Valeo LiDAR
Towards a democratisation of LiDAR in Automotive

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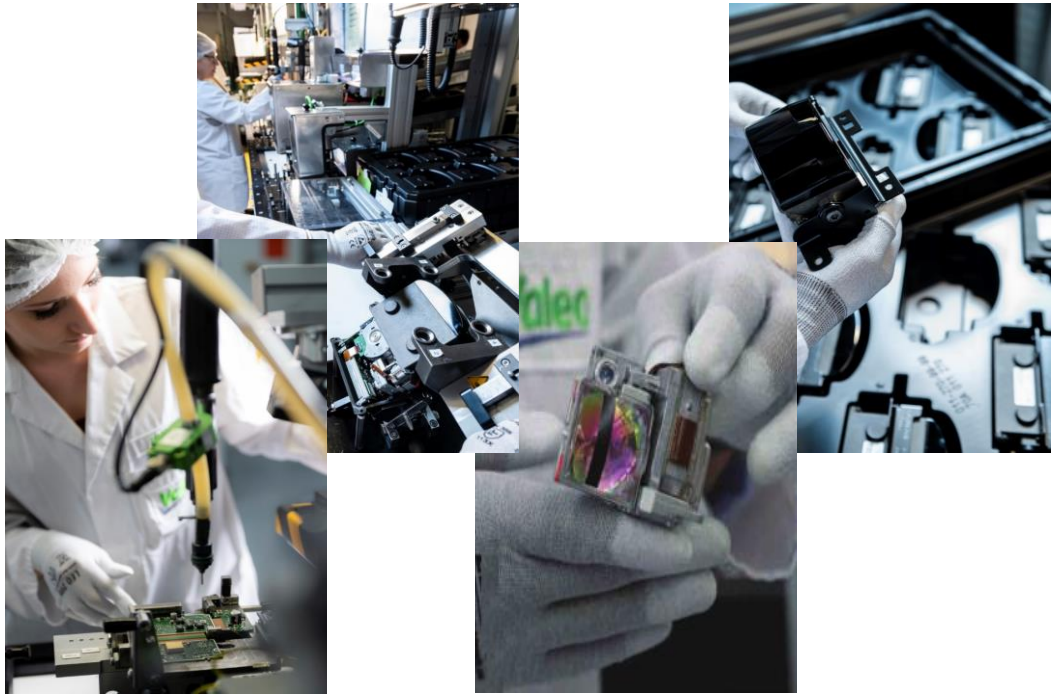
VALEO, THE BROADEST PERCEPTION PORTFOLIO ON THE MARKET

With 30 years of experience in ADAS: ultrasonic, radar, front and rear cameras, surrounding view, every 4th new car worldwide comes with Valeo ADAS technology

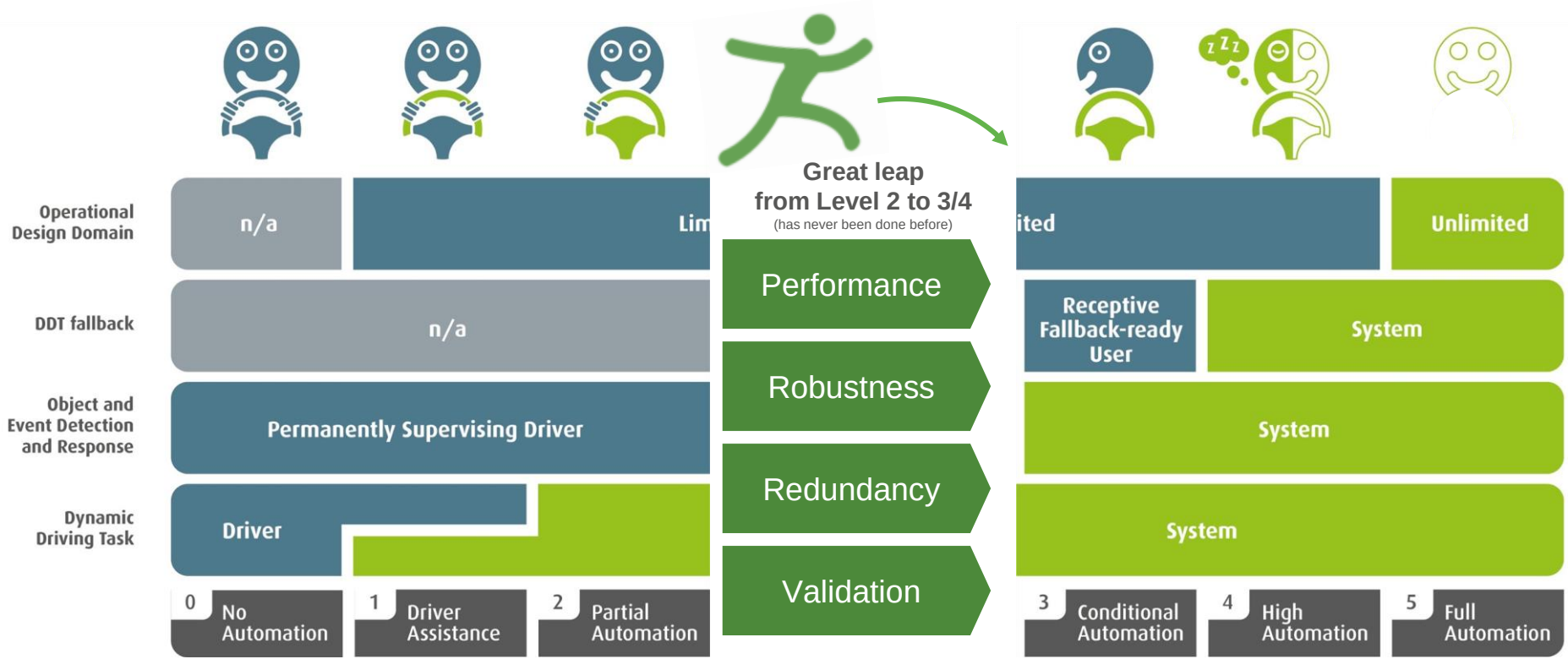
VALEO LiDAR SCALA®, AUTOMOTIVE VOLUME PRODUCTION



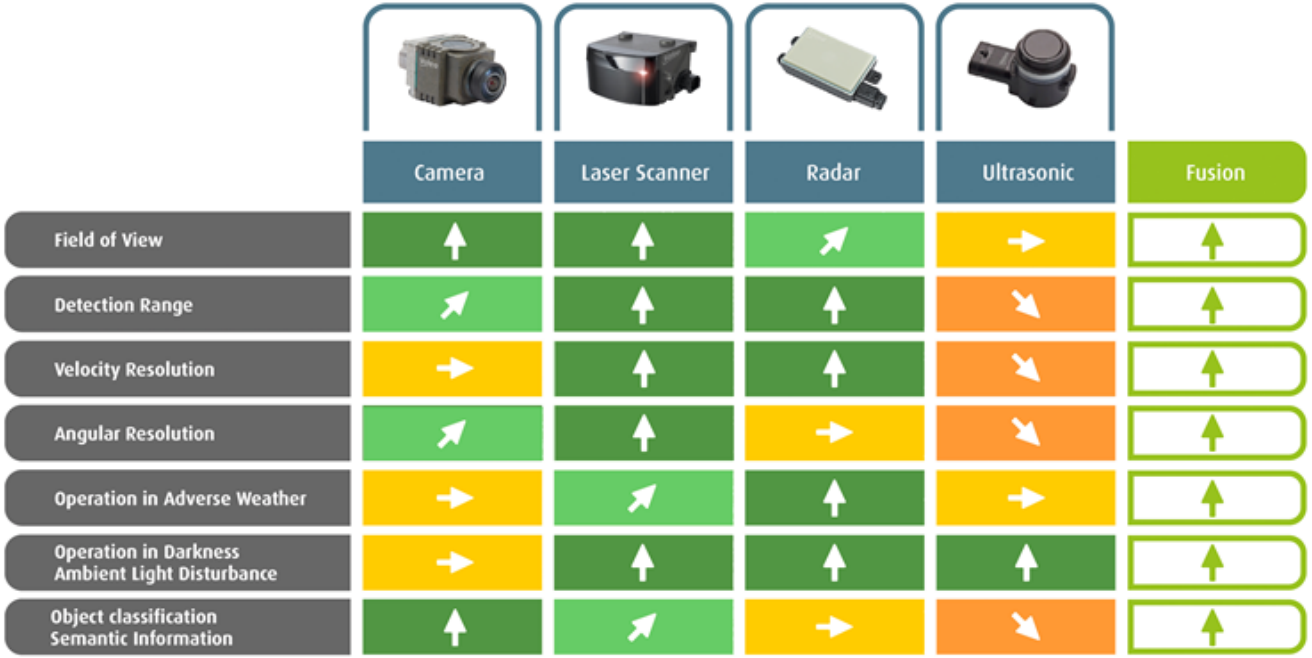
Over 100,000 Valeo LiDAR SCALA® shipped to date

SAE LEVELS OF AUTOMATION

(*) Definitions of Automated Driving Level according to SAE J3016™



LiDAR AS KEY SENSOR FOR VEHICLE AUTOMATION

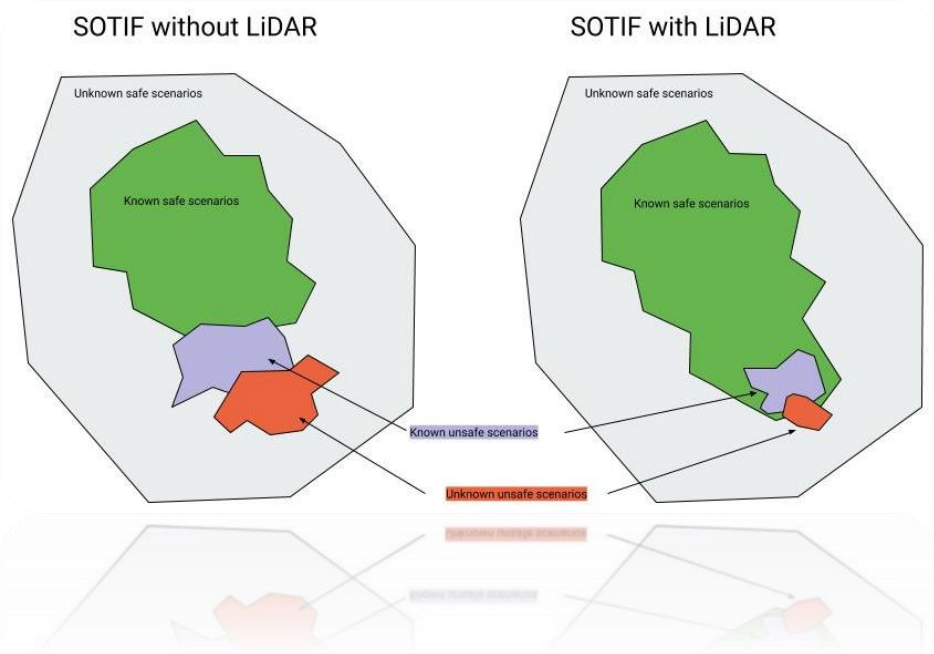


LiDAR will enable full automation, its fusion with Camera and Radar offers the required redundancy

LiDAR as key sensor for vehicle automation

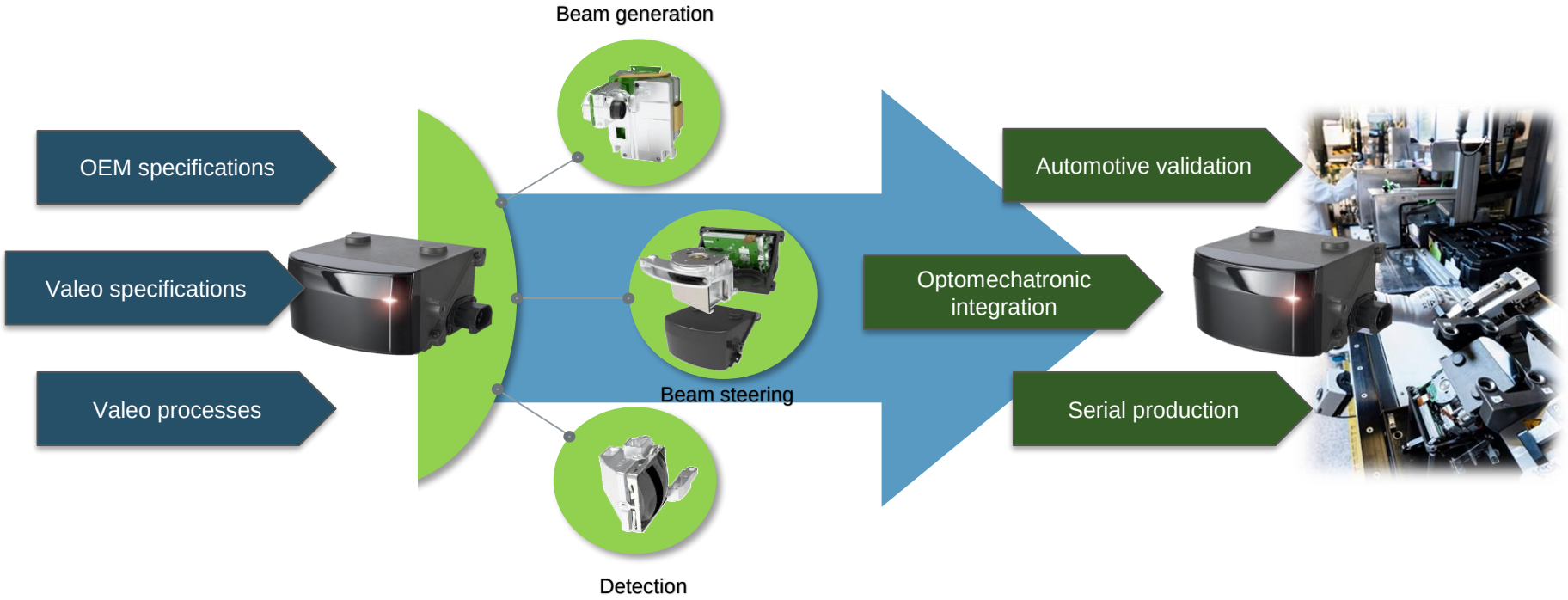
With its technological diversity to other ADAS sensors Camera or RADAR, the LiDAR is offering

- Reduction of unknown unsafe scenarios by contribution to the fusion system
- Contribution to known unsafe scenarios during validation to make them safe.



Functional Safety and SOTIF are at the center of Valeo LiDAR developments

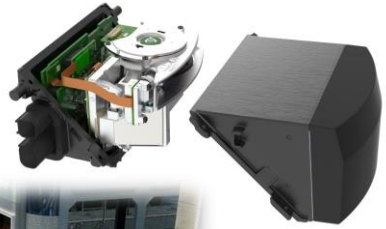
VALEO LiDAR, PROVEN ROBUSTNESS FOR AUTOMOTIVE USE



Robust optomechatronic integration with focus on fullfilling all automotive requirements

VALEO LiDAR, PROVEN ROBUSTNESS FOR AUTOMOTIVE USE

- Robust design, with focus on optomechatronic integration, enabling to withstand severe environment (temperature, shock and vibration) conforming to automotive requirement
- Smart sensor with functionalities fulfilling not only functional safety requirements but also SOTIF requirements
- Integrated heating and cleaning subsystems with related algorithms to enable operation in different dirts and weather conditions



Robust optomechatronic integration with focus on fullfilling all automotive requirements

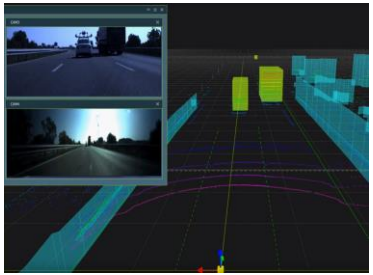
VALEO LiDAR, SMART SENSOR WITH ASIL & SOTIF COMPLIANT FUNCTIONS

Main output functions

- Dynamic object detection & classification
- Static object detection & classification
- Lane detection & Classification
- Freespace
- Ground topology
- Point cloud interface
- Localization & map matching
- Dense map prediction
- Static map

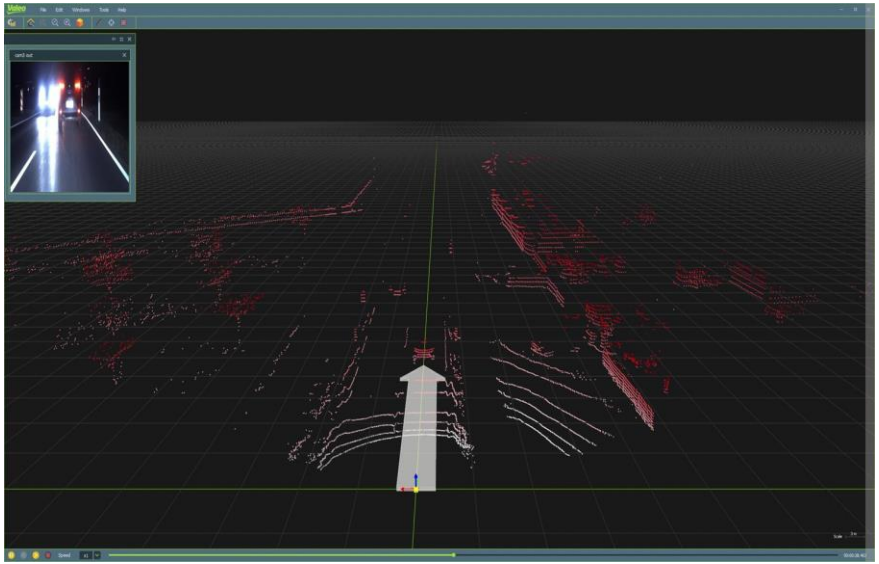
Service functions

- Blockage detection
- Heating & cleaning control
- Detection range estimation
- Rain & spray detection
- Online misalignment detection & calibration
- Ego motion calculation
- Interference detection / suppression
- End Of Line calibration
- Flashing over the air



Object Detection

Blockage Detection



Point Cloud Interface

- **VALEO inhouse algorithms based unique LiDAR expertise**
- **Ready for sensor or ECU integration**
- **ASILB and SOTIF compliant**
- **Runtime optimized code, fully validated**

VALEO LiDAR SYSTEM VALIDATION – FOCUS ON EFFICIENCY AND SAFETY

Automation

High level of testing and data processing automation in order to guarantee repeatability and accuracy and enable test cases in accordance with FuSA and SOTIF.

Sim. & Virtual Validation

Pre and post processing simulation starting from sensor model up to System HiL/SiL/ViL enabled by very rich field experience coming from the hundred of thousands of LiDAR on the road

Important contributor to development efforts

Standardization

High level of tooling and real-life test standardization enabling plug and play tool chain

Data Management

Global data management system that covers the process needs end-to-end

Valeo LiDAR system validation enabling high efiiciency and design robustness

VALEO LiDAR PRODUCT ROADMAP

SCALA® Gen. 1	SCALA® Cocoon	SCALA® Gen. 2	SCALA® Gen. 3
			
2017	2020	2020	202x
1st World Automotive qualified	360° detection cocoon	Triple vertical field of view	Solid-state LiDAR
Large detection range with wide horizontal field of view	Compiled of several SCALA®		
Launched in 2017	Customer project	Customer project	Customer project

VALEO LiDAR PRODUCT ROADMAP

Valeo SCALA®

SCALA® Gen. 1	SCALA® Cocoon	SCALA® Gen. 2	SCALA® Gen. 3
			
2017	**2020**	2020	202x
World 1st			
Automotive qualified	**360° detection cocoon**	**Triple vertical field of view**	**Solid-state LiDAR**
Large detection range with wide horizontal field of view	Compiled of several SCALA®		
Launched in 2017	**Customer project**	Customer project	Customer project

VALEO LiDAR PRODUCT ROADMAP

Valeo SCALA®

SCALA® Gen. 1	SCALA® Cocoon	SCALA® Gen. 2	SCALA® Gen. 3
			
2017	**2020**	**2020**	**202x**
World 1st			
Automotive qualified	**360° detection cocoon**	**Triple vertical field of view**	**Solid-state LiDAR**
Large detection range with wide horizontal field of view	Compiled of several SCALA®		
Launched in 2017	**Customer project**	**Customer project**	**Customer project**

VALEO LiDAR PRODUCT ROADMAP

Valeo SCALA®

SCALA® Gen. 1	SCALA® Cocoon	SCALA® Gen. 2	Gen. X
			
2017	**2020**		**202x**
World 1st			
Automotive qualified	**360° detection cocoon**	**Triple vertical field of view**	**Hybrid technology**
Large detection range with wide horizontal field of view	Compiled of several SCALA®	High detection range with wider horizontal field of view	
Launched in 2017	**Customer project**	**Customer project**	**Customer project**

VALEO towards a democratisation of LiDAR as enabler of vehicle automation


Valeo
SMART TECHNOLOGY
FOR SMARTER CARS