

Capital Market Days 2020

Strategic Action Field: Autonomous Mobility

On the Way to Autonomous Mobility

Ticker: CON
ADR-Ticker: CTTAY
<http://www.continental-ir.com>

Frank Petznick, Head of Business Unit ADAS, AMS
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Strategic Action Field: Autonomous Mobility

On the Way to Autonomous Mobility



Continental's Autonomous Mobility Business

Leading Player with Track Record of Profitable Growth

> 100 mn
Units delivered
2017 – 2019
Radars
Cameras
Lidars
AD¹ Control Units

25 OEMs

50 Brands

> 300 Models



~ 15% CAGR
2017 – 2019

~ €2 bn Revenue
2019



~ €10 bn Order Intake
2017 – 2019



Legend:

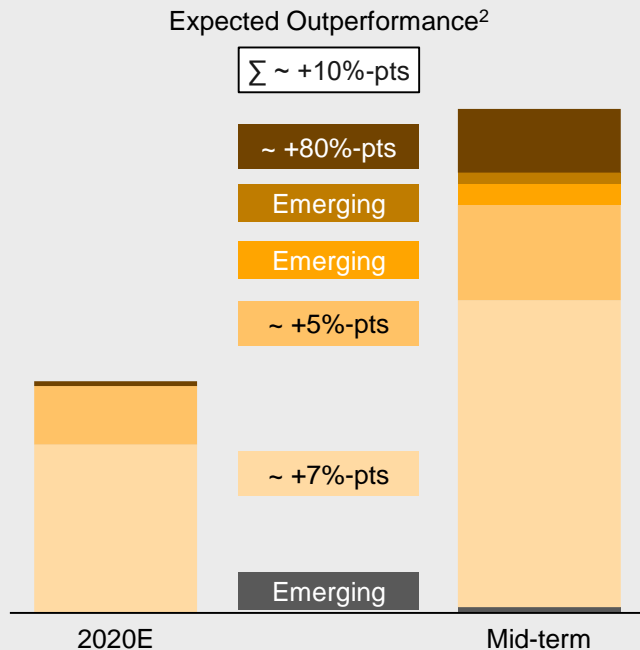
- Radars
- Cameras
- Cabin Sensing
- Lidars
- AD Control Units

¹ Assisted / Automated Driving

Continental's Autonomous Mobility Business

Sustainable Growth Through Our Increasing Content per Vehicle

Sales in Action Field¹ (€)



Future Growth Drivers

Software as a Product

- › Licenses and updates



System Integration

AD Control Units / AD High Performance Computer

- › Scalable software and computing platforms guarantee future readiness

High Resolution Lidars

- › Introduction in \geq L3 systems, additional integration in \geq L2 Plus systems

Cabin Sensing

- › Driven by legislation (e.g. driver monitoring, child presence detection)

Cameras

- › High quantity of satellite cameras in \geq L2 Plus systems ("camera belt")

Radars









- › High quantity of radars in \geq L2 Plus systems ("radar belt")
- › Next generation radars with exceptional performance (e.g. 4D radar)

Ultrasonic Sensors

¹ Based on mid-term IHS light vehicle production (LVP) forecast from November 2020 | ² Mid-term organic sales growth above IHS LVP

Continental's Portfolio for Automated Driving

Level 2 Plus Solutions Addressing Significant Growth

Continental technology		in series	in series	from 2021	from 2021/22
		Partly Automated Driving (SAE L2)	L2 "Performance"	"L2 Plus" L2 "Premium"	Highly Automated Driving (HAD) (SAE L3)
				HAD Ready	
 Software	AD High Performance Computer	Highway Assist NCAP ¹ 5 stars 	Traffic Jam Companion (hands-off ≤ 80 kph) 	Highway Companion (hands-off ≤ 130 kph) L2 in extended "Operational Design Domain" 	Cruising Chauffeur Traffic Jam Chauffeur
		optional	1	1	2
 Sense	Radars	1 – 5	5 – 7	5 – 7	7
	Cameras	1 – 2	6	6	9
	Lidars			optional	≥ 2
Content per vehicle		> 200 EUR	> 2x L2	> 4x L2	> 10x L2

¹ New Car Assessment Programme

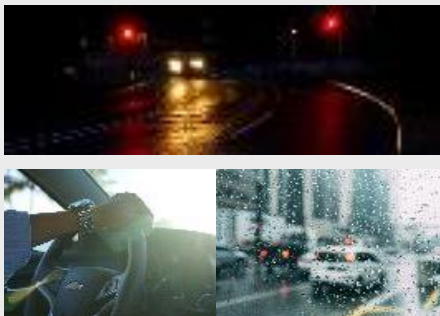
Radar – Fundamental for ADAS and AD

4D Imaging Radar Securing Technology Leadership

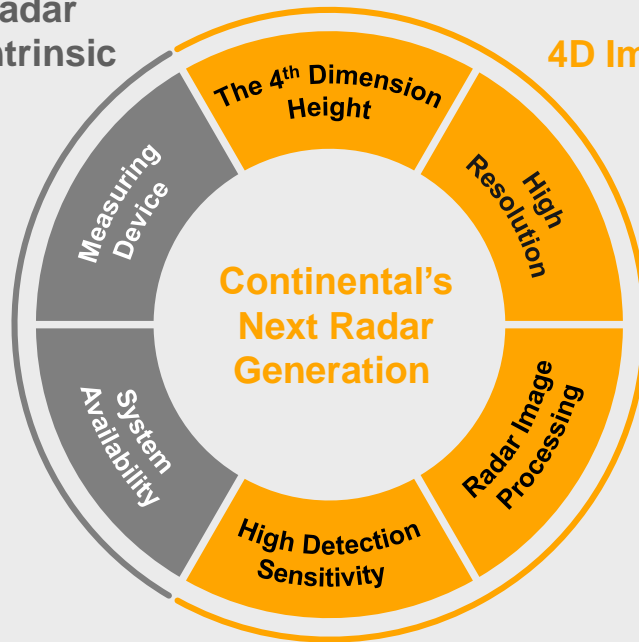
Precise distance and speed in real-time



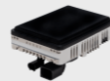
Adverse weather conditions



Radar
intrinsic



NEW!
4D Imaging
Radar



Non overridable
ground obstacles



Underridable
elevated objects



Road boundaries



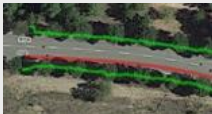
Debris/potholes



Complex/dense traffic



Landmarks



Success

Expected first to market

SOP: 2021



SOP: 2024



Camera – Comprehensive Surround Vision Strategy

Leveraging 360° Vision for Automated Driving

Leading Surround View Systems

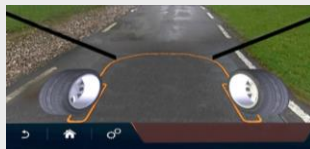
Benchmark **Adaptive 3D View**

1st SOP: **2018**
Customer: **VW, Audi, Porsche**



First to market **Transparent Hood**

1st SOP: **2020**
Customer: **Jaguar Land Rover**



Easy-learning **Trailer Reverse Assist**

1st SOP: **2020 First to Market!**
Customer: **FCA**



Satellite Camera Platform

1st SOP: **In production since 2017**
Customer: **VW, JLR, Daimler**

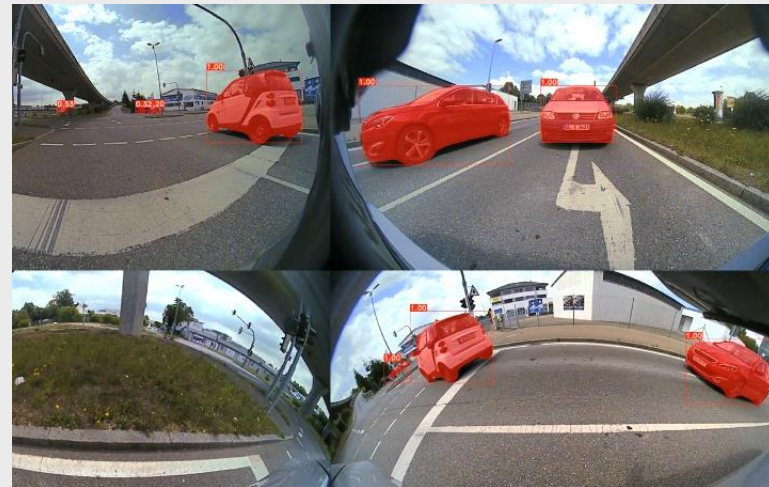
2022



Multi View Surround
Vision for AD

360° Vision for Systems \geq L2 Plus

Synergetic utilization of near range **Camera Vision for Cruising**



Target SOP: **2024**

Lidar – Required for Safe Automated Driving

Full Range Portfolio

Short Range Lidar



Solid State Flash Lidar

Highlights

- › No gaps in image/data! No motion distortion!
- › High accuracy object and free space detection

Target application:

Urban areas, traffic jam, robocabs

Success

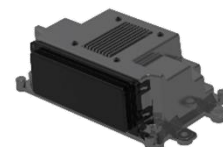
SOP: 2021

L2+
L3



Long Range Lidar

Strategic investment in Lidar pioneer



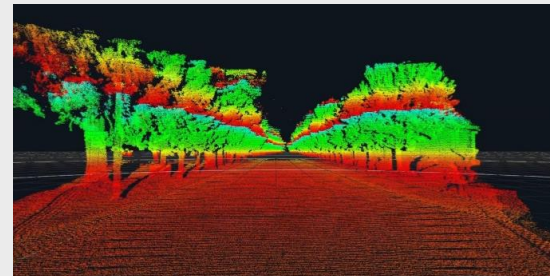
MEMS¹ Mirror Scanning Lidar

Highlights

- › Patented novel advanced MEMS¹ technology
- › Dynamic spatial resolution enabling concurrent far range, high resolution and high sensitivity at minimized power consumption

Target application:

Highway

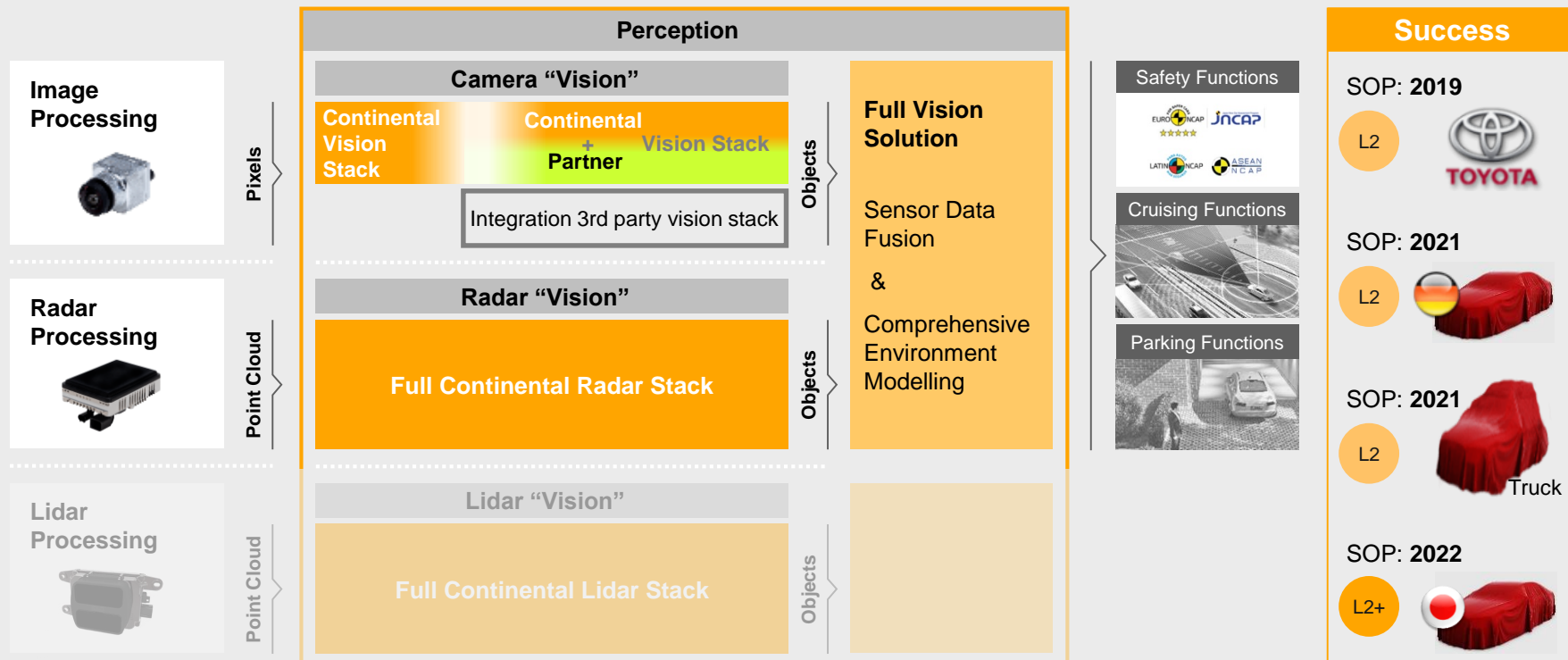


Target SOP: 2024

¹ MEMS: Micro electro-mechanical system

From Vision to Perception

Sensor Know-how Enables Vision Solutions & Functions



Software Stack and Hardware Platform Solutions

Modular & Scalable to Manage High Complexity

Full Stack Capability

Driving and Parking Functions



Perception



Operating System and Middleware



Software components from

Continental

Continental subsidiary

Continental subsidiary

3rd party



High Performance Computer (AD HPC)

Partly Automated Driving (SAE L2)

"L2 Plus"
Performance

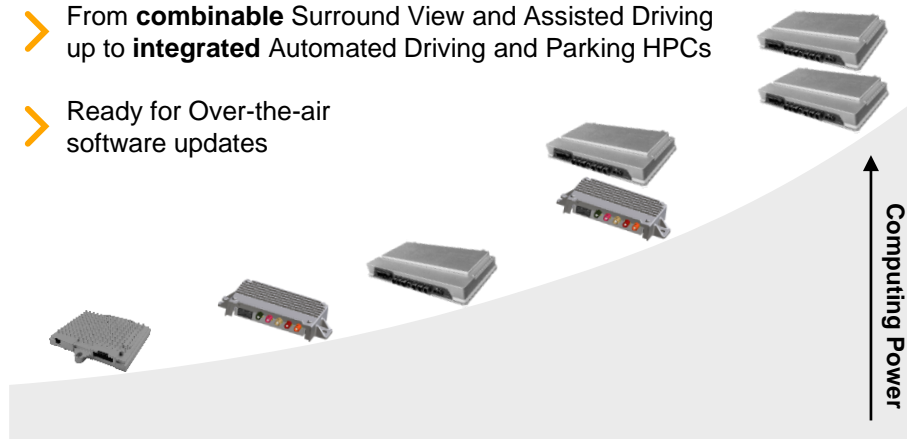
Premium

Highly Automated Driving (SAE L3)

Fully Automated Driving (SAE L4)

> From **combinable** Surround View and Assisted Driving up to **integrated** Automated Driving and Parking HPCs

> Ready for Over-the-air software updates



Success

SOP: 2022

L2+



SOP: 2022/23

L2

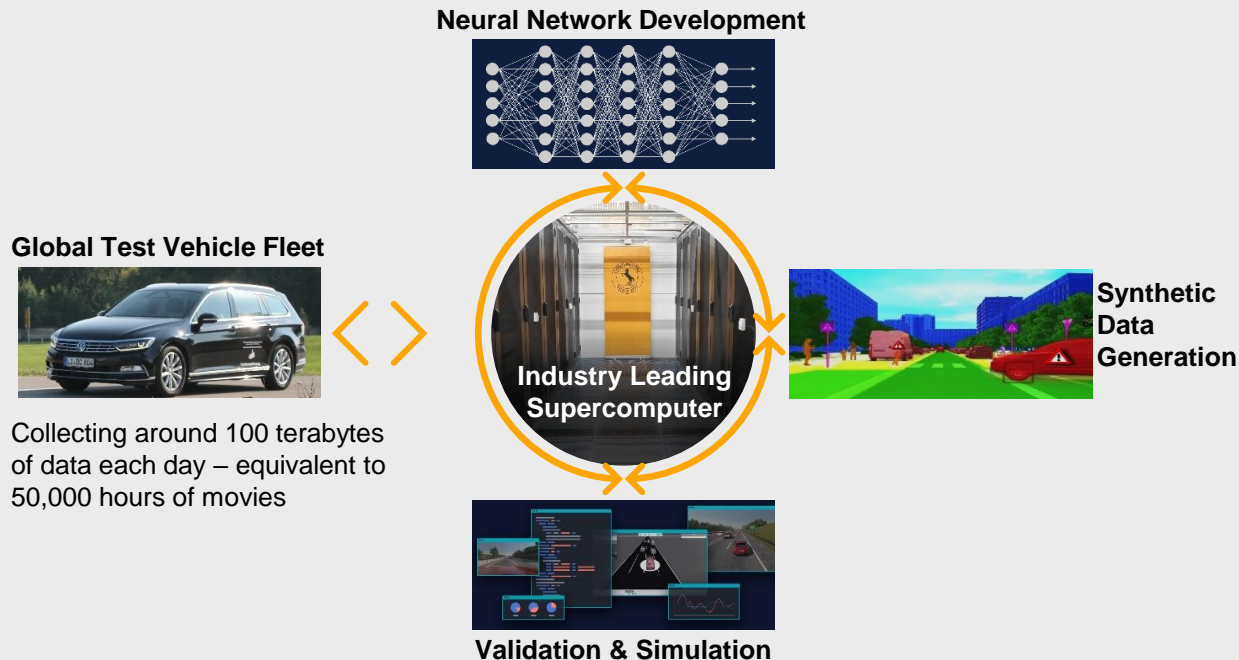
L2+



We Are Ready for the Challenges of the Future

AI and Simulation for the Next Era of AD Technologies

The Vital Importance of Data Quality & Efficient Data Management



AI Competence Center



- **Core development** of AI technologies
- **Roll-out** to product development teams

Exploiting Additional Business Areas

Markets of Interest

Software as a Product



Relevance

- › Software will be a key differentiator within automotive
- › Defining business models for Software is crucial for ADAS

Continental Status

- › Business model implemented: Example "3D View" functionality

Continental Future

- › Full stack supplier to create best in class software solutions actively including partners

Commercial Vehicles



- › First commercial autonomous fleet operations expected
- › Strong market growth within the next 5 years by push of legislation

- › Strong customer base established
- › Dedicated business unit within Continental

- › Full system and solution provider supporting commercial fleets

Mobility Provider



- › Autonomous fleet operations expected within dedicated environments
- › Experiences gained through those fleets will be crucial for a data driven development

- › Established business relationship through sensor competency

- › Strong collaboration with fleet providers to test innovative technologies and improve software functions

On the Way to Autonomous Mobility

Summary



Our **sensor heritage** is the foundation for sustainable profitable growth

We leverage the **excellent software expertise** of in-house suppliers like Elektrobit and Argus

We offer **Full Stack capabilities** – perfectly prepared for the future

Selective **partnerships** complement our **in-house strength**

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The Future in Motion