



TECHNOLOGY LEADERSHIP

Bank of America • 18 May 2021

SMART TECHNOLOGY FOR SMARTER MOBILITY

WE ARE A HIGH TECH COMPANY

#1

In **ELECTRIFICATION**

Market Leader on 48V MHEV & BEV

#1

In **ADAS***

First to market LiDAR & L3 autonomous

OUR PARTNERS



DAIMLER



HYUNDAI
MOTOR GROUP



RENAULT NISSAN MITSUBISHI

STELLANTIS



TESLA



TATA

VOLKSWAGEN
GROUP

#1

In **LIGHTING**

First to market sensor cleaning system

#2

In **THERMAL SYSTEMS**

Leader in Battery thermal management & HVAC for EV
Leader in Bus climate solutions

*ADAS = Advanced Driving Assistance System

VALEO RESERVED

Valeo



LEADERSHIP IN ELECTRIFIED MOBILITY

Bank of America • 18 May 2021

SMART TECHNOLOGY FOR SMARTER MOBILITY

ELECTRIFICATION IS NOW ACCELERATING

BEV sales

21% › by **2030**

61% › in **2040**

Regulations



++



++



+/-

China

Push through NEV credits
as well and strong
infrastructure push

City bans

+20 cities
have announced
banning plans

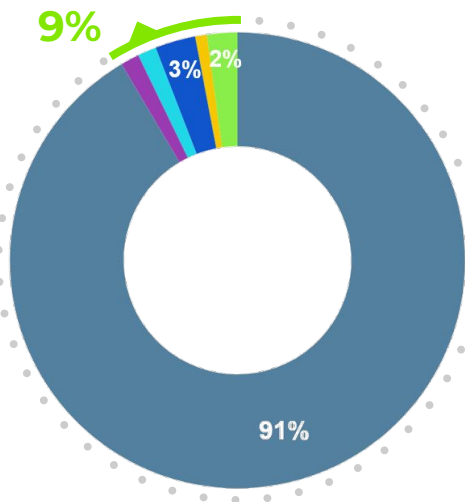
EVs Launched

+500
from 2018 to 2023

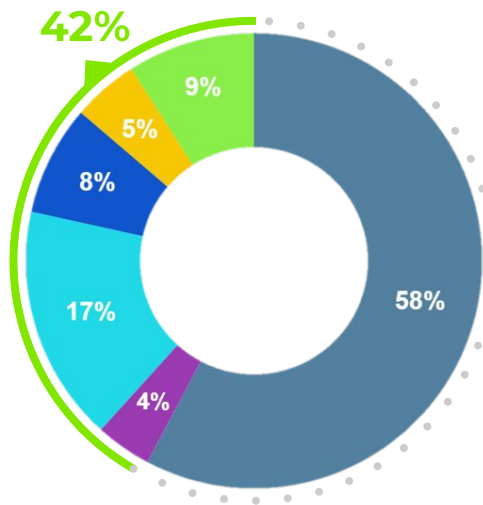
source: McKinsey

THE NEXT DECADE WILL SEE A MASSIVE SHIFT

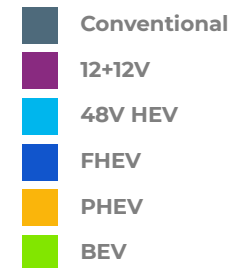
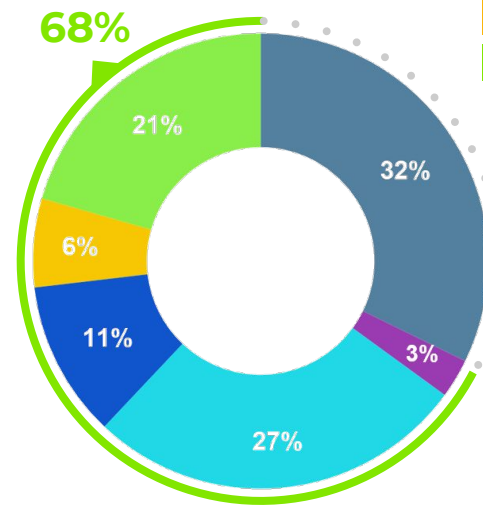
2019



2025



2030



In 2030, 48V and BEV will take highest share of electrified powertrains.

**OUR
OBJECTIVE
LEADING
THE
ELECTRIFICATION
REVOLUTION**



ELECTRIC MOBILITY COVERS VERY DIFFERENT SEGMENTS

Small Electric

Light Electric

Mild Electric

Hybrid

Plug-in Hybrid

Full Electric

— LOW VOLTAGE (12V & 48V) **Valeo** —



— **Valeo SIEMENS** eAutomotive — HIGH VOLTAGE (60V+)
— THERMAL MANAGEMENT **Valeo** —



ELECTRIC MOBILITY IS A FUNDAMENTAL TECHNOLOGICAL SHIFT

CONVENTIONAL

INCREASING ELECTRIFICATION

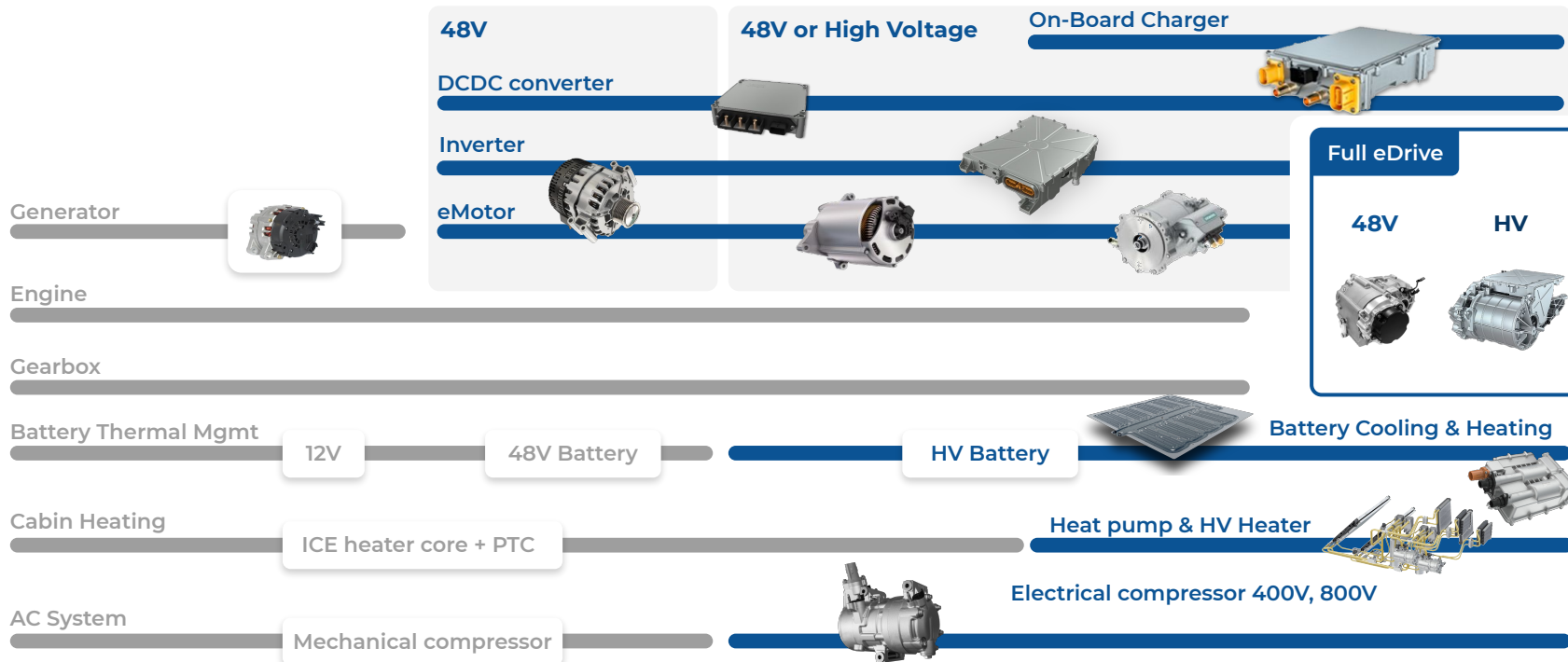


Mild Hybrid

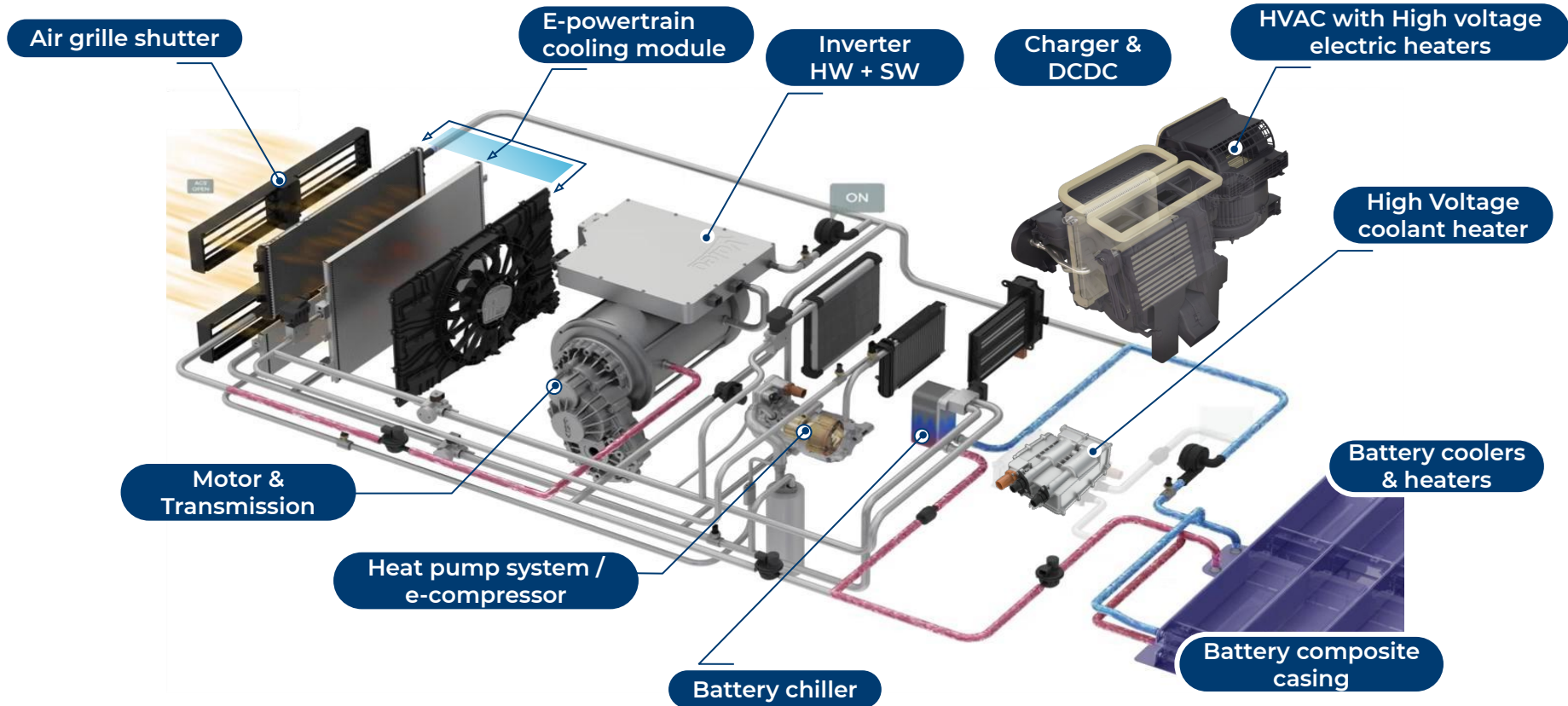
Full Hybrid

Plug-in Hybrid

Full Electric



CAR ARCHITECTURES ARE COMPLETELY REDESIGNED



WE HAVE COMPLETELY REVISITED OUR PORTFOLIO

WE HAVE DEVELOPED FULLY REUSABLE PLATFORMS WITH ELECTRONICS & SOFTWARE

POWERTRAIN ELECTRIFICATION

Motors



Inverters



OBC* DC/DC



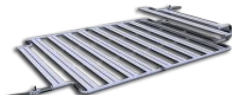
eDrive

SMART THERMAL MANAGEMENT

Heat pump



Coolant e-Heater



Battery Thermal
Management



e-Compressor

CHARGING SOLUTIONS



Charging station

ALL MOTORS, ALL ELECTRONICS, ALL THERMAL SYSTEMS, ALL SOFTWARE



LEADER

IN

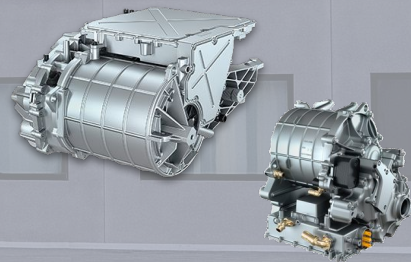
LOW & HIGH

VOLTAGE

SOLUTIONS

WE WALK THE TALK

Valeo

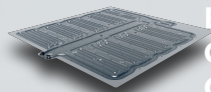


eDrive systems

WE WALK THE TALK



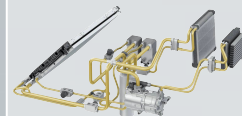
Front & Rear
Inverters



Battery
Cooler &
Chiller



HVAC with HV
air Heater



R744 Heat
pump
exchangers

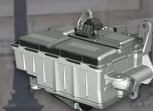
Valeo



WE WALK THE TALK



Motor



Inverter



eCompressor

Valeo

MAJOR BEV, PHEV & 48V SOP'S RECENT GROWTH DRIVERS (2020-2021)



Volkswagen



ID.3 & ID.4

- Inverter
- Battery Coolers
- AC unit with HV electric heater
- Battery Chiller



Mercedes-Benz



EQS

- eDrive System

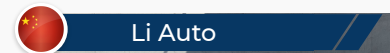


Hyundai - KIA



Tucson, Sportage

- iBSG 48V



Li Auto



One

- Battery cooler
- Heat pump systems
- Electrical compressor
- Comfort controller



Stellantis



208, 2008, Corsa

- Battery coolers
- Heat pump system
- Electrical compressor



Stellantis



DS7 Crossback, 3008, Grandland

- eMotor & inverter



Renault



Clio, Megane, Captur

- Dual Inverter
- On-Board Charger
- Dedicated hybrid transmission



Volvo

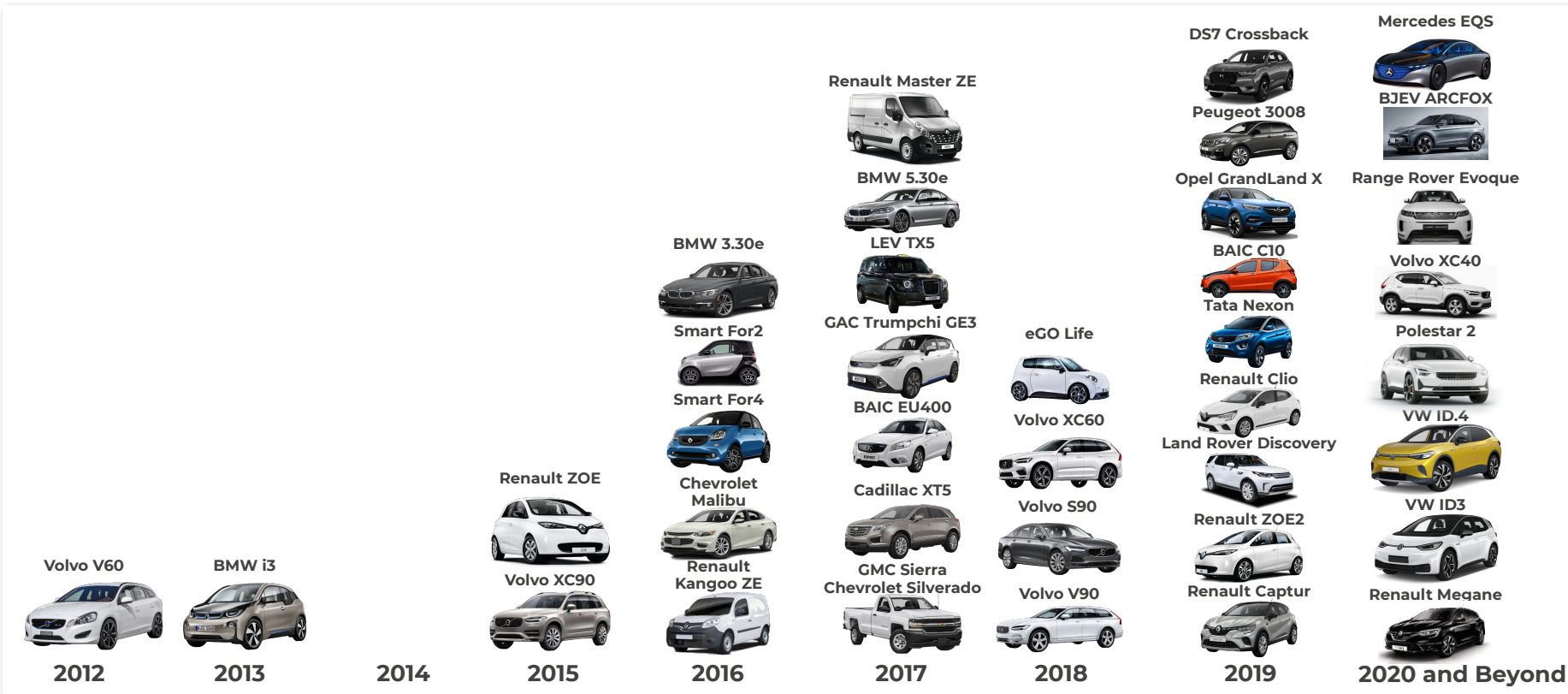


XC40

- eMotor



WE ARE A WORLD LEADER OF HIGH VOLTAGE SOLUTIONS



2020-2023: Valeo High Voltage solutions into 90 vehicles with 40% of market share

WE HAVE DEVELOPED SUCCESSFUL TECHNOLOGICAL PLATFORMS FOR ELECTRIFICATION

**48V
ELECTRIFICATION**

Valeo

**E-THERMAL
SOLUTIONS**

Valeo SIEMENS
eAutomotive

**HIGH VOLTAGE
ELECTRIFICATION**

GROUP CUMULATED OI
(end of 2020)

23.7bn€

COMPETITIVE POSITIONING OF POWERTRAIN & THERMAL SOLUTIONS

Non exhaustive list

	Valeo	Competitor 1	Competitor 2	Competitor 3	Competitor 4	Competitor 5	Competitor 6	Competitor 7
Hybrid machines ⁽¹⁾	+++	-	-	++	+	+	-	-
ePowertrains ⁽²⁾	+++	+++	++	+	++	++	-	-
Electronics ⁽³⁾	++	+++	++	++	-	++	-	-
Battery Cooler	+++	+	-	-	-	-	++	++
Heat Pump	++	++	-	-	-	-	+	+++

(1) 48 belt starter generator & 48V eMotor

(2) eMotor + Inverter + reducer

(3) On Board Charger + DCDC converter

+++ Leader
 ++ Fast follower
 + Player

Powertrain Solutions
Thermal Solutions

Global leader in Low & High voltage solutions as well as Thermal Management

A close-up photograph of a bicycle's rear motor and wheel assembly. The motor is black and mounted on a silver frame. The rear wheel has a black tire with a tread pattern. The background is blurred, showing a natural outdoor setting.

KEY PLAYER

OF
NEW
MOBILITY
SOLUTIONS

NEW ELECTRIC MOBILITY OPPORTUNITIES

2
WHEELER



3
WHEELER



DROIDS



SHARED
MOBILITY



LAST MILE
DELIVERY



DIGITAL

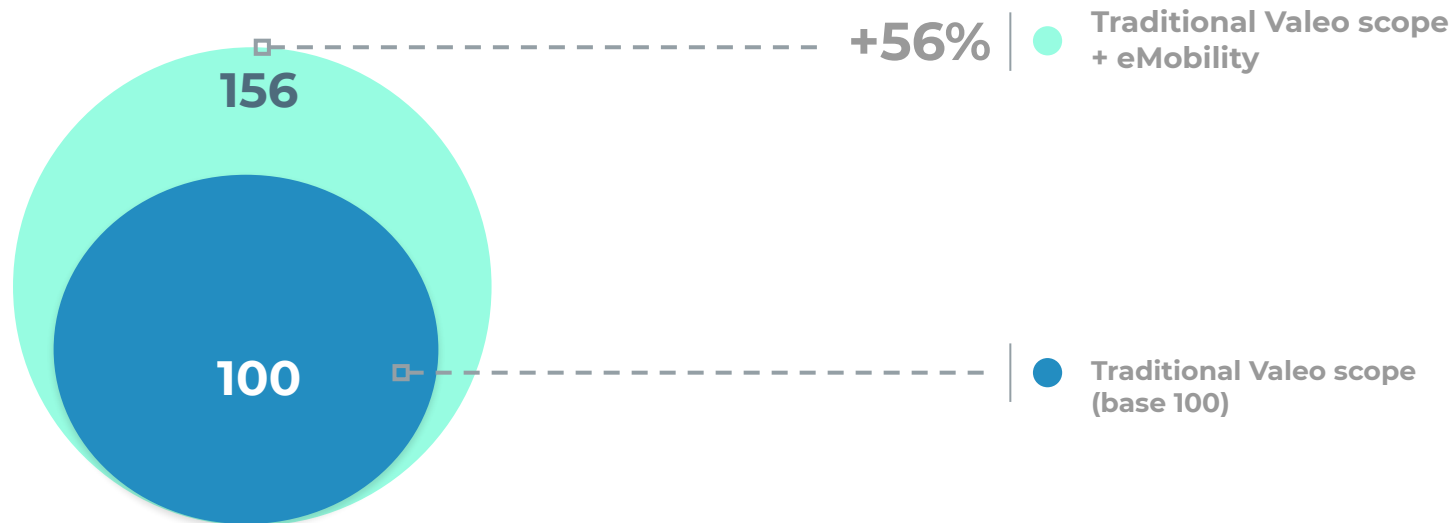


LOW SPEED
EV



NEW ELECTRIC MOBILITY IS A (BIG) MARKET OPPORTUNITY

2030 ADDRESSABLE MARKET FOR VALEO TECHNOLOGIES



DRIVEN BY

REGULATIONS

NEW BUSINESS MODELS

CONSUMER ACCEPTANCE

NEW ELECTRIC MOBILITY OPPORTUNITIES

WE ADAPT/DEVELOP OUR PORTFOLIO

2 Wheeler

eBike



- eMotor
- HMI
- Lighting

eScooter



- eMotor
- Lighting

3 Wheeler

eRickshaw



- eMotor
- Lighting

4 Wheeler

eDroid & eVans



- Skateboard
- eMotor
- Full AD
- Sensor cleaning
- Thermal management
- Sanitization

Small EV



- 48V eDrive
- Healthy Car
- Connectivity
- Smart Access

Robotaxis



- HV eDrive
- Healthy Car
- Connectivity
- Full AD

NEW ELECTRIC MOBILITY OPPORTUNITIES

MARKET PERSPECTIVE IN 2030

2 Wheeler

eBike



11 to 14M
Annual volumes⁽¹⁾

eScooter



25M
Annual volumes⁽²⁾

eMotorcycle



3 Wheeler

eRickshaw



Up to 2M
Annual volumes⁽³⁾

Sources:

- (1) Sport Marketing Surveys & Valeo - 2030 annual volumes in EU & USA
- (2) Motor Cycle Data & Valeo - 2030 annual volumes globally
- (3) Valeo estimations - 2030 annual volumes in India

NEW ELECTRIC MOBILITY OPPORTUNITIES

MARKET PERSPECTIVE IN 2030

4 Wheeler

Goods delivery

Human transportation

eDroid

eVans & LCVs

Small EV

Robotaxis



Up to **600k**
Annual volumes⁽¹⁾



Up to **2M**
Annual volumes⁽²⁾



Up to **5M**
Annual volumes⁽³⁾



500k to 1M
Annual volumes⁽⁴⁾

Sources:

- (1) Valeo estimations - 2030 annual volumes globally
- (2) IHS & Valeo - 2030 annual volumes globally

- (3) McKinsey - 2030 annual volumes globally
- (4) Valeo estimations - 2030 annual volumes globally

KEY FIGURES ABOUT ELECTRIFICATION AT VALEO

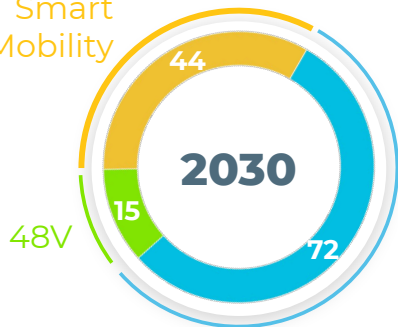


€131B

2030 Electrification market*

* Valeo addressable market, excluding batteries

Smart
e-Mobility



2030

High Voltage
Valeo SIEMENS
eAutomotive



>5000

Engineers worldwide



> 35

Sites in 15 countries



>3000

Patents



>2M

Lines of code in our
software

And it's just a start !...



SMART TECHNOLOGY
FOR SMARTER MOBILITY



LEADERSHIP IN DRIVING ASSISTANCE

Bank of America • 18 May 2021

SMART TECHNOLOGY FOR SMARTER MOBILITY



OUR MARKET

WAVE 3:

AUTOMATED DRIVING

2025 platforms are Level 3 ready

WAVE 2:

LEVEL 2+ ADAS SYSTEMS

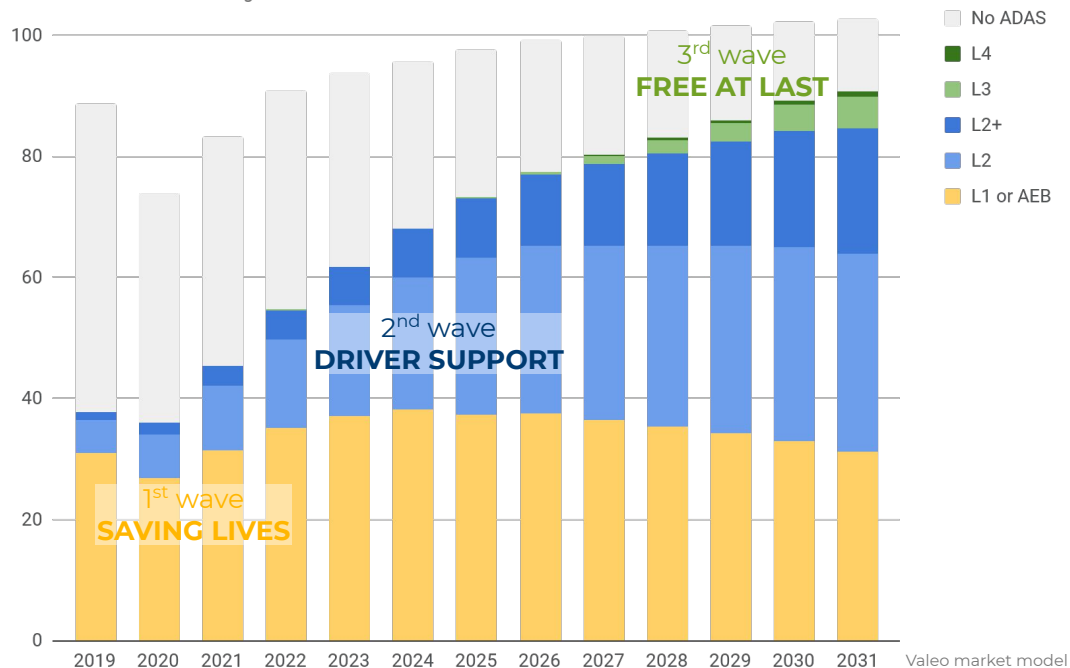
Focus on enhanced user experience

WAVE 1:

SAFETY & ACCIDENT REDUCTION

Standard on new vehicles

Vehicle Fitment by SAE Level



Amount of Level 2 and Level 2+ systems to quadruple by 2025

OUR MARKET

Active Safety systems will be standard equipment

3- or 5-Star NCAP compliance

Front Camera as basic sensor

Safe reversing gaining importance

>75%

of new cars worldwide by 2025

Level 2 ADAS functionality as the dominant segment

Vision-only entry solutions

L2+ functions as transition to L3

First L4 function will be in Parking

50%

of new cars with ADAS by 2025

Level 3 automation enabling unique experience

First applications in 2021

2024/25 platforms are L3 capable

Highway Pilot as main target

5%

of new cars worldwide by 2030

Added value through ADAS features to help offset the cost of the safety systems

OUR COMMITMENT & STRATEGY

We are a **LEADER**
in parking, safety &
driving automation



We offer best-in-class
SENSORS &
PERCEPTION SYSTEMS



We provide **FUNCTIONS**
& **MODULES** for private
& commercial mobility



We support our customers to make mobility safe & more pleasant for everyone

OUR COMMITMENT & STRATEGY

We are a **LEADER**
in parking, safety &
driving automation

- ➔ Innovative Mindset for a global customer base
- ➔ Worldwide Mechatronics and Software Competence
- ➔ Global Production Network for volume manufacturing

We offer best-in-class
**SENSORS &
PERCEPTION SYSTEMS**

- ➔ Wide Technology Portfolio for Ranging, Viewing and Computer Vision
- ➔ Covering 360° from Near-field to Long-range
- ➔ Standard Product Platforms

We provide **FUNCTIONS
& MODULES** for private
& commercial mobility

- ➔ Robust and Scalable System Architectures
- ➔ Turn-key systems up to L2+ Driving and L4 Parking
- ➔ Modules for L3 Automation and L4 Driverless

We support our customers to make mobility safe & more pleasant for everyone

LEADER
IN
PARKING,
SAFETY &
AUTOMATION



INNOVATIVE MINDSET



30 years of innovation with 15 world's first in the past 10 years



Development center



Research center



AI Capabilities



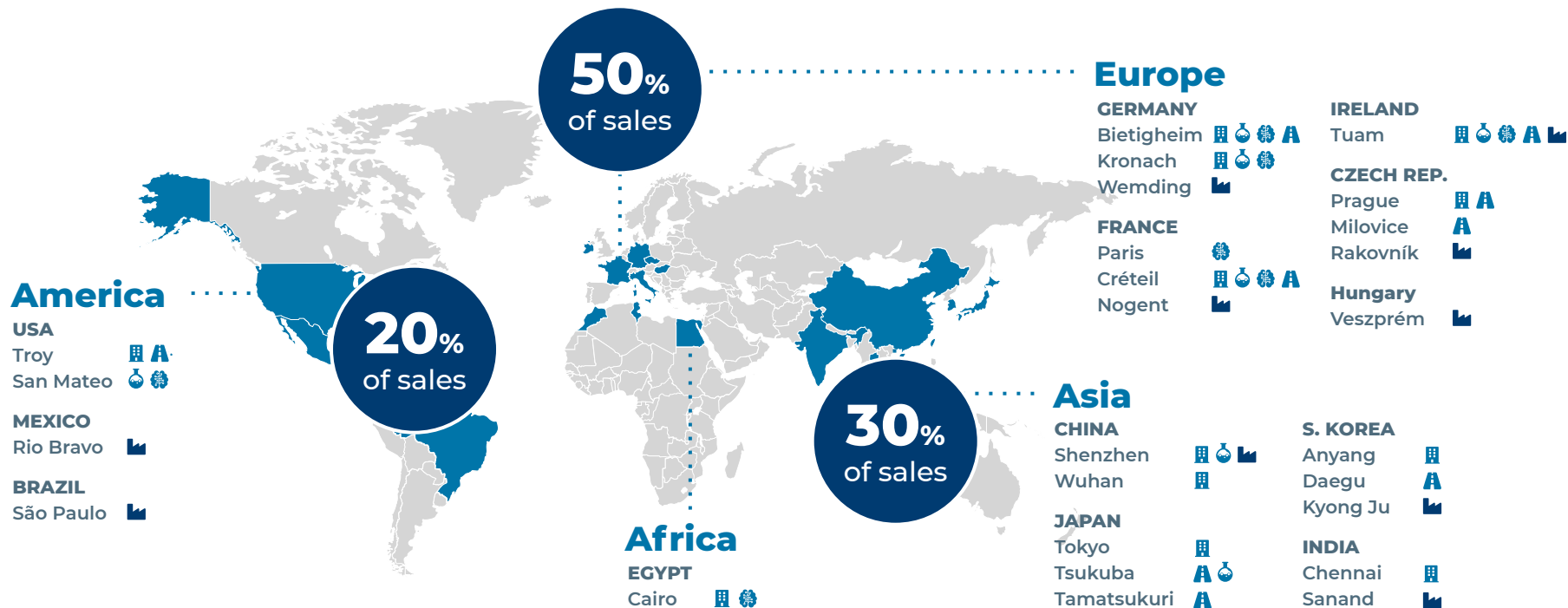
Vehicle test facility



Production site

GLOBAL FOOTPRINT

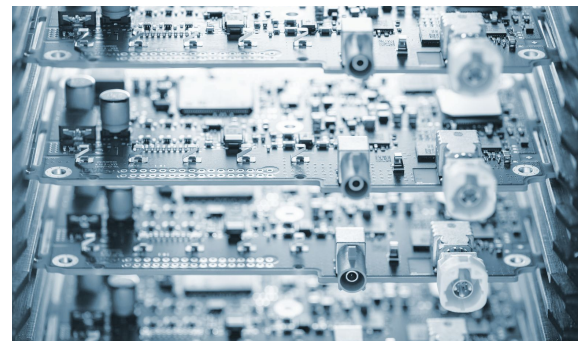
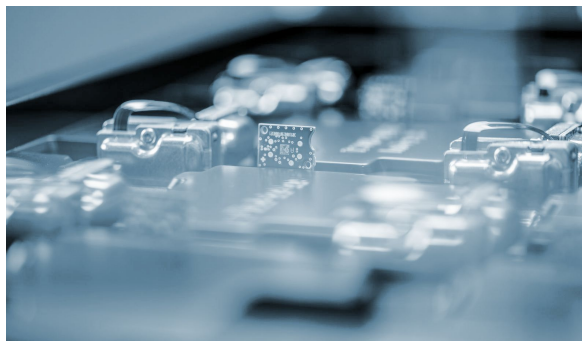
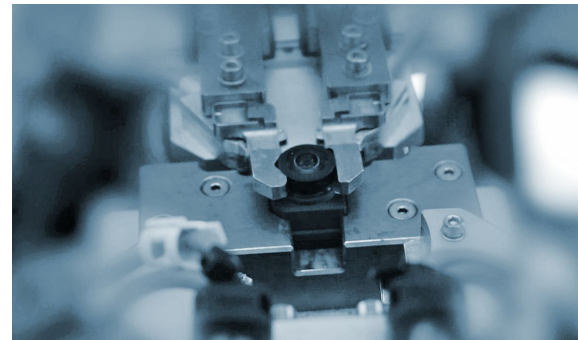
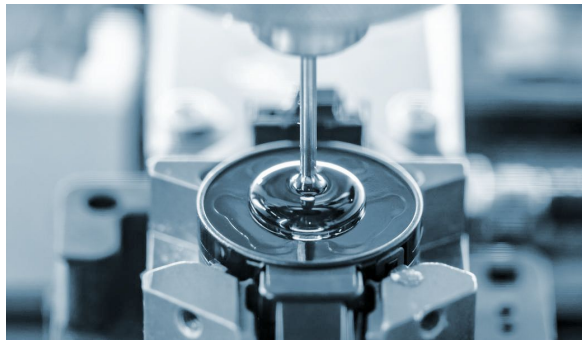
Driving Assistance



Figures: 2025 target

Worldwide network of production facilities and 4,000+ engineers (incl. 1,800+ in SW)

WORLDWIDE VOLUME PRODUCTION



Over 1 billion sensors shipped - Another 1 billion to be shipped in the next 5 years

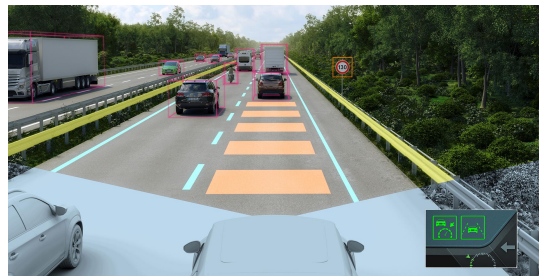
SYSTEM SOLUTIONS FOR ALL ADAS SEGMENTS

One stop solutions for Automated & Safe Parking



- Complete software stack from sensor to end-user function
- Near-field sensors, cameras and control units

Mass market solutions for 5-star NCAP and L2 ADAS



- In-house software for Emergency Braking, Lane Centering, Adaptive Cruise Control, Traffic Jam Assist, Intelligent Speed Assist, ...
- Smart front camera platform

Perception solutions for first L3 functions



- Software for optimal perception results and data fusion
- Ensuring functional safety
- 3D lidar, cameras and control units

Offering the full software stack incl. tool chain and system validation

A close-up photograph of a person's hands wearing white nitrile gloves, holding a black, cylindrical sensor component. The component has a reflective surface and a small circular feature on top. The background is blurred, showing what appears to be a factory or laboratory setting with various mechanical parts and equipment.

EXPERT

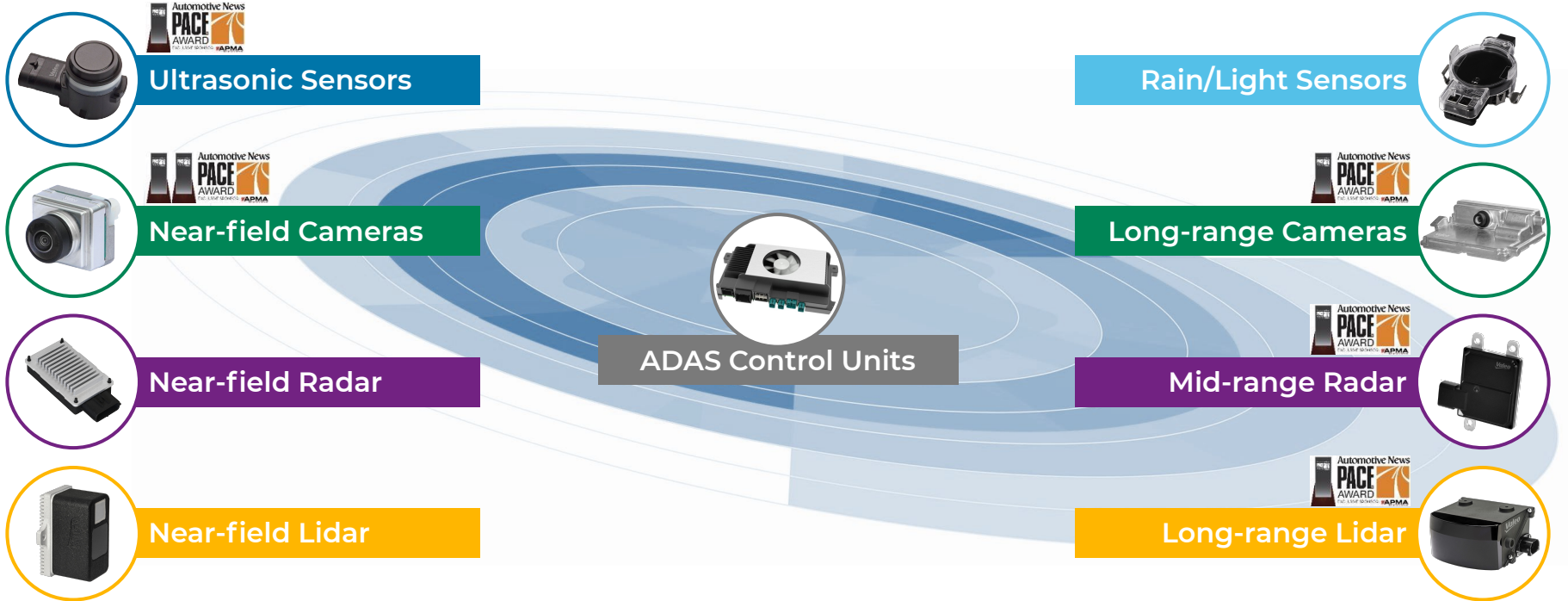
FOR

SENSORS &

PERCEPTION

SYSTEMS

TECHNOLOGY FOR RANGING, VIEWING AND COMPUTER VISION



Covering 360° around the vehicle from Near-field to Long-range

STANDARD PRODUCT PLATFORMS

Software

Software



Parking & Maneuvering



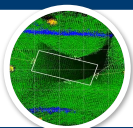
SYSTEMS & FUNCTIONS



Driving Automation



Surround View



Computer Vision



Active Safety



SIGNAL PROCESSING • SENSOR CONTROL



Long-range Cameras



Rain/Light Sensor



Mid-range Radar



Long-range Lidar



Near-field Cameras



Ultrasonic Sensors



Near-field Radar



Near-field Lidar

SENSORS

MIDDLEWARE AUTOSAR • BASIC SOFTWARE



Single Control Unit



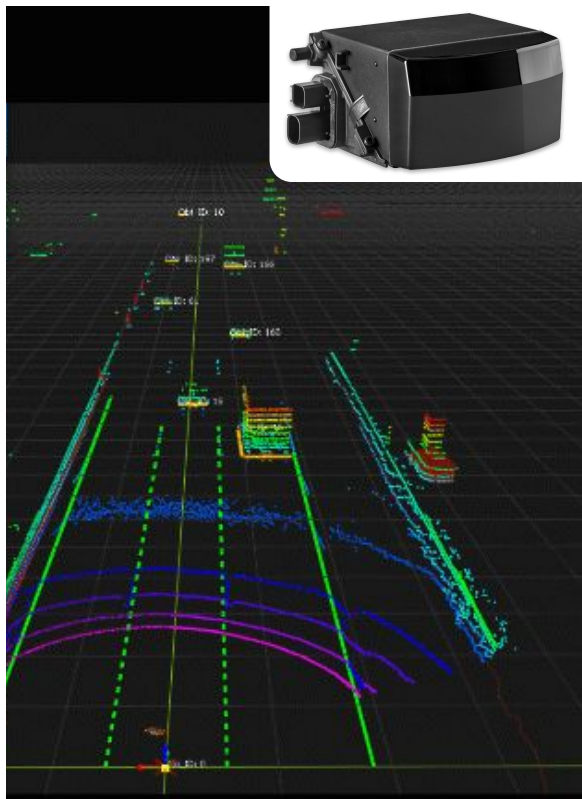
Parking / Vision Controller



Domain / Zonal Controller

CONTROL UNITS

VALEO SCALA[®]: WORLD'S FIRST AUTOMOTIVE GRADE 3D LIDAR



Over **125,000 SCALA[®]** delivered worldwide

Improved **SECOND GENERATION** in 2021

SOFTWARE STACK for optimal perception

Range Estimation

Blockage Detection

End of Line
Calibration

Free Space

Ego Motion

Road Markings

Interference
Suppression

Rain/Spray Detection

Online Calibration

Noise Suppression

Ground Topology

Static Objects

Heating & Cleaning
Control

OTA Capability

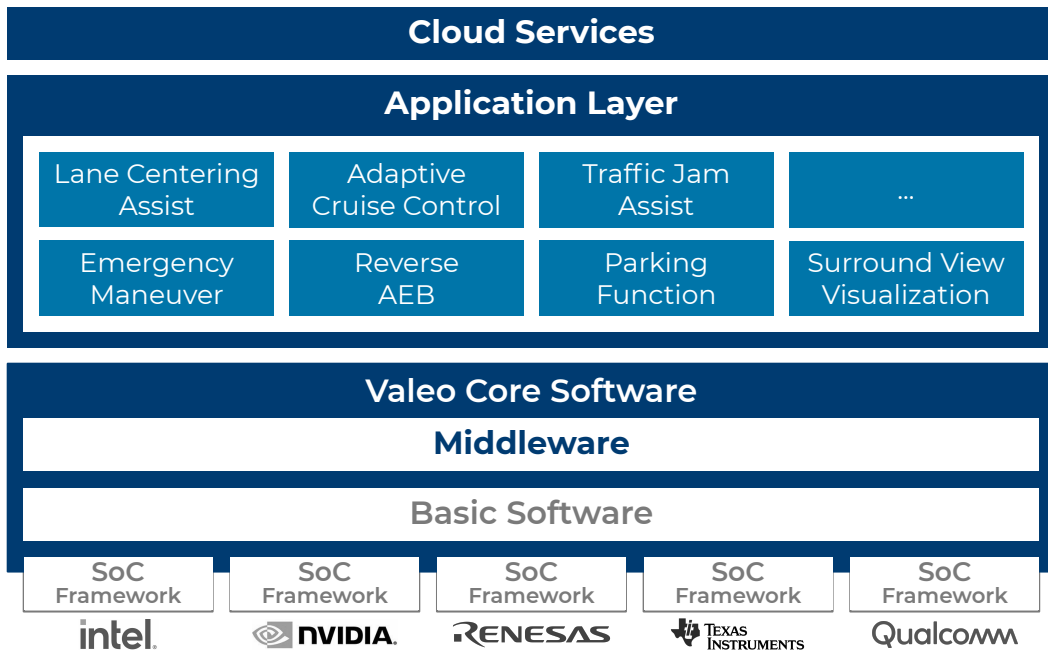
Misalignment
Detection

Point Cloud

Map Matching

Dynamic Objects

SCALABLE ADAS CONTROL UNIT PLATFORM



Integration Services
Continuous Integration • Delivery

Hardware and software out of one hand for an optimal system integration

PARTNER

FOR

FUNCTIONS &

MODULES



SOFTWARE AND SYSTEM COMPETENCE

One stop solutions for
Automated & Safe Parking

Full system responsibility



Valeo

Valeo

Valeo



Vehicle Control

...

Traffic Jam Assist

Adaptive Cruise Control

Lane Centering

Emergency Braking

Functions

Environment Model

Computer Vision

Signal Processing

Sensors / Cameras

Processing HW

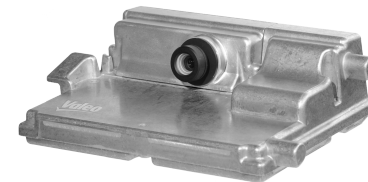
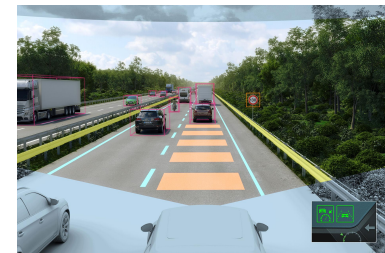
Mass market solutions for
5-star NCAP and L2 ADAS

Function responsibility

Valeo

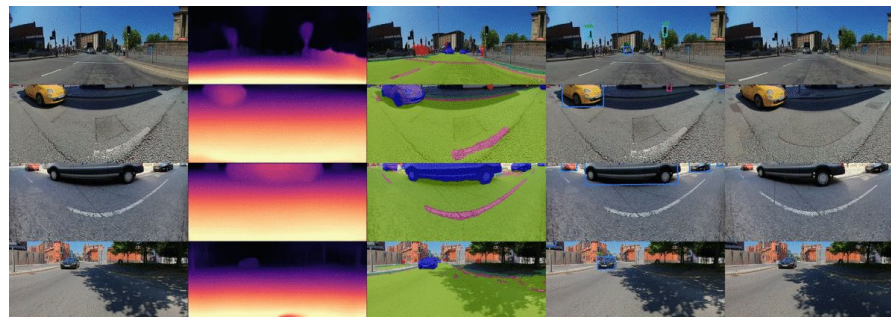
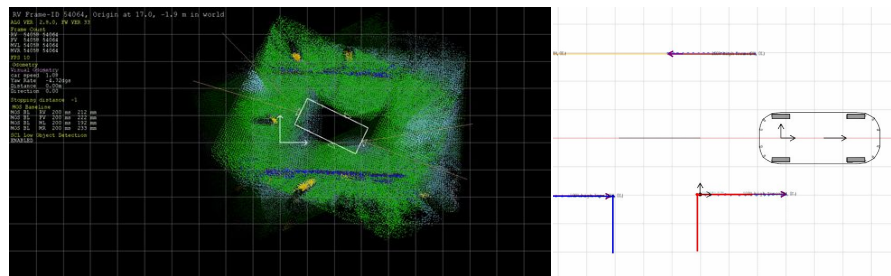
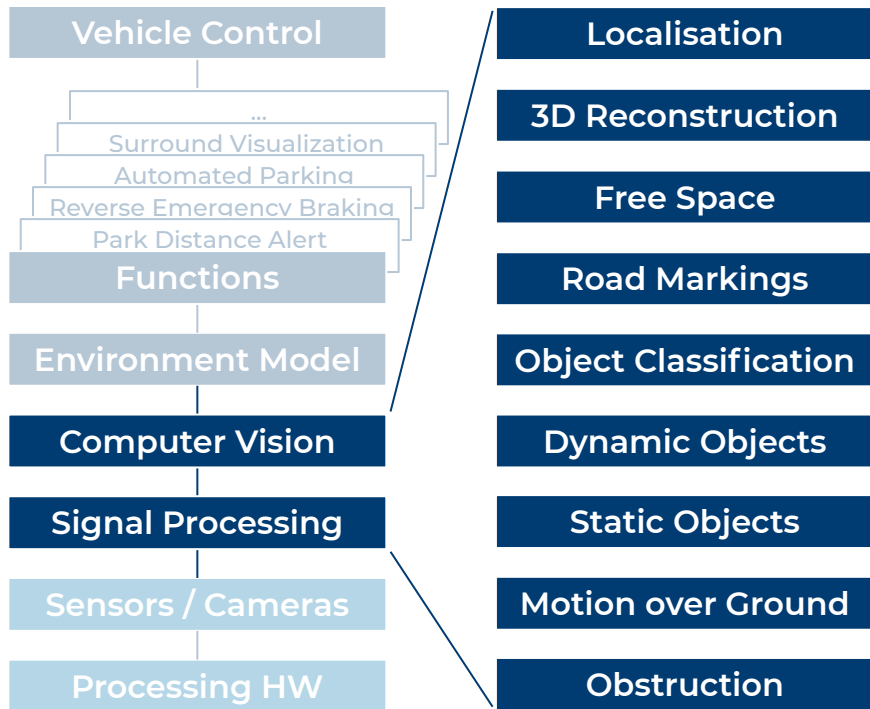
in

Valeo



Offering the full ADAS software stack incl. tool chain and system validation

SOFTWARE AND SYSTEM COMPETENCE



Software stack for optimal perception for parking and driving applications

PERCEPTION SOLUTIONS FOR LEVEL 3 AUTOMATION



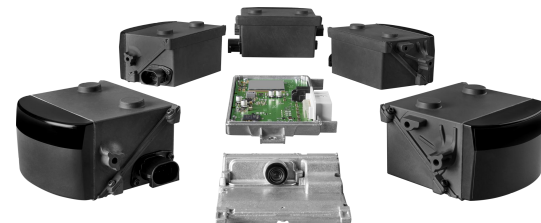
New enhanced Valeo SCALA®



- Data Fusion
- Object Tracking
- Object Identification
- Free Space
- Noise Suppression
- Point Cloud
- Calibration
- Service Functions
- Sensor Control
- Functional Safety



Front Camera, SCALA® Cocoon
ADAS Control Unit



Providing complete »perception systems« incl. tool chain and system validation

FACILITIES FOR LOW & HIGH SPEED SYSTEM VALIDATION



Worldwide network of test tracks with on-site facilities for vehicle modifications

SYSTEMS & MODULES FOR PRIVATE AND COMMERCIAL MOBILITY



Park4U
platform



Safe4U
platform



Cruise4U
platform



Drive4U
platform



Mobility
kits

Premium

High Objects & Underbody
Side Protection

Beyond NCAP / GSR
Emergency Evasion
CMS class III

Auto Lane Change
Highway Pilot

Driving Policy

SCALA®
Long-range Lidar

AVP ready

Voyage^{XR} ready

Mainstream

Trained Parking
Surround View

V2V and V2X
Blind Spot
5-star AEB

Construction Zones
Hands-off

Precise Localisation

Near-field Lidar

Entry

Automated Parking
Park Assist
Rear Camera

3-star AEB / GSR
Rear AEB
Rain Sensor

ACC Stop&Go
Lane Centering

Perception &
Data Fusion

Near-field Camera

Ultrasonic Sensor

Full ADAS stack up to L2+ driving and L4 parking

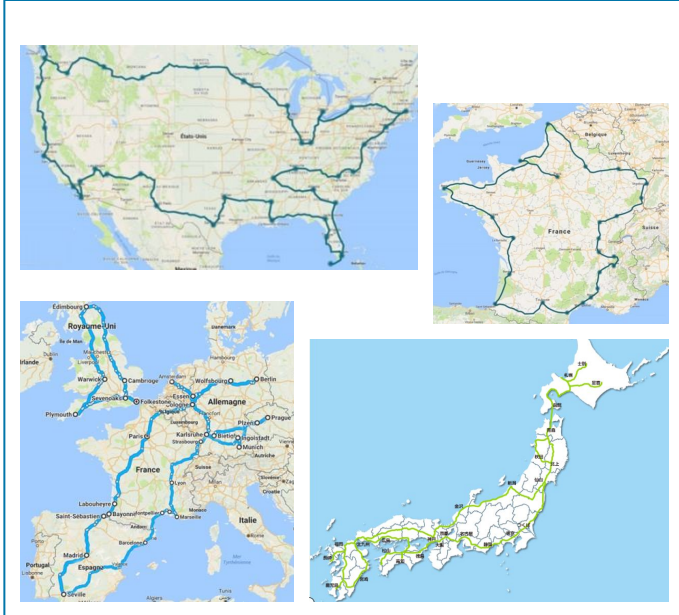
Modules for L4 driverless

VALEO DRIVE4U™ AUTOMATED DRIVING PLATFORM

Test Cars and Test Campaigns all over the world

Automated Driving on Highways

Test campaigns in US, Europe and Japan



Automated Driving in Urban Environment

Test campaigns in US, France, Germany and Japan



The only AD platform worldwide relying on automotive production sensors



John Krafcik
Waymo CEO
at IAA 2019



We are working very closely
with our friends at ... **Valeo**
that are helping us get up
and going.



VALEO DRIVE4U™ AUTOMATED DRIVING PLATFORM



Full software stack for urban automated driving

Fully redundant 360 degree perception

Deep learning 3D objects detection

Robust and precise localization and mapping

Motion prediction for dynamic objects

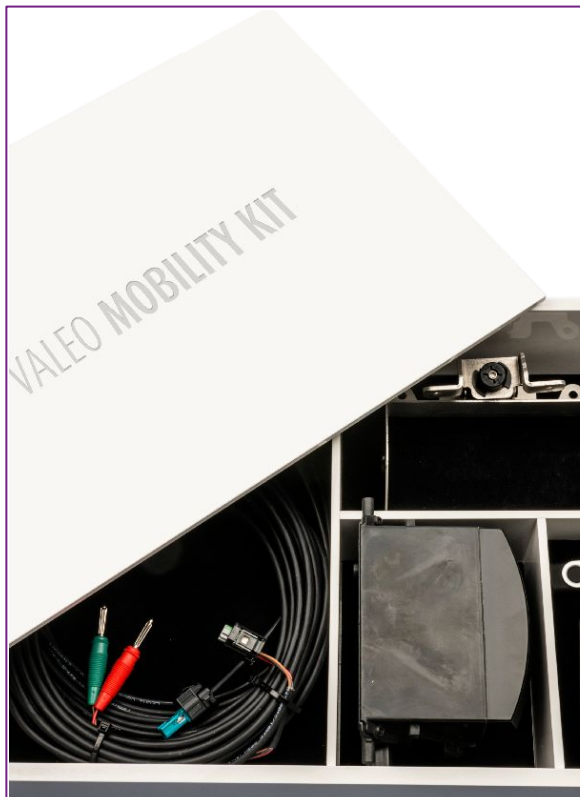
Dynamic driving policy and decision making

Vehicle control and redundant supervision

The only AD platform worldwide relying on automotive production sensors

VALEO MOBILITY KITS FOR NEW PLAYERS AND MARKETS

ALL NEEDS • ALL VOLUMES • ALL FOR YOU



OFF THE SHELF sensors & perception systems

Conquer new **VALUE SPACES** beyond the car

Automotive **QUALITY** for science and start-ups

CONCLUSION



LEADER IN PARKING, SAFETY & AUTOMATION

LEADER IN PARKING, SAFETY & DRIVING AUTOMATION



YEARS of ADAS volume production experience

MILLION ADAS systems delivered in 2020

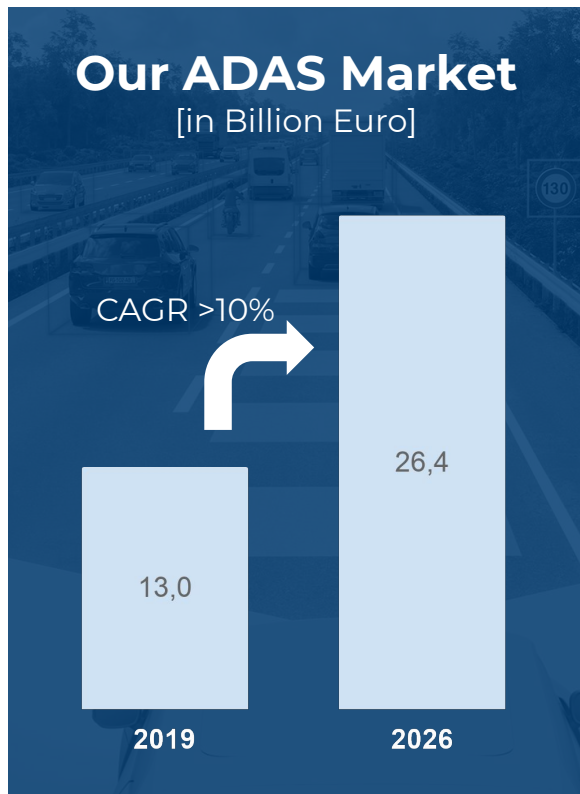
PERCENT of new cars come with Valeo ADAS

LEADER IN PARKING, SAFETY & DRIVING AUTOMATION



More than €12bn **ORDER INTAKE** 2018-2020

LEADER IN PARKING, SAFETY & DRIVING AUTOMATION



Valeo continues to **OUTPERFORM** the market

Complete **SOFTWARE STACK** and tool chain

Clear **LEADER** in ultrasonic, cameras and lidar



SMART TECHNOLOGY
FOR SMARTER MOBILITY