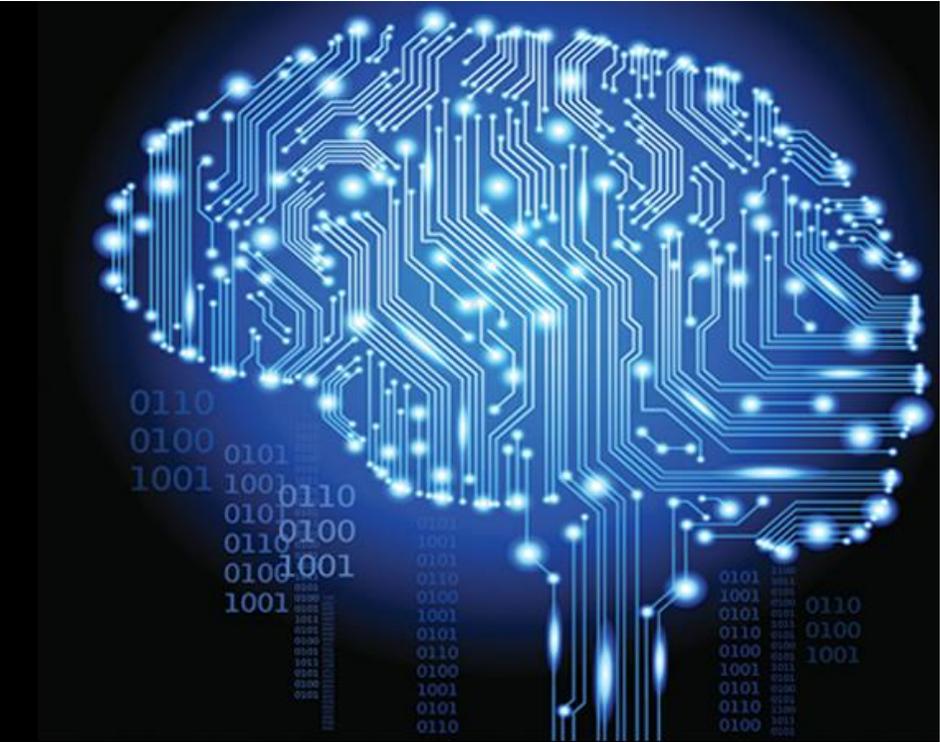
Technology
is ready





Are we
ready?

Success factor: Technology, Innovation and Agility

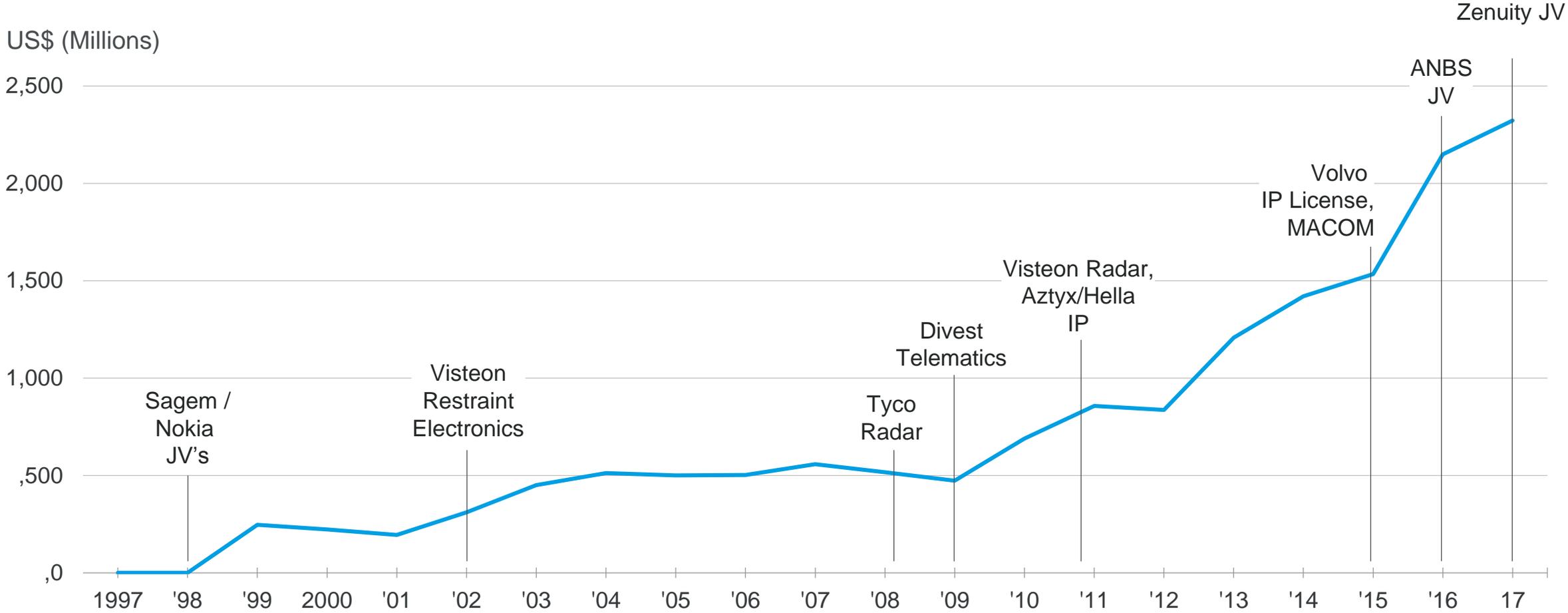


A nighttime cityscape featuring several tall skyscrapers with illuminated windows. In the foreground, a multi-lane highway is shown with long-exposure light trails from cars, creating streaks of white, red, and blue. The overall scene is lit with a cool blue tone.

The Veoneer brand will be a
visionary pioneer in automotive
electronics, ADAS, automation
and new mobility

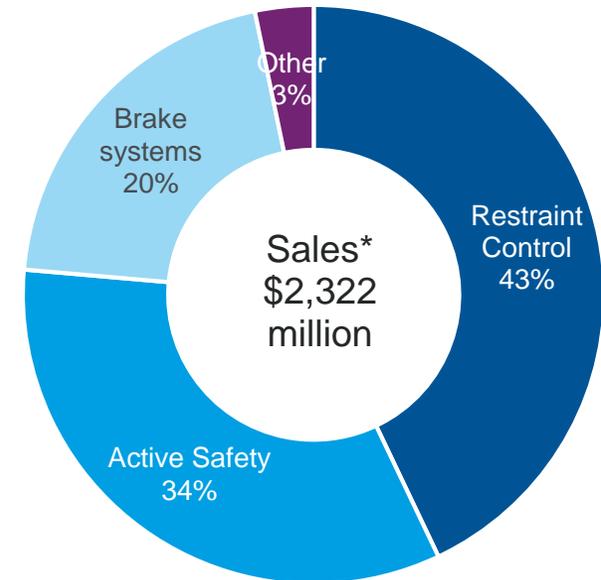
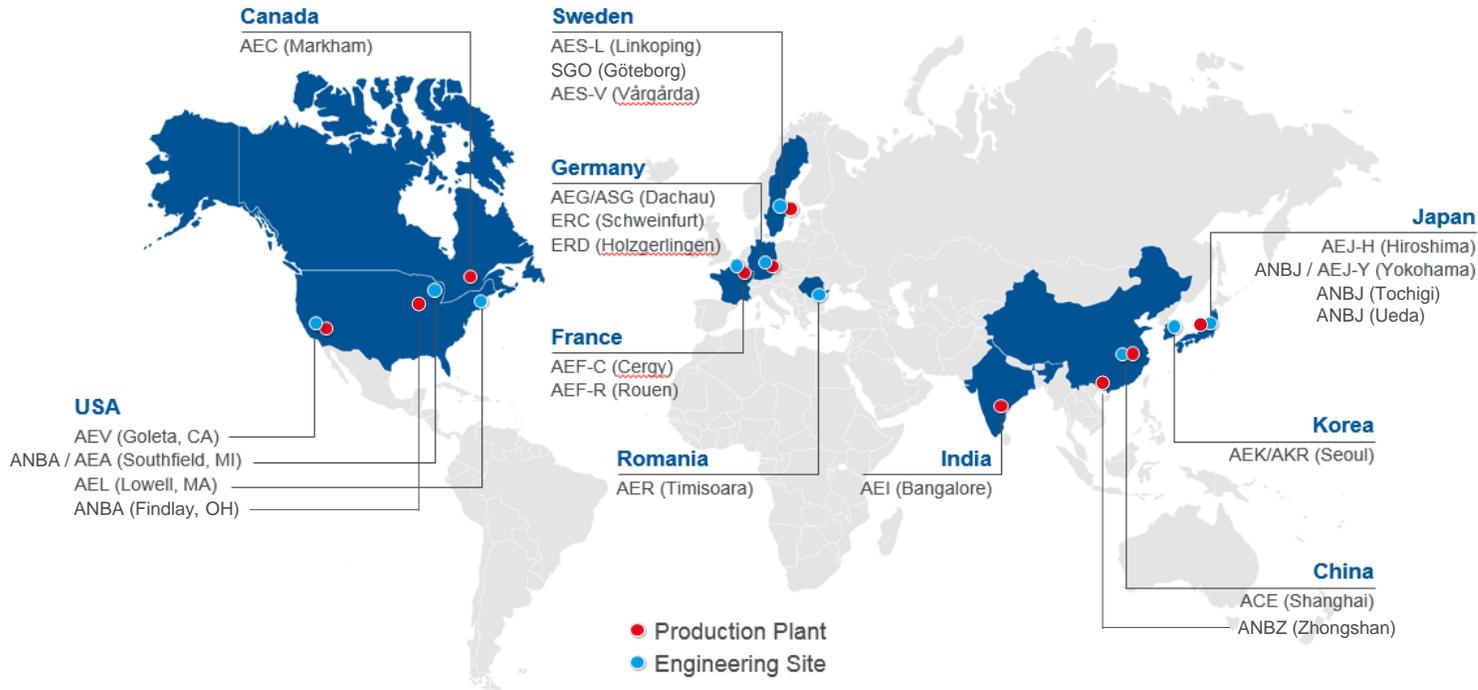
veoneer

Electronics – Our Journey so far



(*) Active Safety includes: Radar, Vision (Forward looking Mono/Stereo/Night), Advanced Driver Assist Electronic Control Unit, Positioning Modules.

Autoliv Electronics – A strong footprint



7,500 EMPLOYEES
in 10 countries

3,600 ENGINEERS
of which 65% software

20 OEM CUSTOMERS
and 7 new entry customers

20 FACILITIES

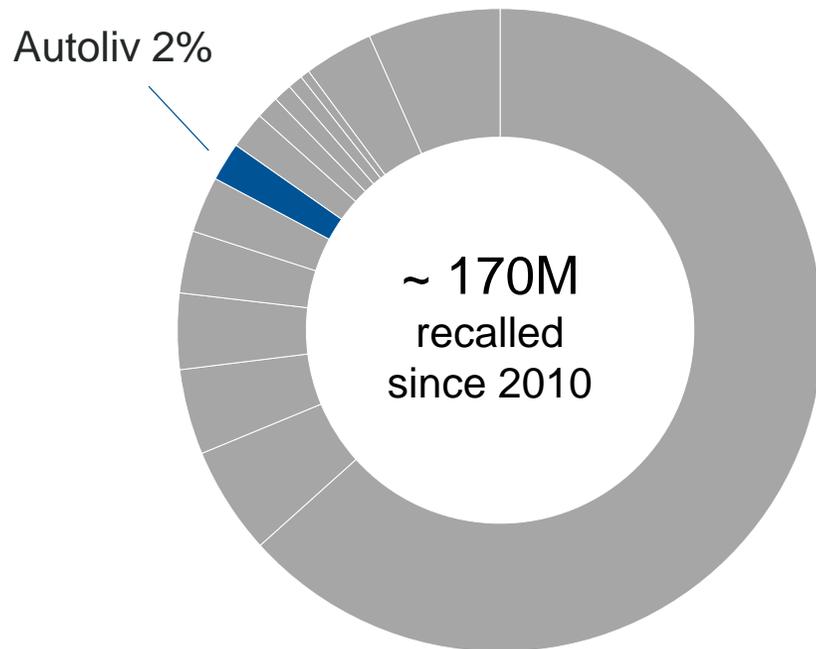
* FY2017

Autoliv Electronics- a strong basis for customer trust

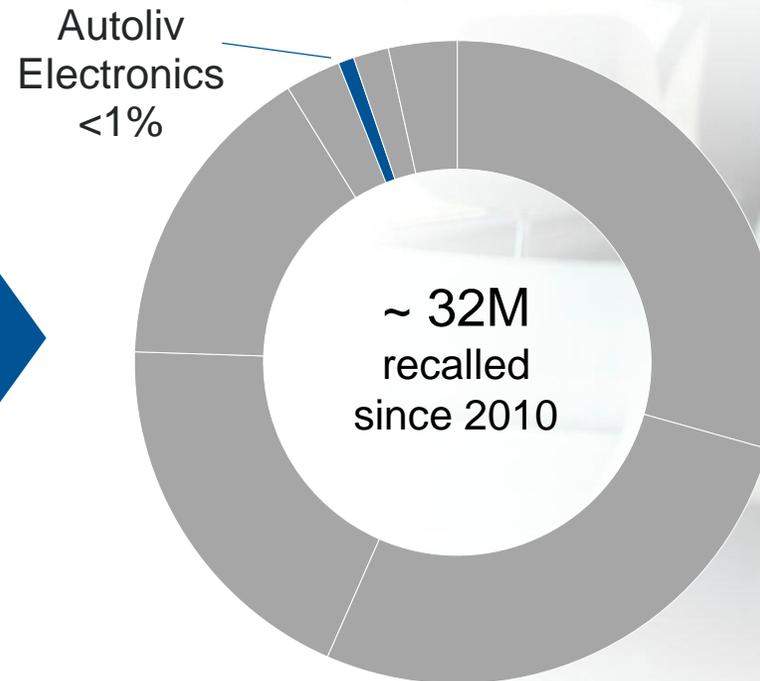
Our Passive Safety quality journey extends really well into Electronics



All Safety Products

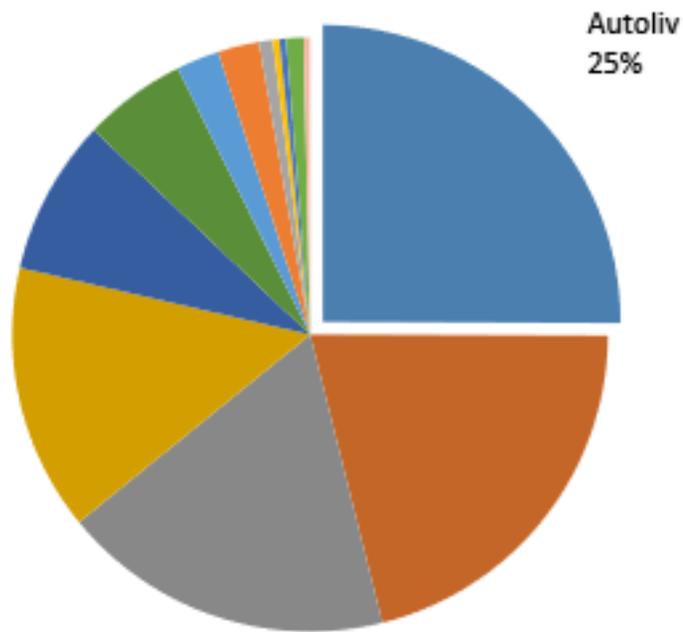


Electronics



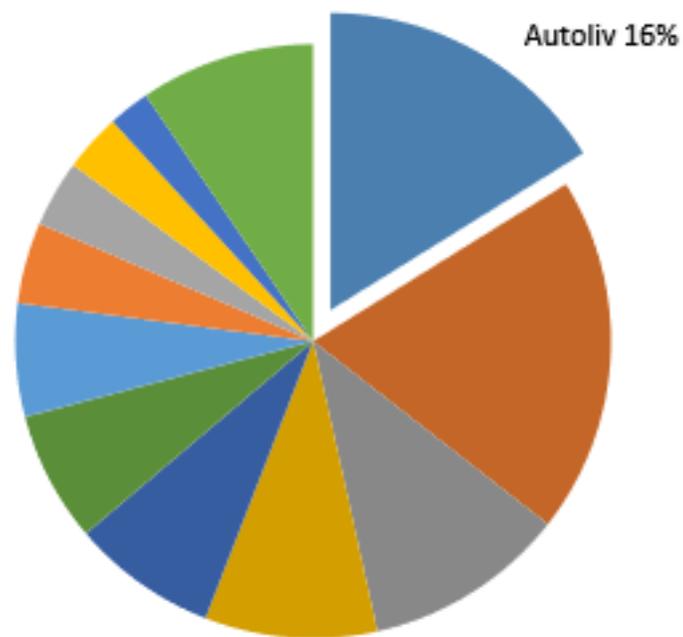
Autoliv Electronics – Top 2 market share position in 2017 for RCS and Active Safety

Restraint Control Systems



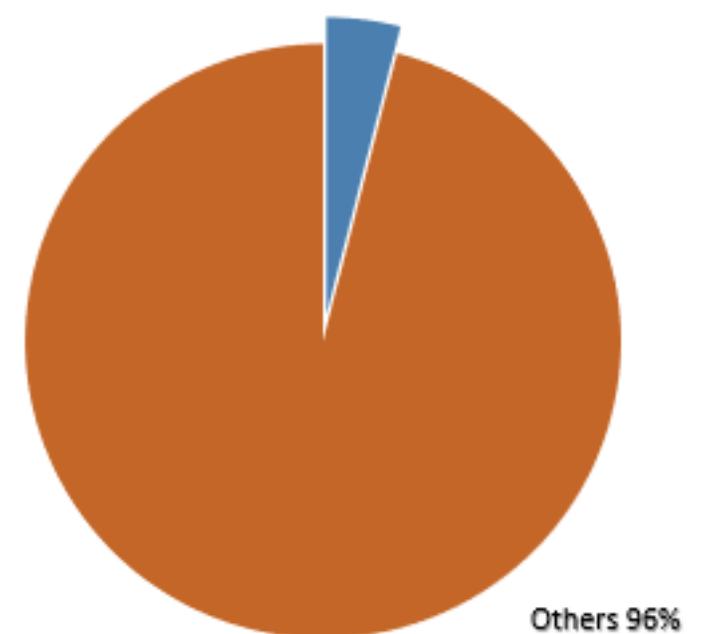
- 44% of Electronic's sales

Active Safety Systems



- 35% of Electronic's sales

Brake Control Systems



- 21% of Electronic's sales



Active Safety – building for the future

Real life safety

Standardized Test Scenarios



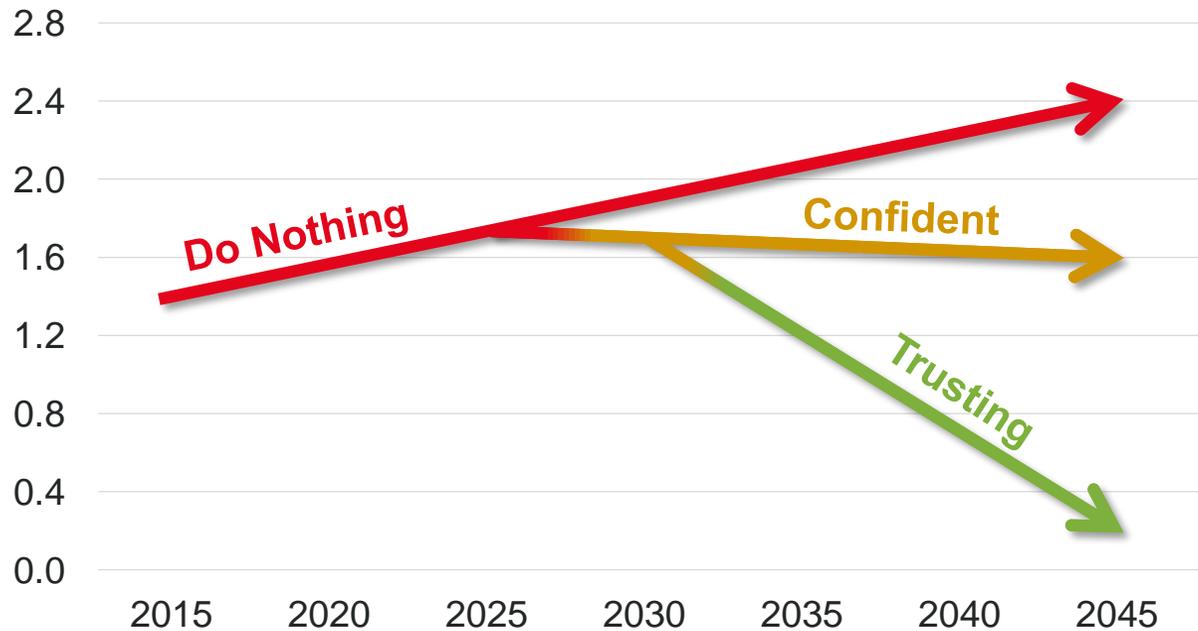
Real Life Situations and Benefit



Why We Are Here - The Road Towards Saving More Lives

Mitigating the Future?

Global Traffic Fatalities (millions)



Source: Autoliv Research

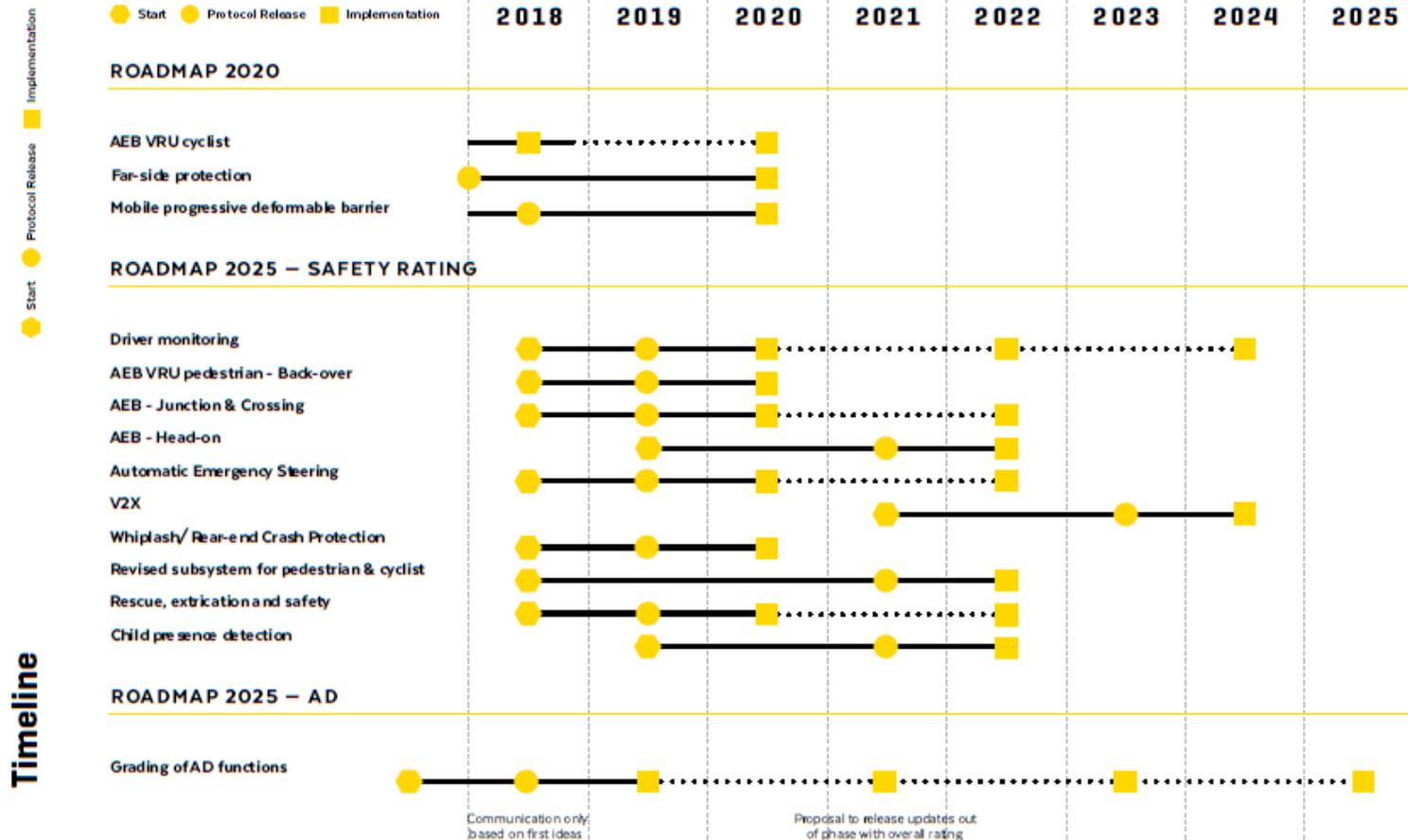
Driver Confidence

- Today's safety technology in all new vehicles
- Consumers willingness to buy and use
- Confidence in the vehicles' perception

Occupant Trust

- Driver co-pilot and shared control
- The driver considers the vehicle intelligent
- Eventually full trust in the vehicle to drive

EuroNCap 2025 Roadmap



Additional benefits to consumers



Different visions of Autonomous Driving...

Autonomous car as premium product



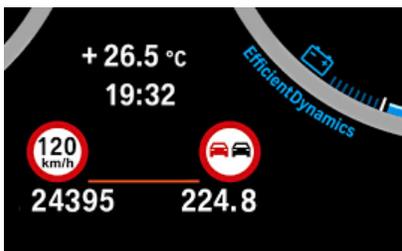
Autonomous car as shared resource



From ADAS to HAD

Level 0 through Level 5

0



NO AUTOMATION

- Forward Collision Warning
- Traffic Sign Warning
- Blind Spot Monitoring

1



DRIVER ASSISTANCE

- Autonomous Emergency braking (AEB)
- Lane Keep Assist
- Auto High Beam

2



PARTIAL AUTOMATION

- Lane Change Assist
- Lane Centering
- Advanced parking

3



CONDITIONAL AUTOMATION

- Highway Assist
- Traffic Jam Assist
- Automated parking

4



HIGH AUTOMATION

- Piloted Highway Driving
- Geo-fenced City Pilot
- Unattended Valet Parking

5



FULL AUTOMATION

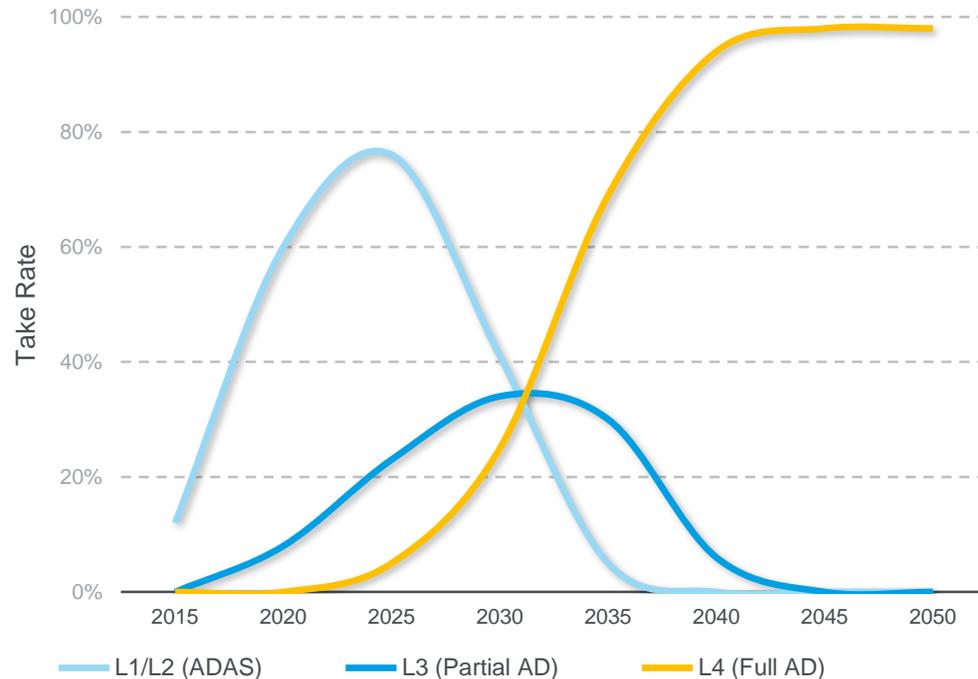
- Mobility on Demand
- Autonomous Driving

ADAS
Automated Driver Assistance Systems

HAD
Highly Automated Driving

AD is estimated to be <10% of the market in NA by 2025

Estimated Take Rates of SAE Level1-4 Take Rates

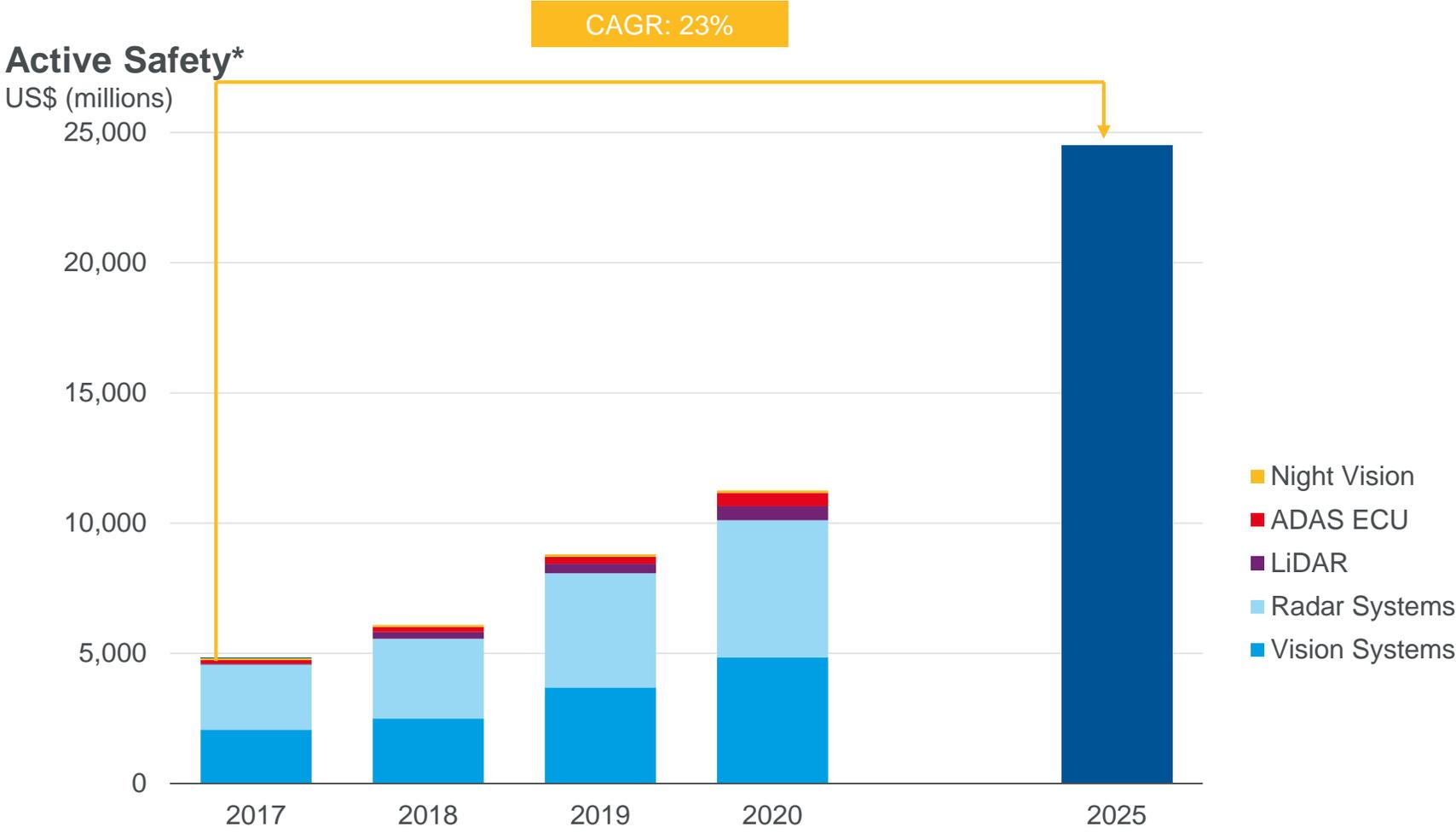


- Most of the volume in the market will be advanced driver assistance systems, with autonomous driving comprising less than 10% by 2025.

Estimates show SAE L4 gain 5% traction 2025

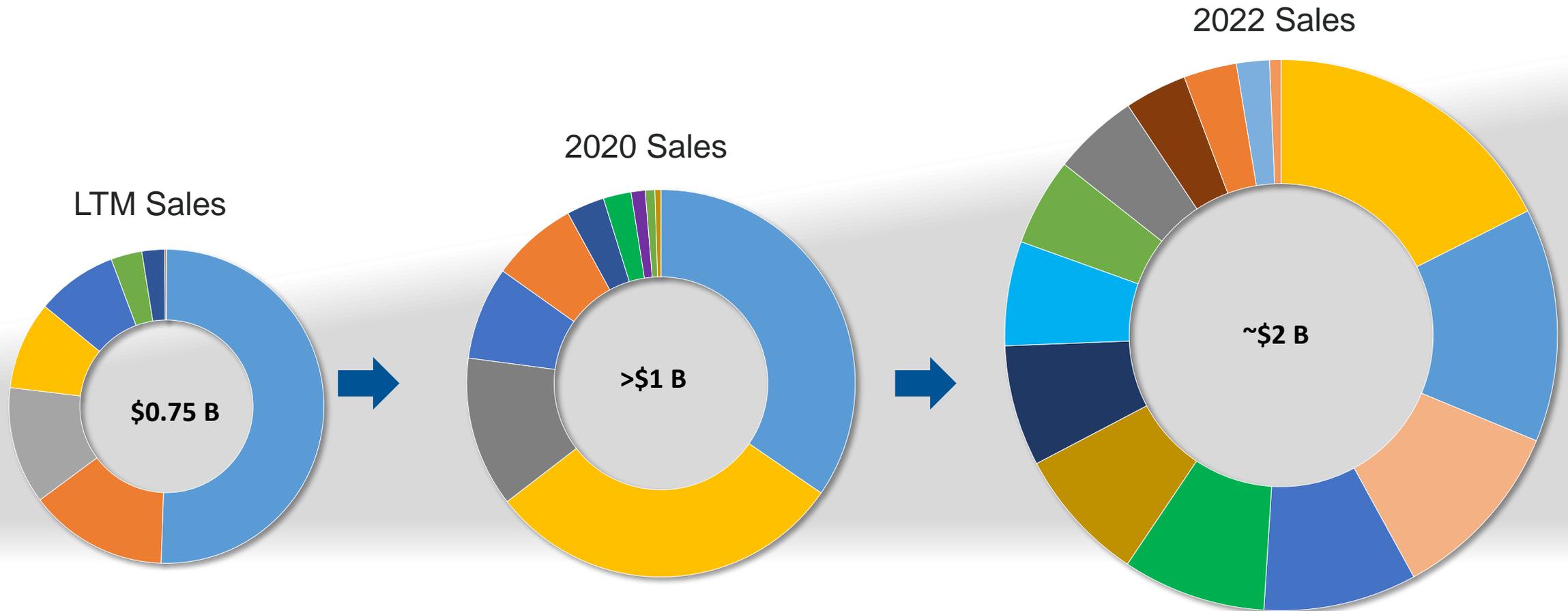
SOURCE: Goldman Sachs

Active Safety Sensor Market



*) Active Safety Market includes Radar (Front/side/rear), Forward looking Cameras (Mono/Stereo/Night Vision), Other (Advanced Driver Assist Electronic Control Unit, LiDAR).

Active Safety Revenue* by OEM group



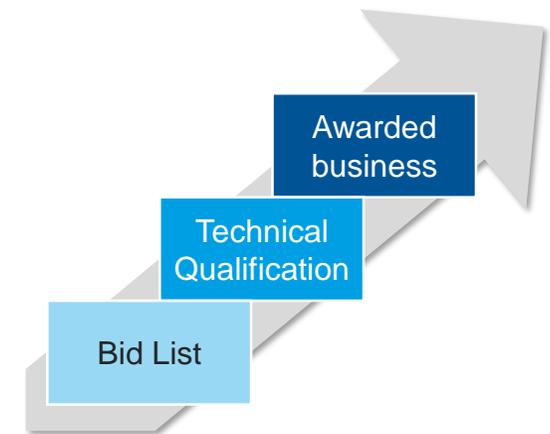
(*) Non-US GAAP measure excludes costs related to Antitrust matters and capacity alignment, (**) Active Safety, (***) Compound Annual Growth Rate 2017 to 2020 and 2017 to 2022 assuming 2017 LTM as of Q2'17.

Active Safety – Customer snapshot

2015

Represents >90% of global light vehicle production

Customer	RADAR			VISION*			ADAS ECU			LIDAR		
Customer 1	█			█			█					
Customer 2	█			█			█					
Customer 3												
Customer 4												
Customer 5	█											
Customer 6	█											
Customer 7												
Customer 8	█											
Customer 9	█											
Customer 10												
Customer 11	█			█								
Customer 12	█						█					
Customer 13												
Customer 14	█											
Customer 15												
Customer 16												
Customer 17	█			█								
Total	10	5	4	4	1	1	3	2	2	0	0	0



*Vision based on Autoliv developed algorithms,

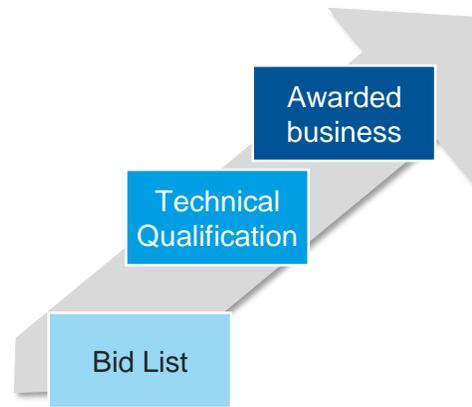
Electronics– Customer snapshot

Active Safety

2017
Dec

Represents
>90% of
global light
vehicle
production

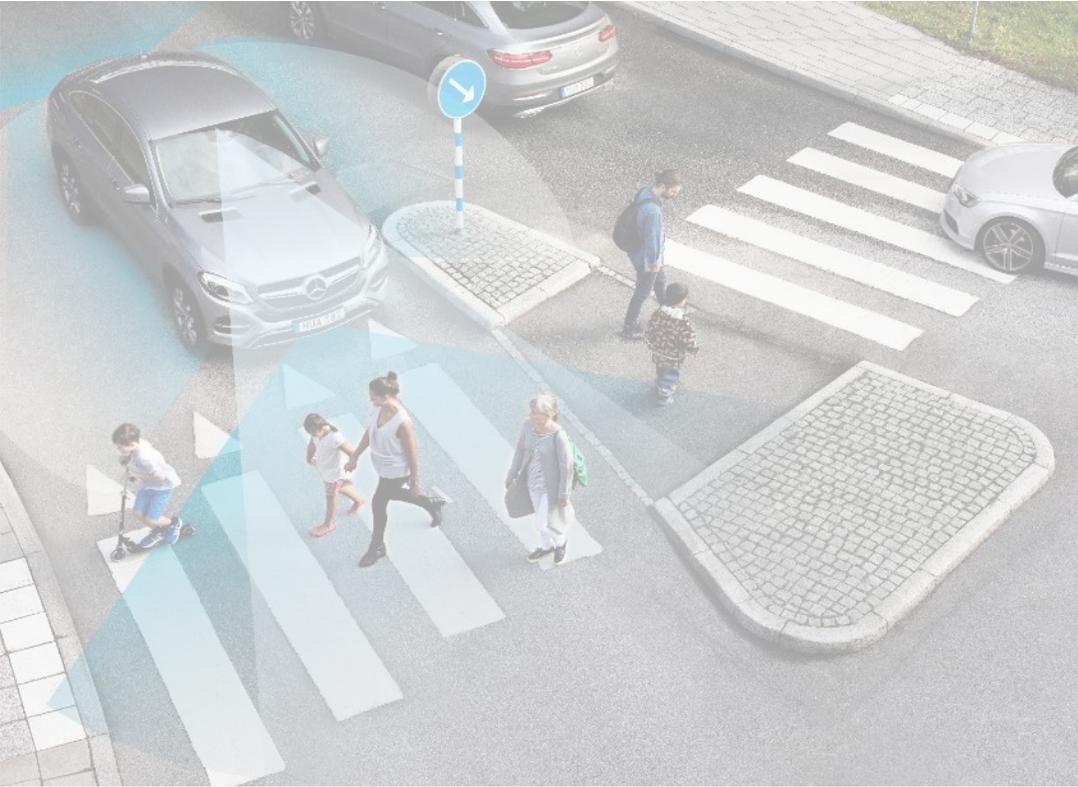
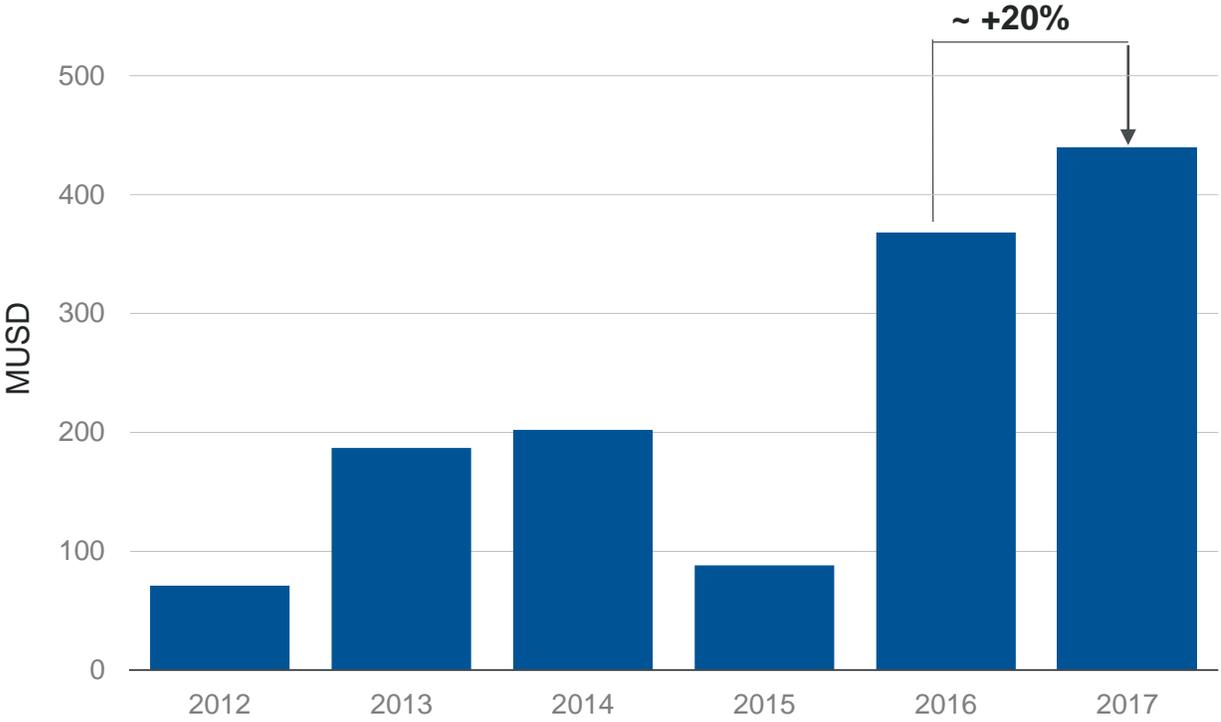
Customer	RADAR			VISION*			ADAS ECU			LIDAR			RCS			BRAKE		
Customer 1																		
Customer 2																		
Customer 3																		
Customer 4																		
Customer 5																		
Customer 6																		
Customer 7																		
Customer 8																		
Customer 9																		
Customer 10																		
Customer 11																		
Customer 12																		
Customer 13																		
Customer 14																		
Customer 15																		
Customer 16																		
Customer 17																		
Total	14	12	7	13	8	4	10	8	2	11	3	1	15	13	12	7	5	3



*Vision based on Autoliv developed algorithms,

Order Intake Annualized sale

Active Safety



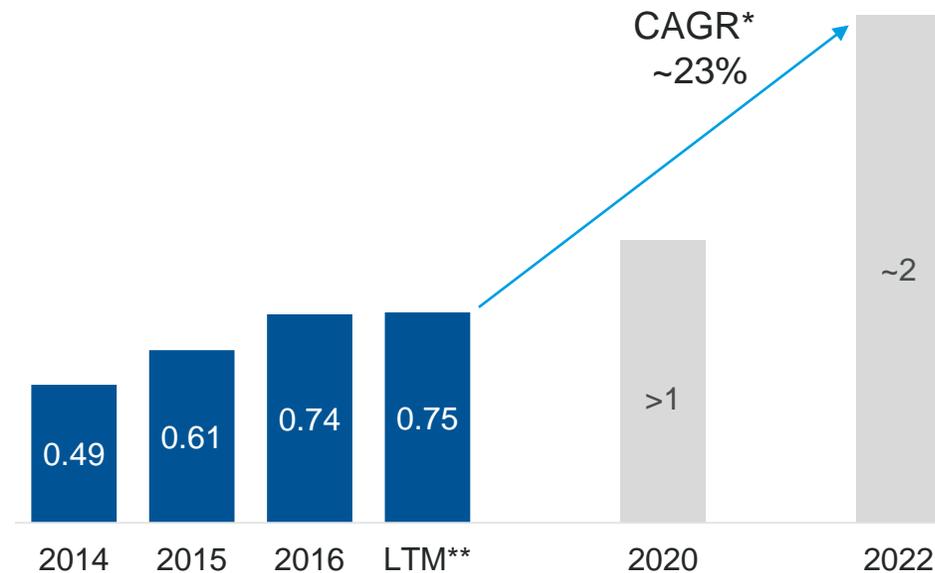
(*) \$ value represent expected average annualized sales from respective years order intake, historic data is based on CMD material.

Autoliv Active Safety Sales Growth

CMD Target: 2020 Sales target of >\$1B

Active Safety Sales – US\$ Billion

- High market growth
- Strong product offering
- Strong bid-list presence
- New order wins during 2016-17



2025 Ambition

- Active Safety sales ~\$4B

(** CAGR Compound Annual Growth Rate.
(**) Last Twelve month sale as of June 30, 2017.

Active Safety - Selected Customer Launches

Vision

- Europe (SOP 2018)
- Europe (SOP 2019)
- Asia (SOP 2018)

ADAS ECU

- Europe (SOP 2019)

Night Vision

- North America (SOP 2020)

Advanced ADAS Software

- Europe (SOP 2019)

Radar 24 GHz NB

- Europe (SOP 2020)
- Asia (SOP 2019)
- North America (SOP 2019)

Radar 77GHz

- Europe (SOP 2019)
- Asia (SOP 2019)
- North America (SOP 2019)



New Launch Q1-2018



System including:

- Next generation Mono-vision system with full AEB functionality.
- Optional stereo vision is for Level2+ functionality

Nominated by Geely for First ADAS System

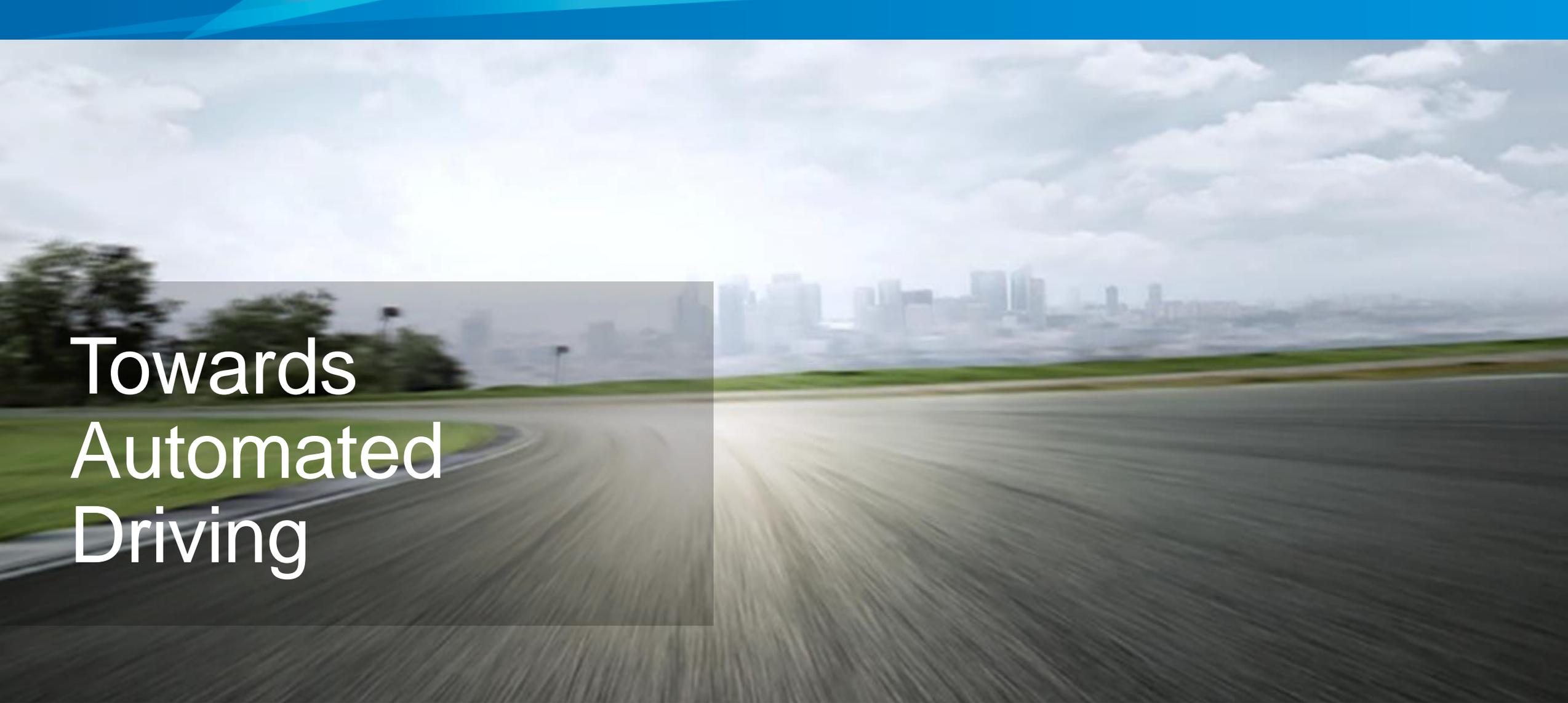
Complete system including:

- ADAS software
- ADAS controller
- Radar system
- Mono and stereo vision camera systems.





Electronics — building for the future technology

A blurred road leading towards a city skyline under a cloudy sky. The road is in the foreground, curving to the right. In the background, a city skyline is visible across a body of water. The sky is filled with large, white clouds.

Towards Automated Driving

Defining ADAS (L2) vs. AD (L4)

Supervised vs Unsupervised

DRIVER RESPONSIBLE



MANUFACTURER RESPONSIBLE



“LEVEL 3”

Something in the middle, depending on:

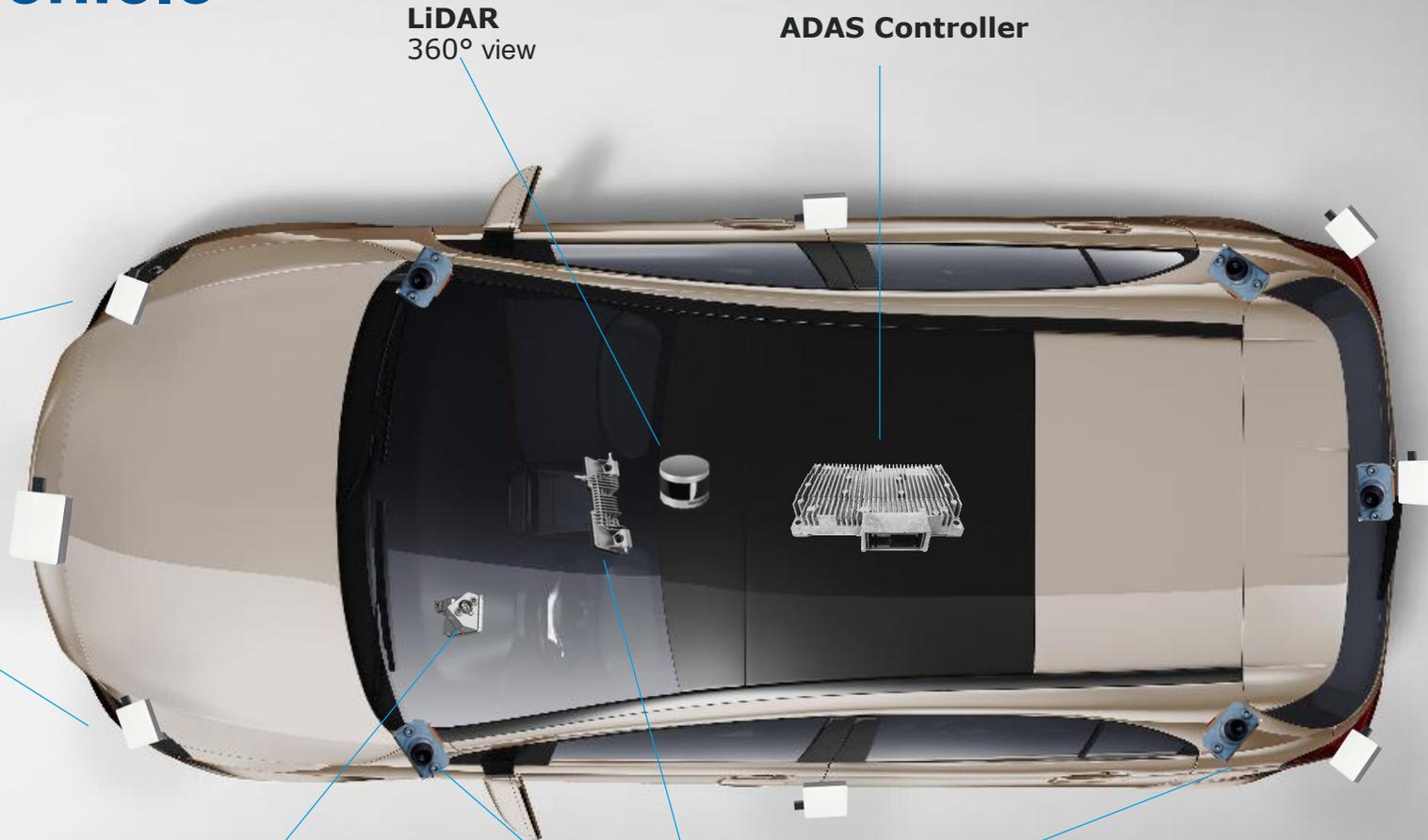
- performance limitation
- level of risk acceptable by Customer

- Driver responsible to intervene whenever needed
- Limitations: Lane markings, road design, oncoming objects, pedestrians, animals, restrictions in steering / braking / acceleration force that can be applied

- Tested on and expects extreme situations
- Takes precautions, takes decisions
- Driver free to do something else
- Overall safety requirement: *Fewer caused accidents (by some margin) than humans*

Example of L4 Vehicle Hardware

Radars
360° view with 6-8 front, rear and possibly also side sensors



LiDAR
360° view

ADAS Controller

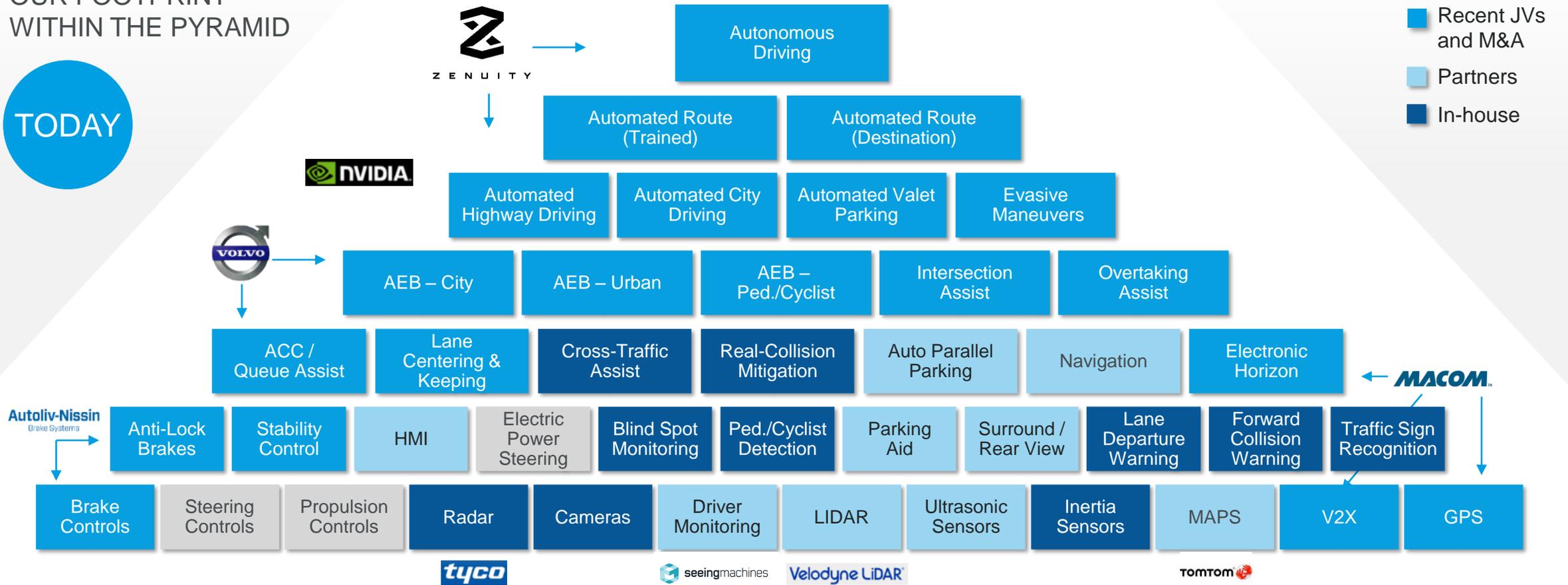
Driver Monitoring

Cameras
360° view with 8-10 cameras

Electronics Active Safety – Building for the long-term

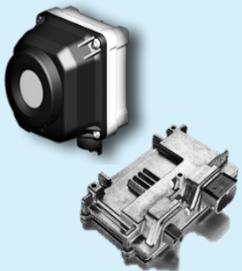
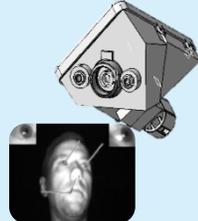
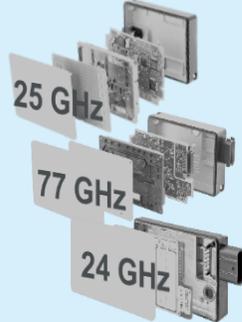
OUR FOOTPRINT WITHIN THE PYRAMID

TODAY



Active Safety Product Offering

Products

Mono Vision	Stereo Vision	Night Vision	Driver Monitoring	Radar	ADAS ECU	RoadScape	LiDAR
							
  	 	    	 <p>Drive me</p>	     	 	 	

The Developing Eco-System

Zenuity bringing Sensor Fusion, Decision and Control

Autoliv

Cloud



Autoliv

Sensors



Partners



Decision & Control

Sensor Fusion



Z E N U I T Y
System



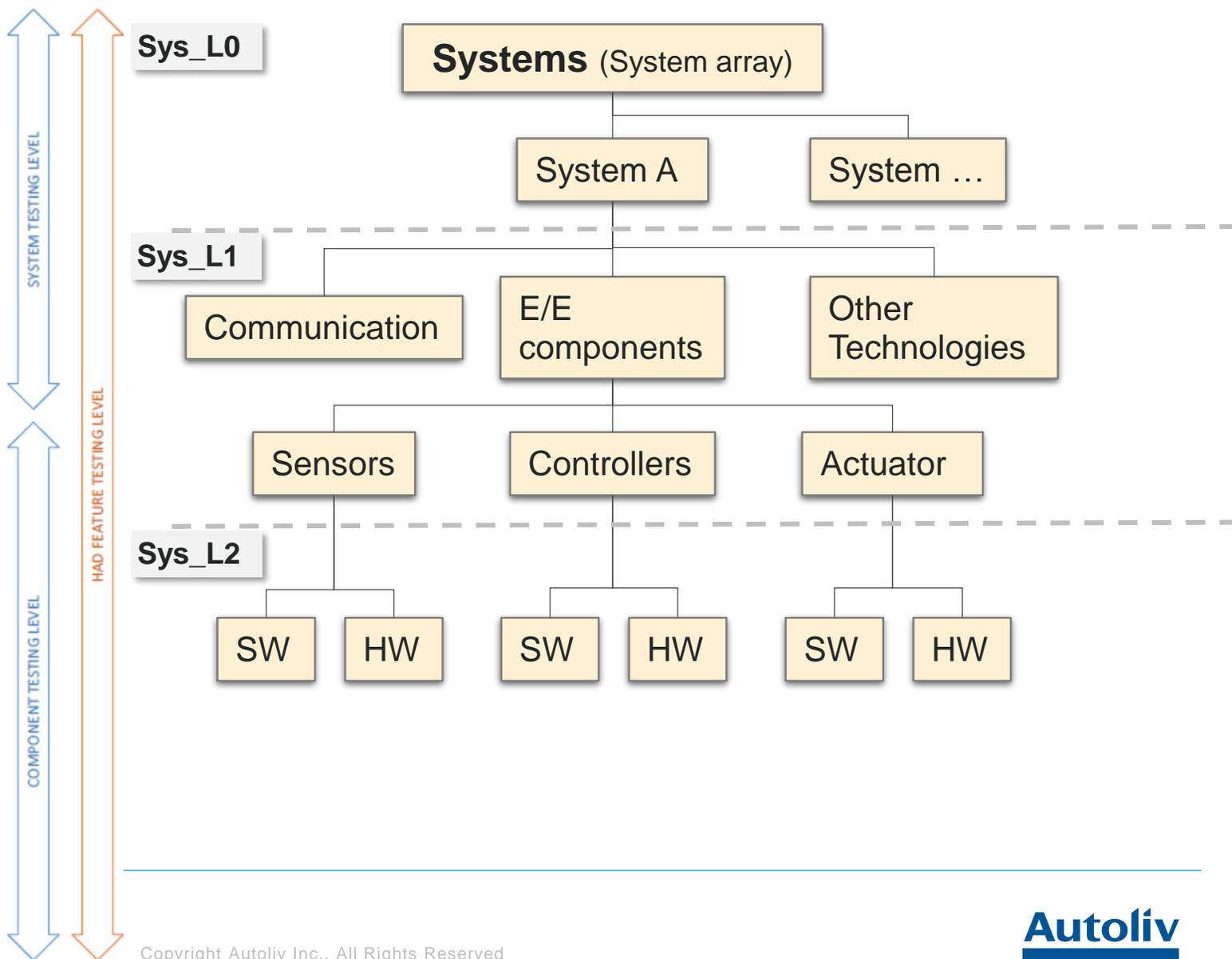
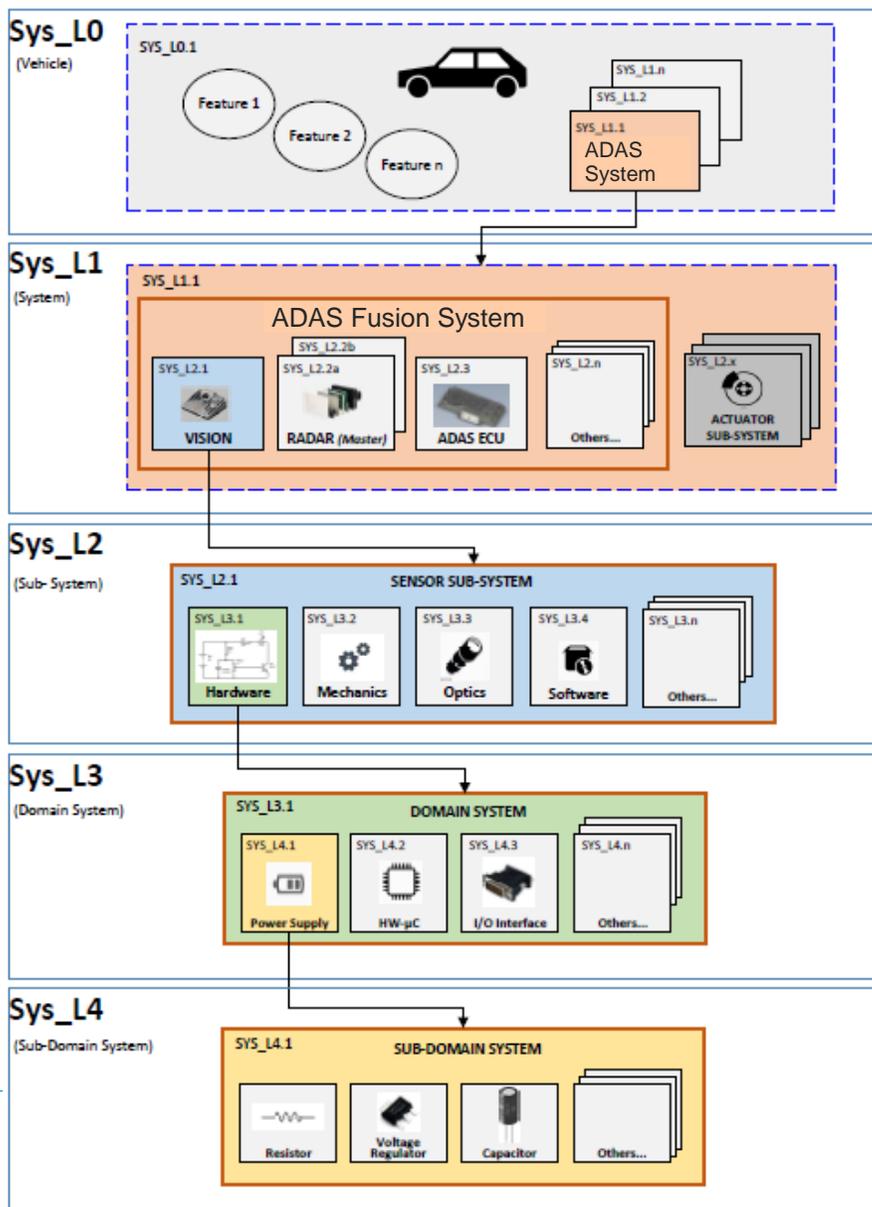
Actuators



Partner

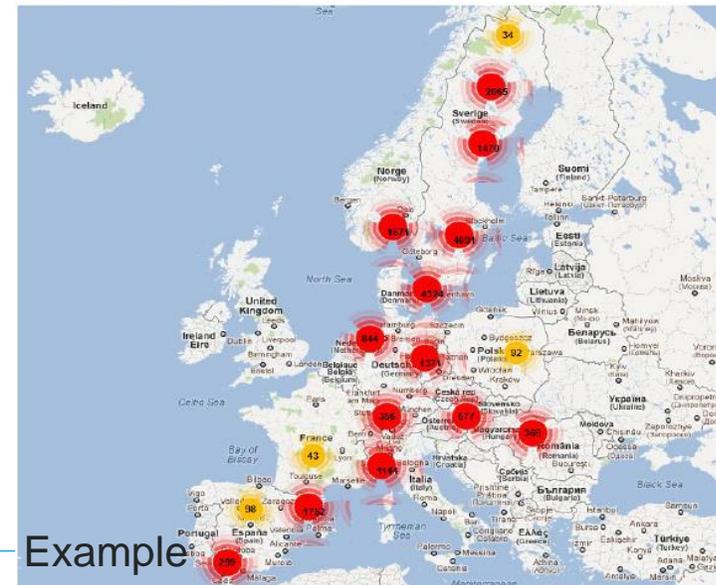
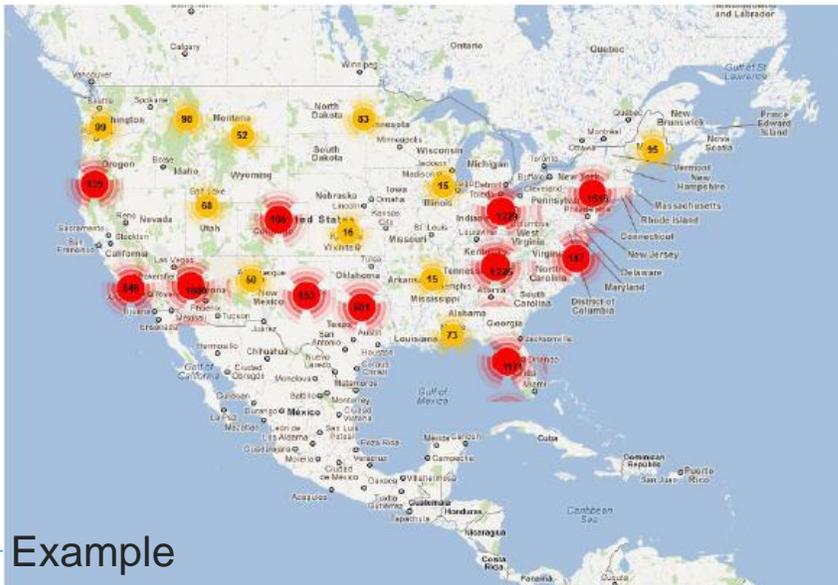


Top-Down System Layers



Data Collection

- Thousands of hours of data corresponding to millions of km required to get statistical relevant results for each function
- Data collection required with a suitable distribution, geographically spread, different weather, seasons, time of day, different use cases
- Data distribution planned together with OEM and based on ALV experience from sensor performance
- Collected data marked by data marking team with relevant instructions from development team
- Example of data collection scene distribution:

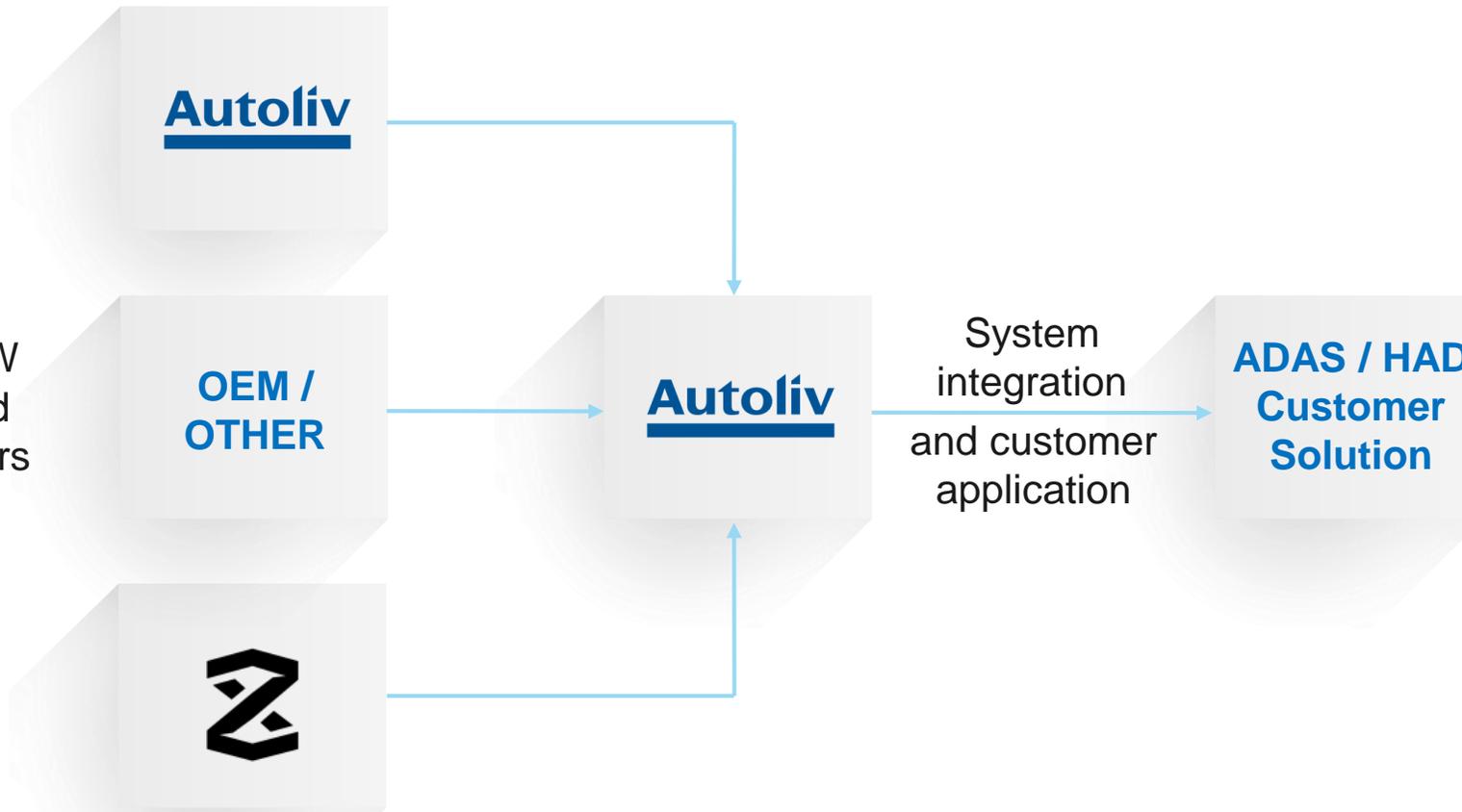


Autoliv's Business Model

- ADAS ECU
- Sensors
- Base SW

- Black Box SW for ADAS and HAD / Sensors

- SW Systems for ADAS and HAD



Autoliv could offer the complete set of modules / features at each level of modularity (global system, sensors, ADAS ECU, SW features) from single component to complete global systems

Customers could concentrate on the contents that could be differentiating for him versus competitor

Business Model Approach for SW

- **LICENSE FEES MODEL**

- Easy to manage
- Possible to provide as Tier1 or Tier2

- **SUBSCRIPTION MODEL**

- Always the most recent features available
- Flexible and agile depending on market environment

- **CLOUD DATA**

- Additional revenue source
- Increased end customer knowledge

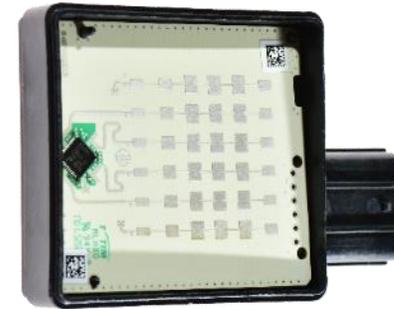


Active Safety Technologies

Safety Electronics Technology

Leading radar sensors to cover complex real life driving scenarios

Autoliv develops leading 24GHz and 77GHz Radar sensor systems. Using unique Radar Signal Processing methods and very high bandwidth allow best in market performance.



Safety Electronics Technology

New Vision Systems and Algorithms

2017 Mono Vision AEB (3rd Generation)

- Mono Camera with Autoliv Vision based AEB
- Cost effective solution to meet NCAP 2018 (Lane, AEB, TSR)

2019 Mono and Stereo Vision (4th Generation)

- Next generation Stereo and Mono cameras
- Support Automated Driving and NCAP 2020
- Conquered two more customers, using Autoliv algorithm solution

2022+ Next generation Vision systems (5th Generation)

- High resolution imagers
- Advanced algorithms and processing
- Multiple camera support



Autoliv Vision Systems



Speed Assistance



Lane Support

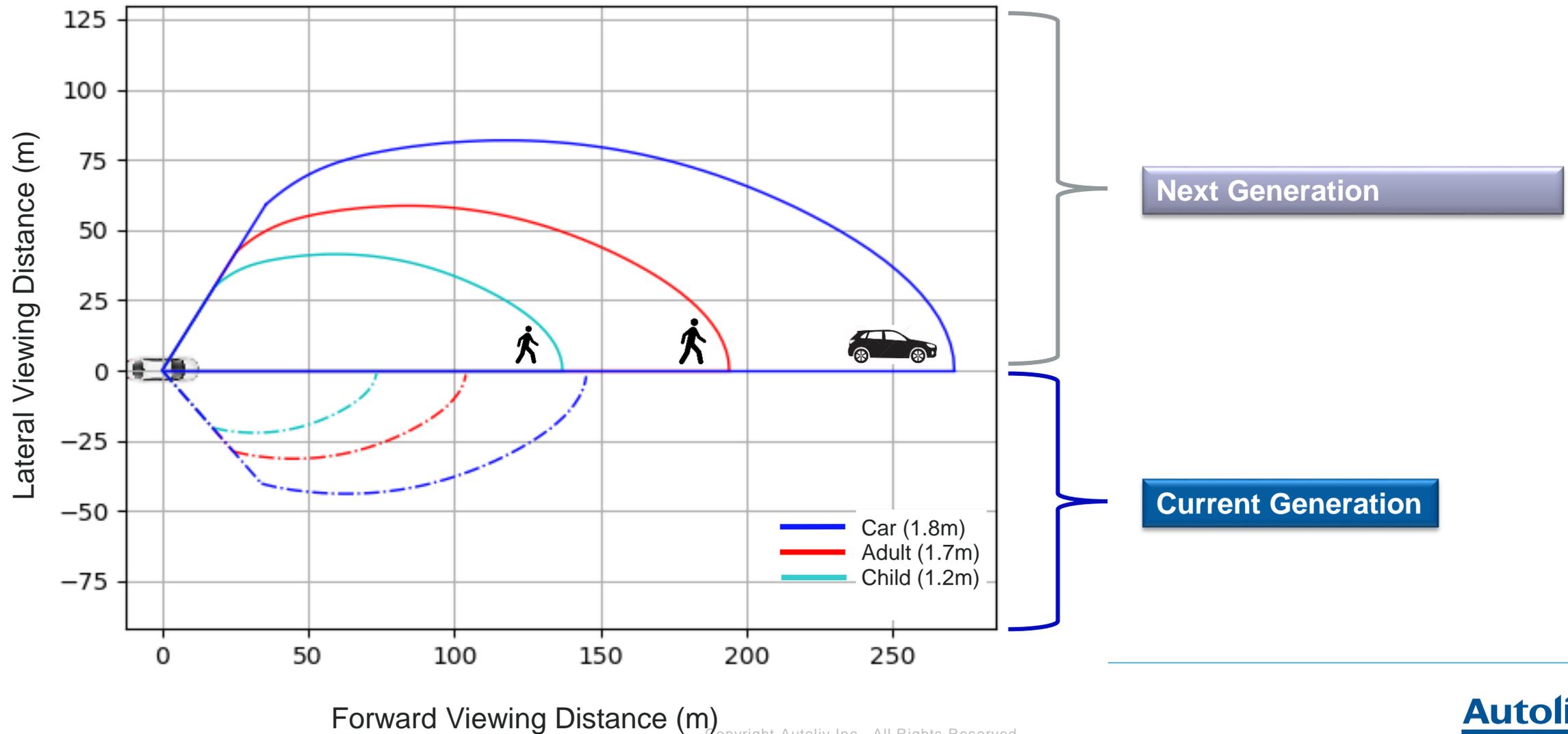


AEB Interurban



NCAP
Driver Assist
Automated Driving support

Detection Distance Overview



Deep Learning at Autoliv

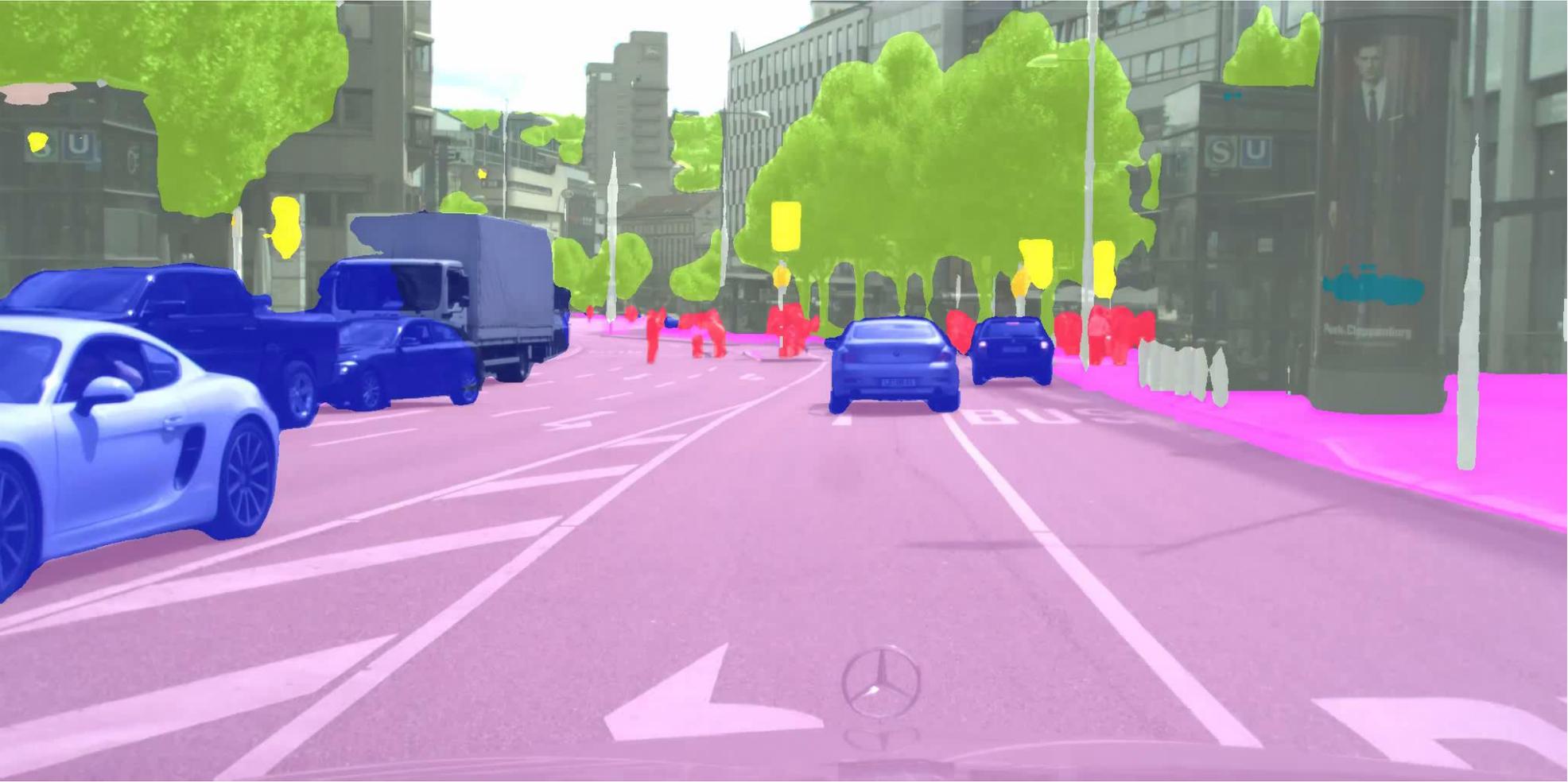
- Deep Learning is a branch of machine learning that regards Deep Neural Networks and outperforming all other known approaches to computer vision in a variety of tasks
 - Classifying many different kinds of objects at the same time (multi-class classification)
 - Detecting vehicles at any angle
 - Detecting partially obstructed objects
- Deep Learning enables functions like:
 - Detecting drivable road surface and classifying road edges
 - Support for mapping via pixel-wise classification of images and detecting map landmarks
 - Predicting the motion of surrounding road-users
 - Etc.
- Autoliv has been working on Deep Learning approaches for our 4th generation camera system and will continue the deployment for upcoming generations.



Holistic Path – Support Pilot Assist and HAD



Semantic Segmentation



Safety Electronics Technology

LiDAR Sensing to Complement Vision and Radar

2018 AUTONOMOUS (L4/5) 2021 PREMIUM OEMs (L3/4) 2024 MASS MARKET (L3/4) 2027

WAVE 1

WAVE 2

WAVE 3

Mobility as Service Drives Market led by New Entrants



Velodyne LiDAR®

360° Surround Scan
200m range

Highway Pilot (L3/L4) Vehicle Launches for Traditional Automotive OEM Business



Forward Looking, 200m,
Complement to Radar + Vision

Velodyne and Autoliv working together to develop a consumer vehicle LiDAR



Success of Mass Market LiDAR
Dependent on Cost/Performance
Evolution vs. Vision and Radar

Complement or Competitor?
to Vision and/or Radar

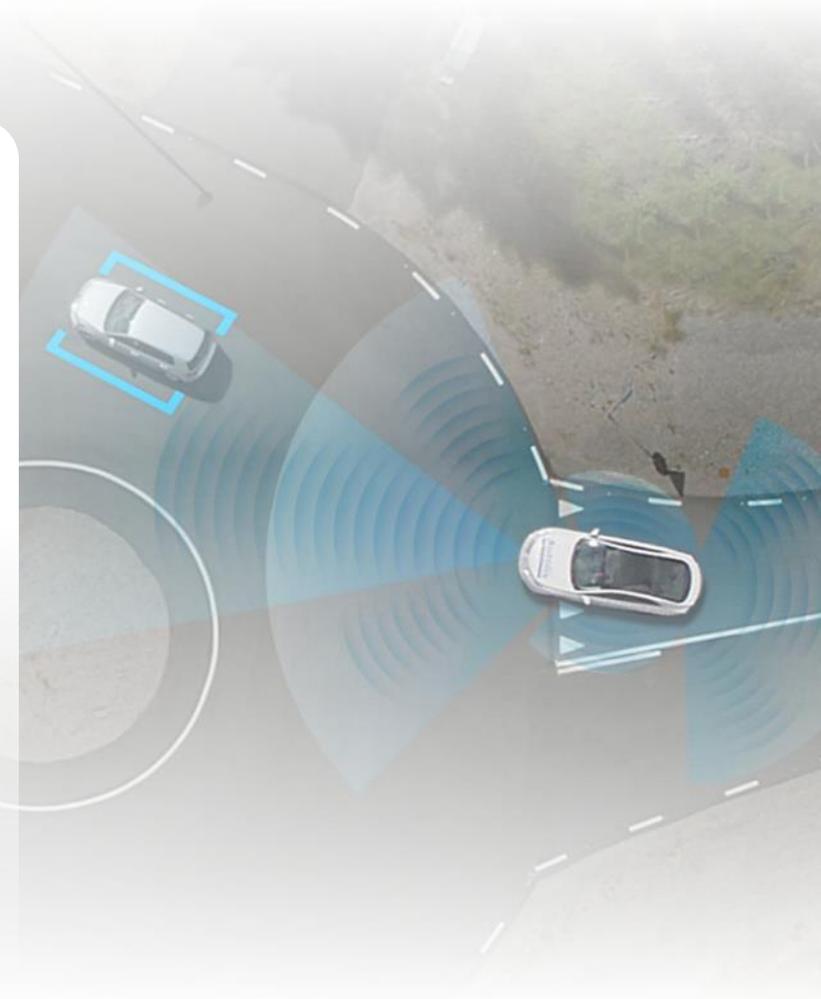
Safety Electronics Technology

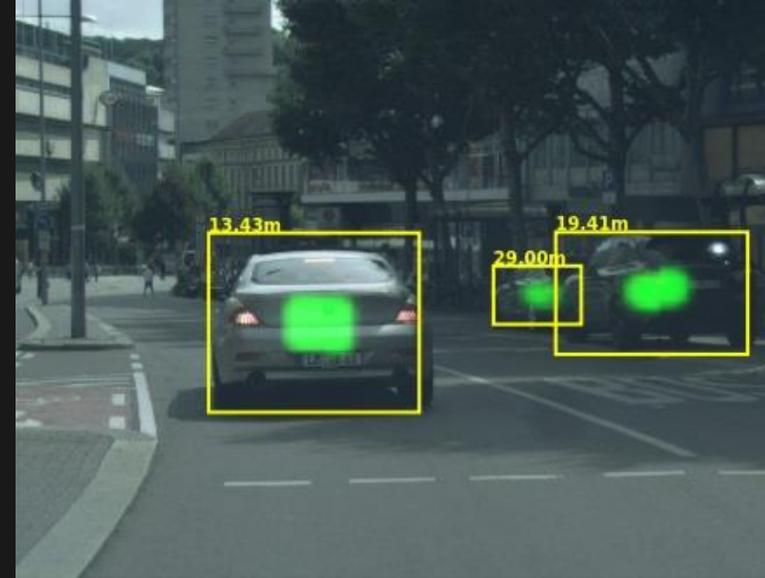
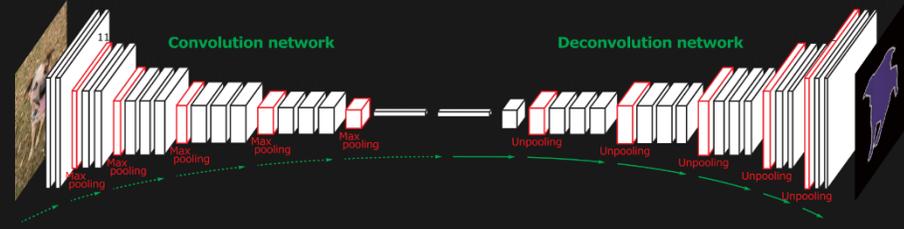
Higher performing computing platforms

Autoliv develops customized ADAS/AD ECU technology and provides outstanding functional safety integration capability

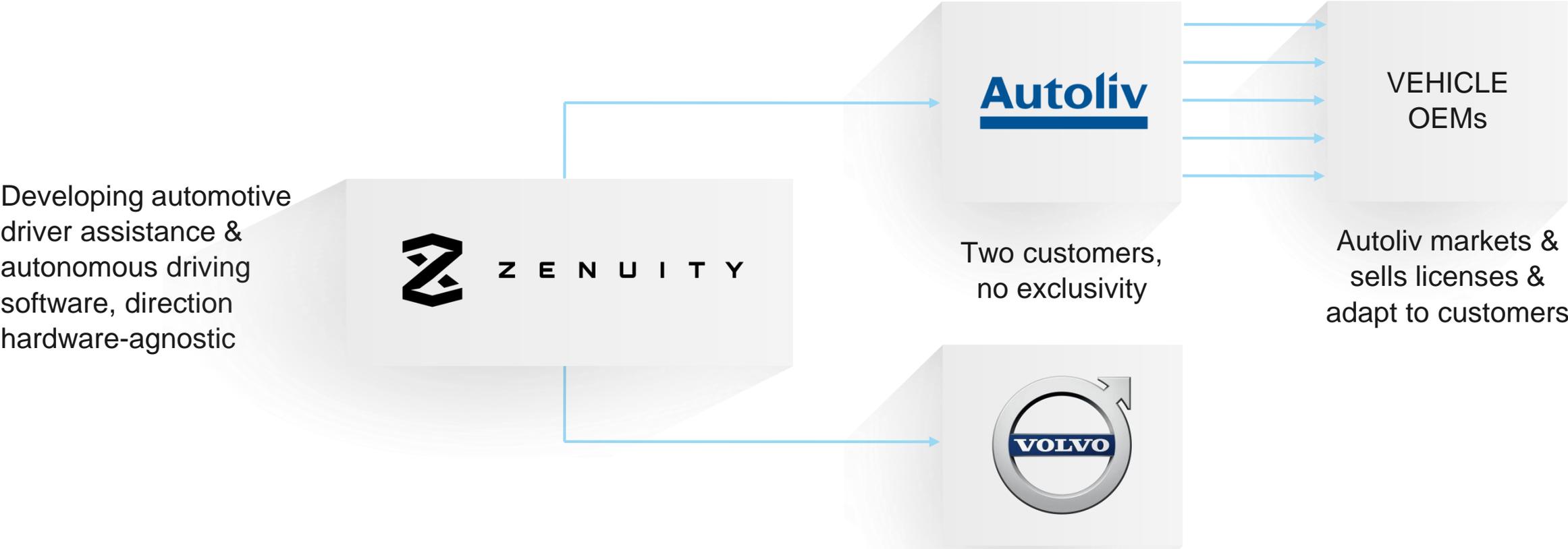


- Connectivity
- Cyber Security
- Multi SoC integration
- Deep Learning Acceleration

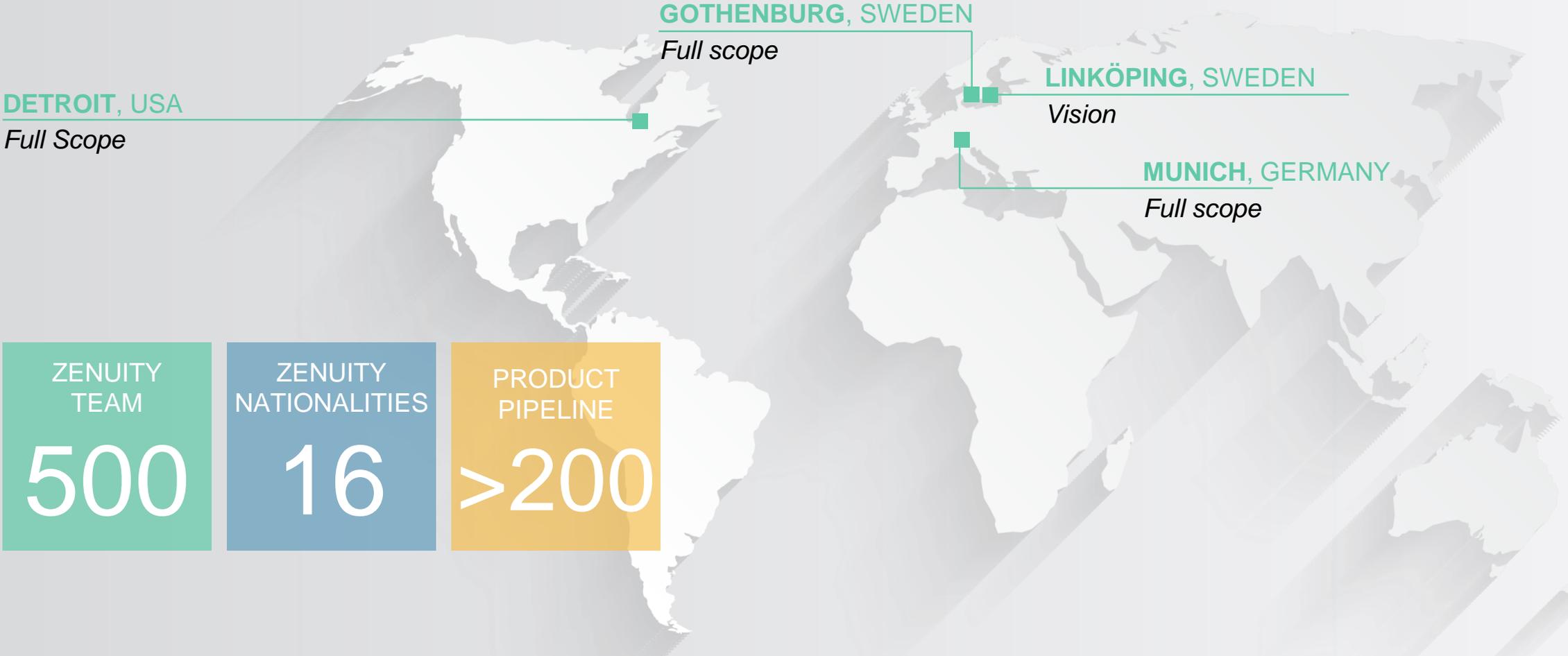




ZENUITY WAY TO MARKET



Zenuity today



ZENUITY
TEAM
500

ZENUITY
NATIONALITIES
16

PRODUCT
PIPELINE
>200

WHERE IS ZENUITY NOW?

Product Overview

- Production ready baseline out of today's Volvo XC90 platform
- Enhanced and additional features to launch 2019

**LEADING
ADVANCED
DRIVER
ASSISTANCE**

**HIGHLY
AUTOMATED
DRIVING**

- Equivalent with "Level 4+"
- Full Autonomous Driving system suite launched 2021

**CLOUD
BASED
AUTOMOTIVE
SOFTWARE**

- Starting with "Road friction indication"
- Include V2X and holistic path planning

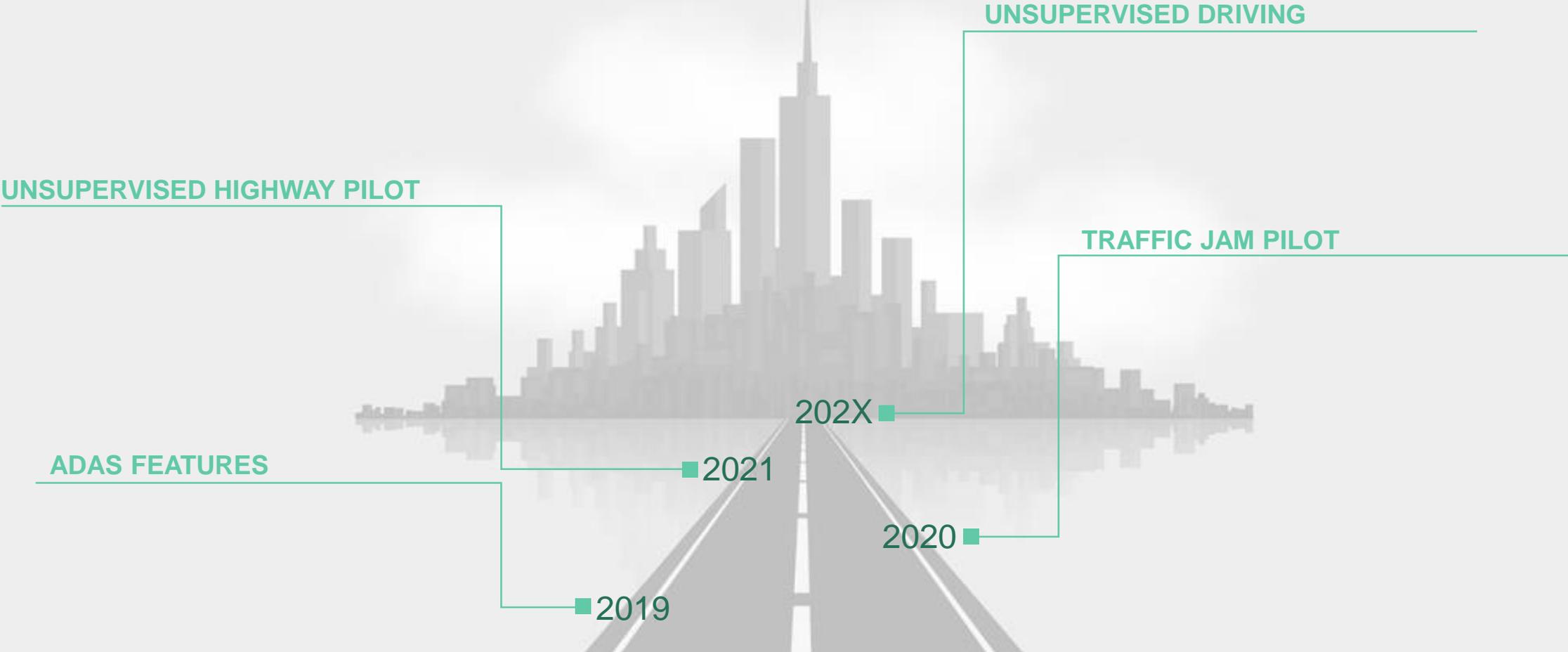
**System offering
from sensors
to actuators**

**Hardware-
agnostic, driving
standardization**

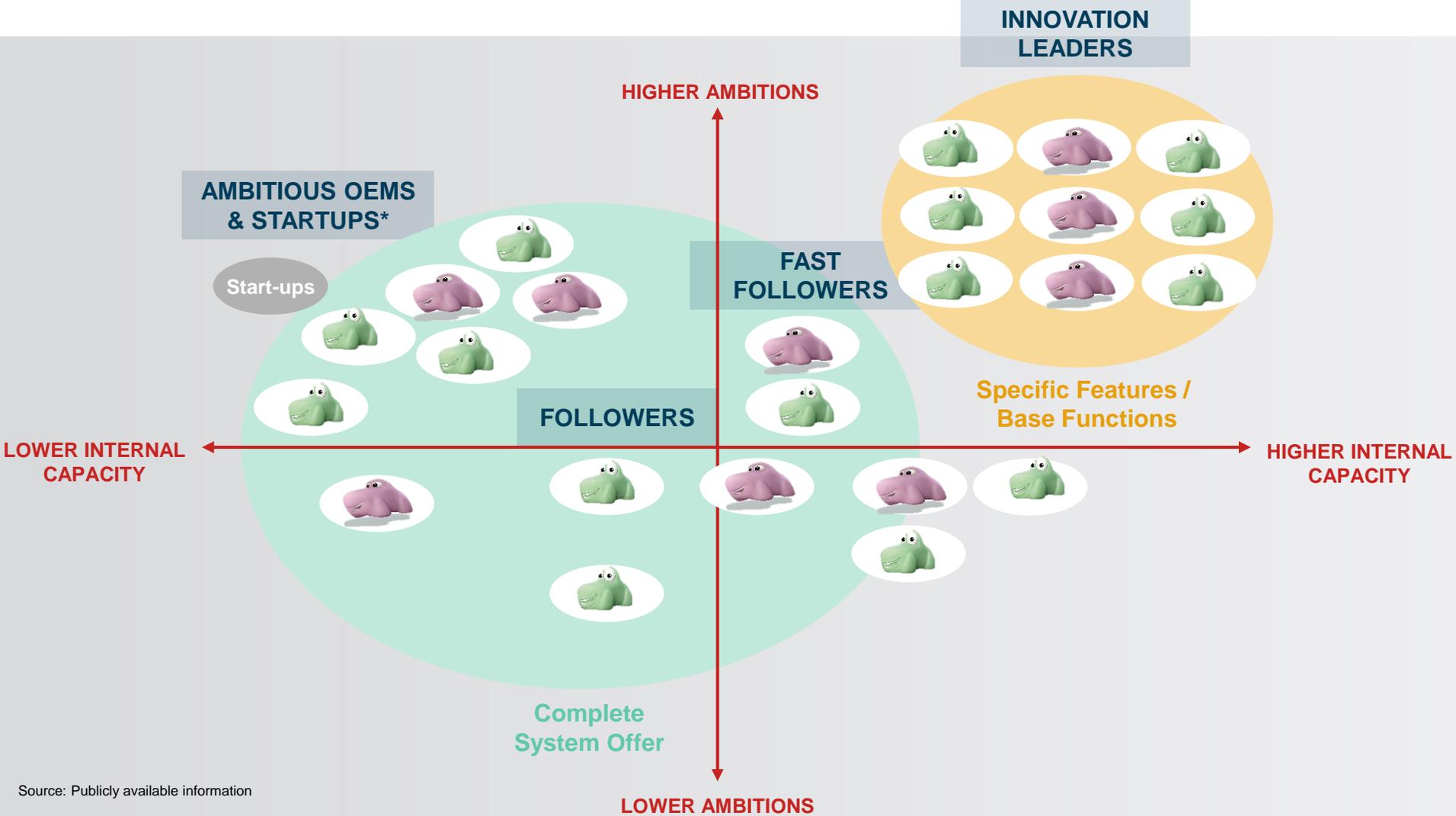
**Real-life
safety based**

ZENUITY AD Roadmap

- towards unsupervised driving



OEM TARGET MARKET



- **INNOVATION LEADERS**
Want a supplier that can help them to deliver basic functions or develop non core features
- **AMBITIOUS OEMS & STARTUPS***
Want comprehensive support to outpace the current innovation leaders
- **FAST FOLLOWERS**
Want support to be seen as on par with innovation leaders
- **FOLLOWERS**
Want to get to an acceptable level with a basic AD platform and the potential to add differentiating features

Source: Publicly available information



Q&A



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30,000 lives

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