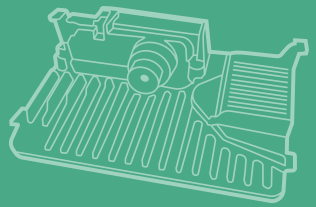
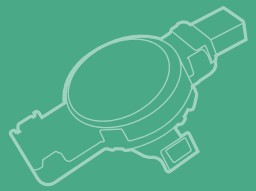
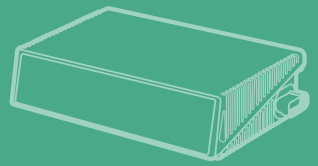
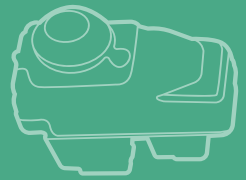
Valeo Autoklimatizace & Czech Optical Cluster

January 2025

SMART TECHNOLOGY FOR SMARTER MOBILITY

01
Company Introduction


Valeo
100 YEARS
A CENTURY OF INNOVATION
TO BUILD CLEANER, SAFER AND SMARTER MOBILITY

POWER

- *ELECTRIFICATION ACCELERATION (HEV, PHEV, EREV, BEV)*
- *GLOBAL ELECTRICAL & THERMAL ENERGY MANAGEMENT*
- *EFFICIENCY & PERFORMANCE SOFTWARE ENABLER FOR DIFFERENTIATION*

BRAIN

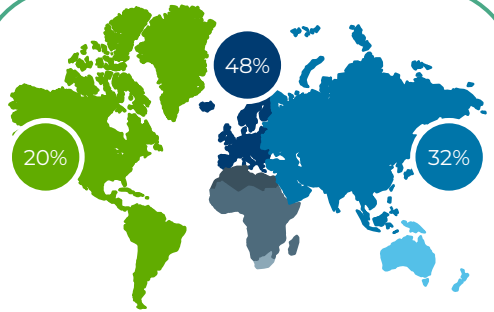
- *ADAS ACCELERATION*
- *SOFTWARE DEFINED VEHICLE*
- *REINVENTION OF INTERIOR EXPERIENCE*
- *SOFTWARE*

Valeo

LIGHT

- *LIGHTING EVERYWHERE FOR STYLE & INTERACTION*
- *COMMUNICATION & CLEANING FOR SAFETY & AUTOMATION*
- *SOFTWARE*

Who We Are



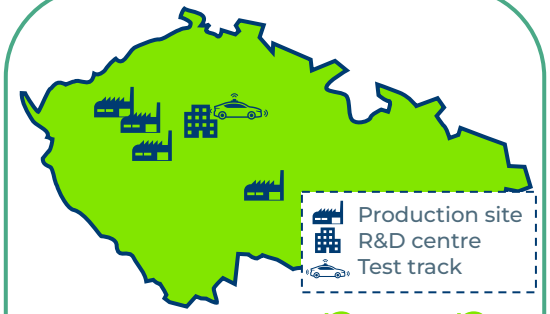
112,000 employees

20,000 people in R&D

175 production sites

66 R&D centres

Strong and Balanced Worldwide Presence



4,500 employees

900 people in R&D

since **1995** production established

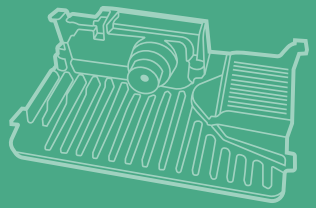
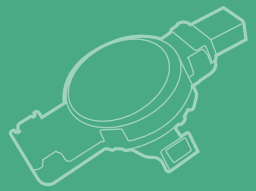
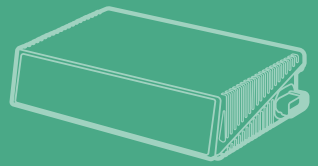
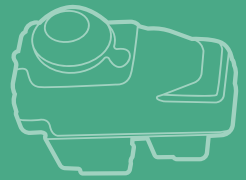
since **2002** R&D established

Established Footprint in the Czech Republic

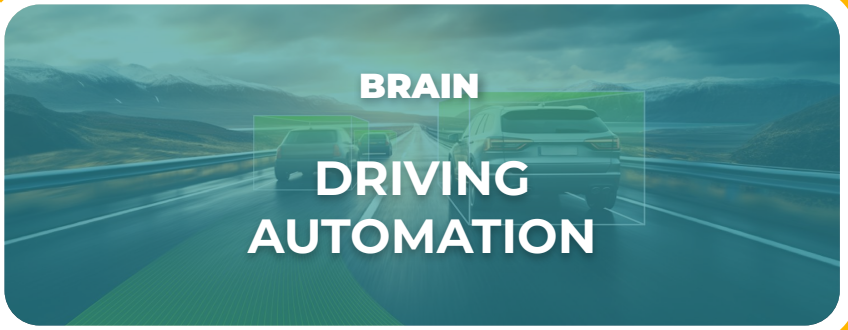
R&D Prague: Wide Product Portfolio

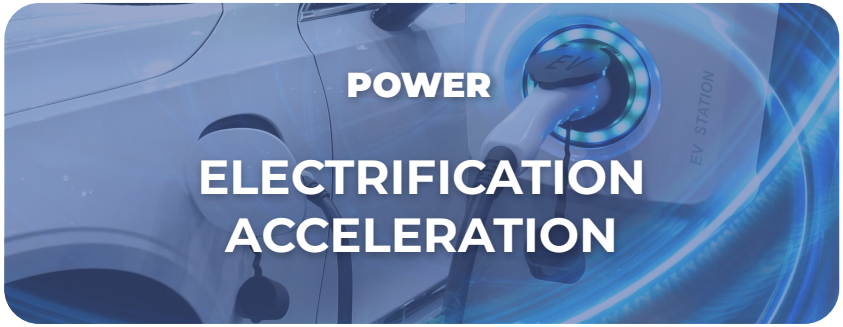
“Valeo Autoklimatizace” is not just about climate control systems!

02
Optics / Photonics in Valeo

Optics / photonics in Valeo





3 strategic pillars out of 4 are based on optics. And 2 pillars are in BRAIN.

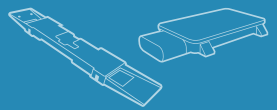
Optics / photonics in BRAIN

VALEO BRAIN DIVISION

DRIVING AUTOMATION

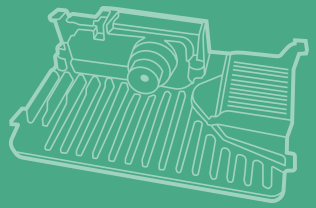
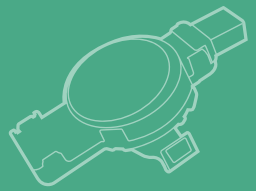
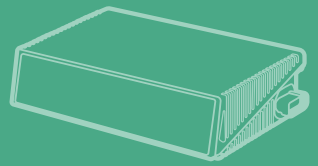
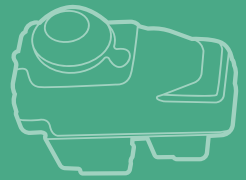
- DETECT 
- VISION 
- LiDAR 
- COMPUTE 
- anSWer 0 1 1 0 1 0 0 1

INTERIOR EXPERIENCE

- SENSE 
- COCKPIT 
- CONNECT 

Most of BRAIN products are Optics / Photonics ones.

03
Optics / photonics in Valeo Prague

Optics / photonics in Valeo Prague

DRIVING AUTOMATION

DETECT 

LiDAR 

- Front cameras, rain/light sensors, radars, lidars
- 1 × metrology lab, 1 × laser lab

INTERIOR EXPERIENCE

SENSE 

COCKPIT 

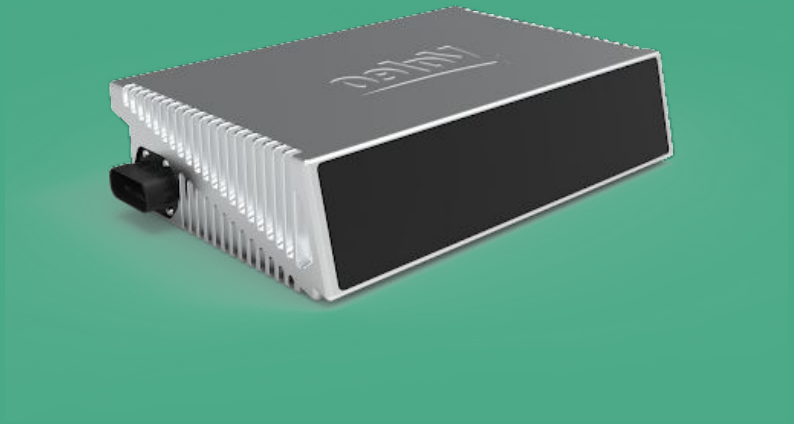
- Driver monitoring cameras, control panels, switches
- 1 × lab (colorimetry, luminance analysis)

Industrialization team

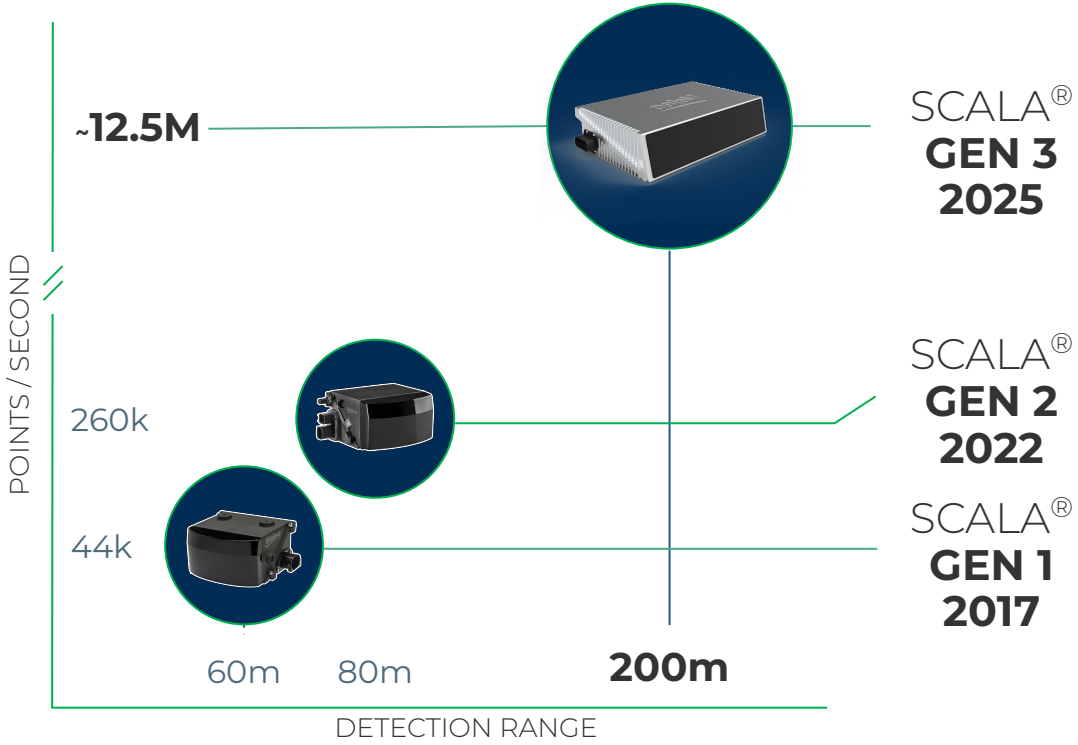
- Prototype optical + calibration stations
- 1 × calibration lab

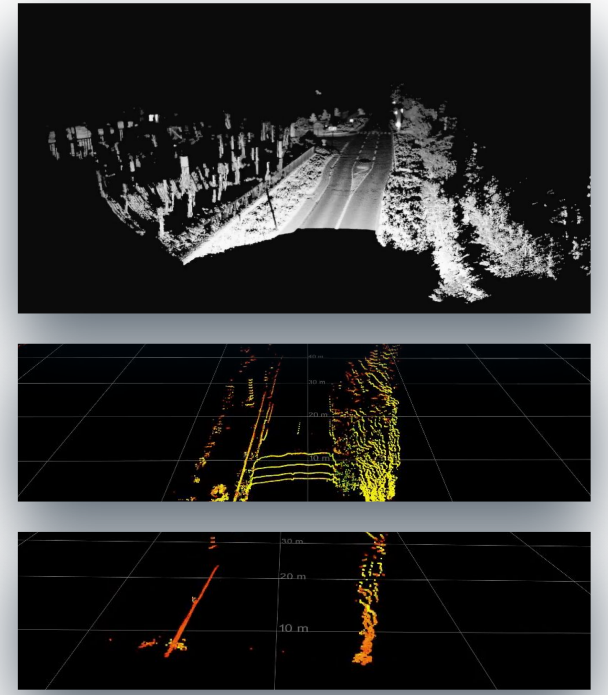
Wide portfolio covered from Prague by several optical teams and (senior) experts

LiDAR



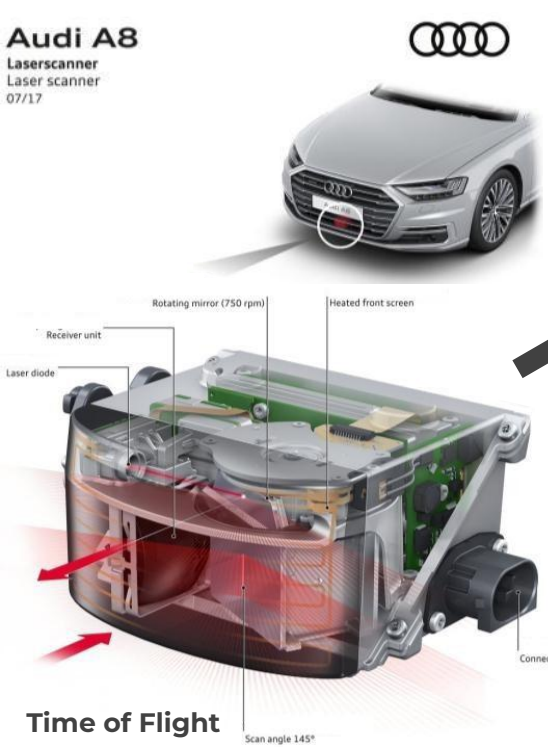
LiDAR Products

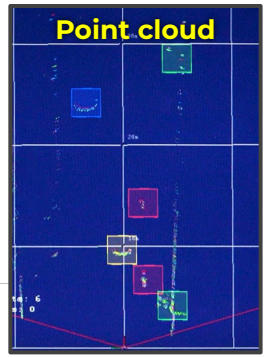


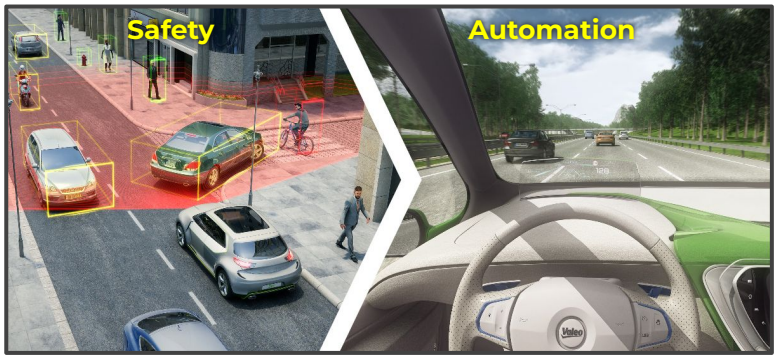


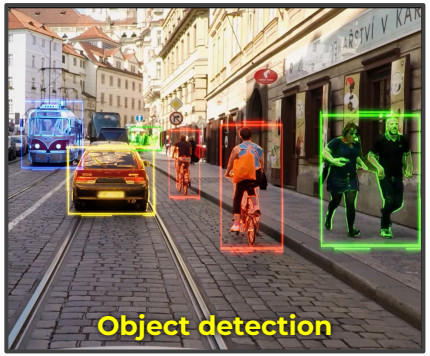
First commercial LiDAR for passenger cars

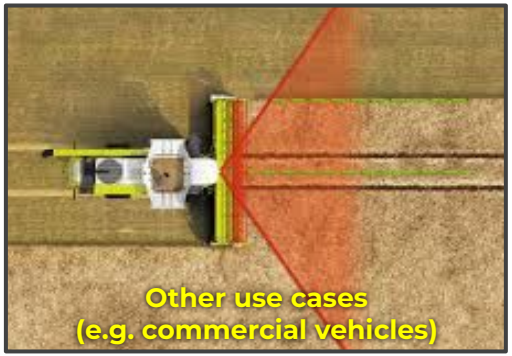
LiDAR function and application











Enabler for L3+ driving automation

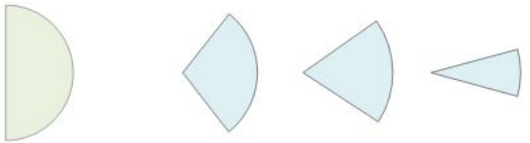
Cameras

Vision based architecture

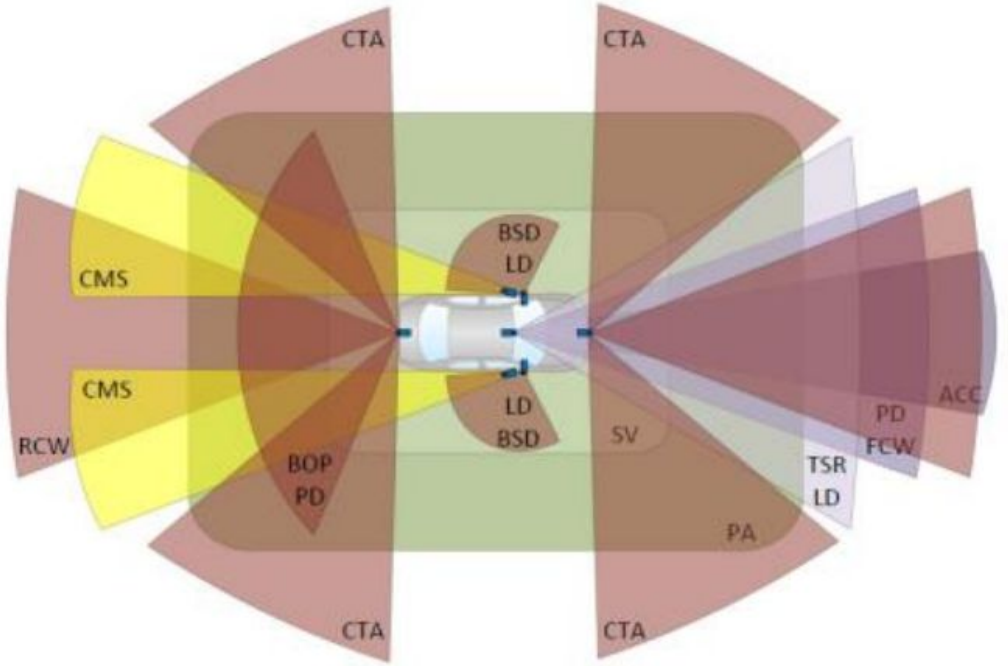
ACC - Active Cruise Control
BOP - Back Over Protection
BSD - Blind Spot Detection
CMS - Camera Monitoring System
CTA - Cross Traffic Alert
FCW - Front Collision Warning
LD - Lane Detection
PA - Parking Assist
PD - Pedestrian Detection
RCW - Rear Collision Warning
SV - Surround View
TSR - Traffic Sign Recognition

Common Automotive Lens HFoV

Near Field Cocoon **Far Field Cocoon**



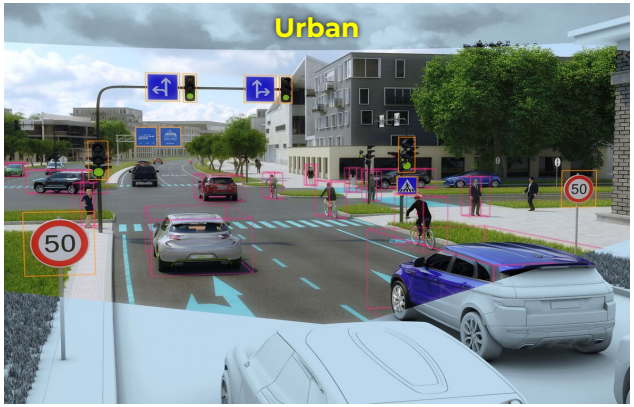
>180° *100° - 120°* *60° - 80°* *20° - 40°*



Camera location, FoV & resolution dependent on targeted use case

Use Cases / Operational Design Domain (ODD)

Day | Night | All-Weather



Rain/Light Sensors

Multifunctional Rain/Light Sensor

Rain function

Evaluating rain intensity and sending corresponding wiping commands

Light function

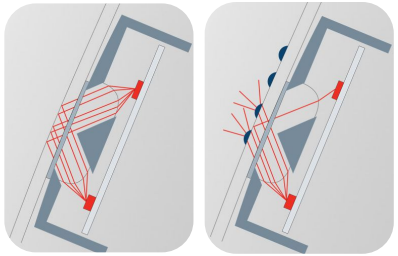
Automated control of low beam headlamps based on light conditions

HUD sensor

Providing luminance information for head-up display brightness control

Solar sensor

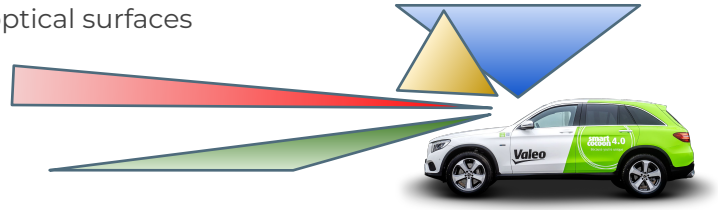
Providing irradiance information to ensure heat comfort (dual-zone)



Rain recognition: **total internal reflection**

Freeform optical surfaces

Up to **6 photodiodes + 2 LEDs** with dedicated optics

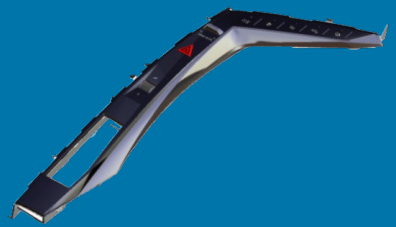


Humidity/temp. sensor

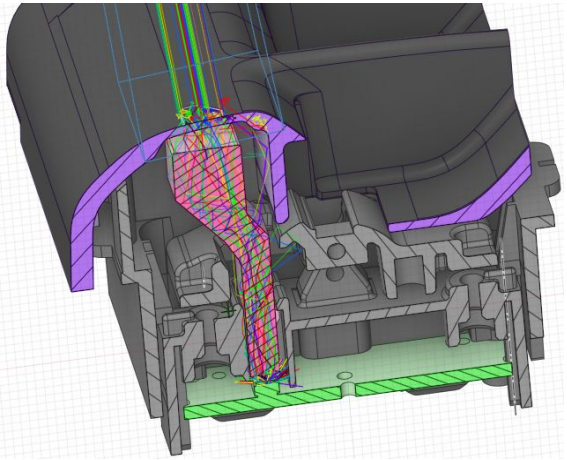
Preventing fogging on the inner side of the windshield (non-optical feature)

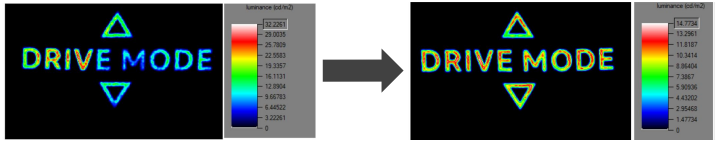
High level of integration in a small package with complex optics

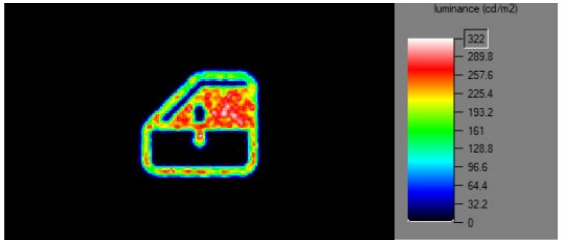
Interior Control Panels

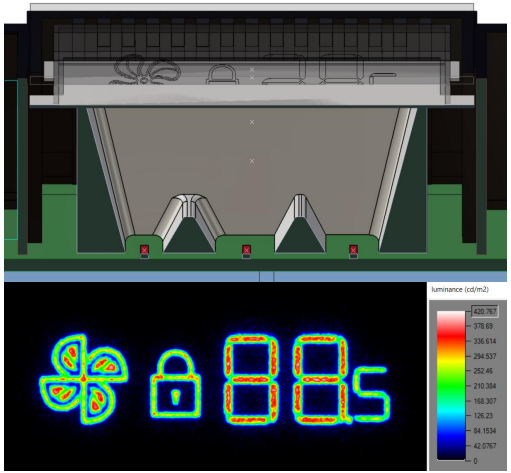


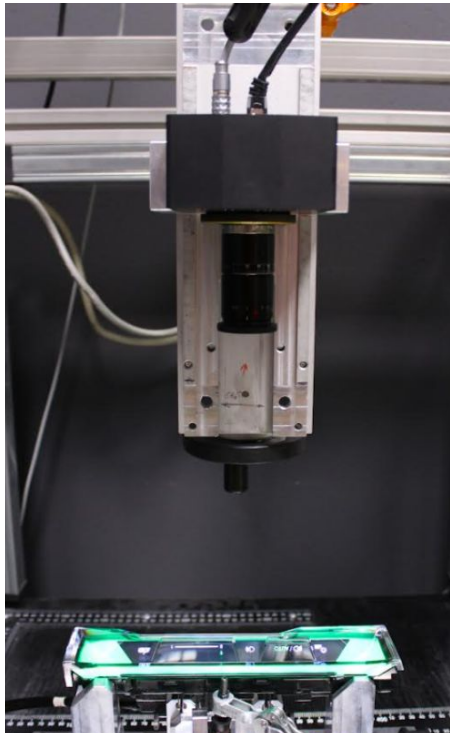
Interior Control Panels











Optical concept design, simulations, tuning, measurements and validation

Center of Advanced Industrial Technologies

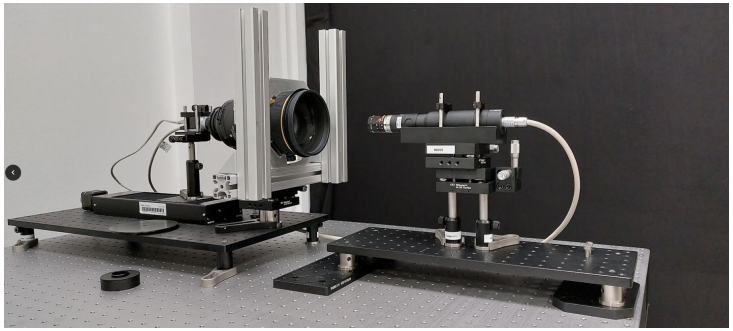
Optics

Prototype stations

Prague Center of Advanced Industrial Technologies

Optics

Characterization of optical target projectors



Camera Golden Samples verification

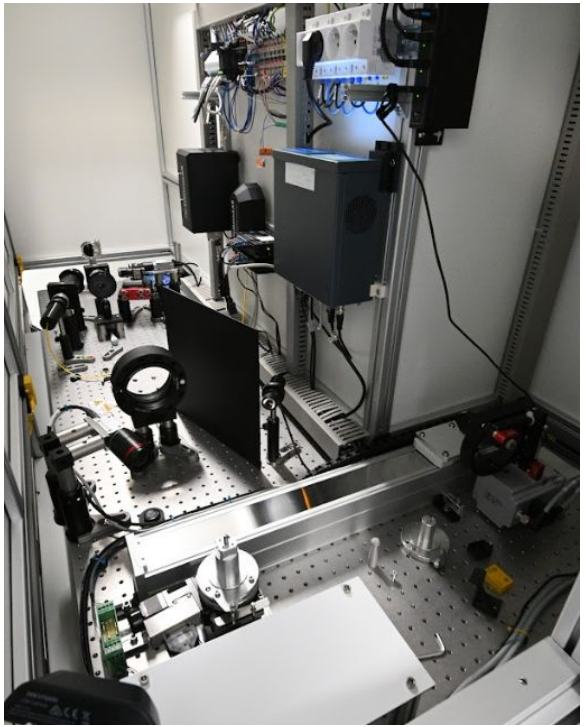
Prototype stations

Prague Center of Advanced Industrial Technologies

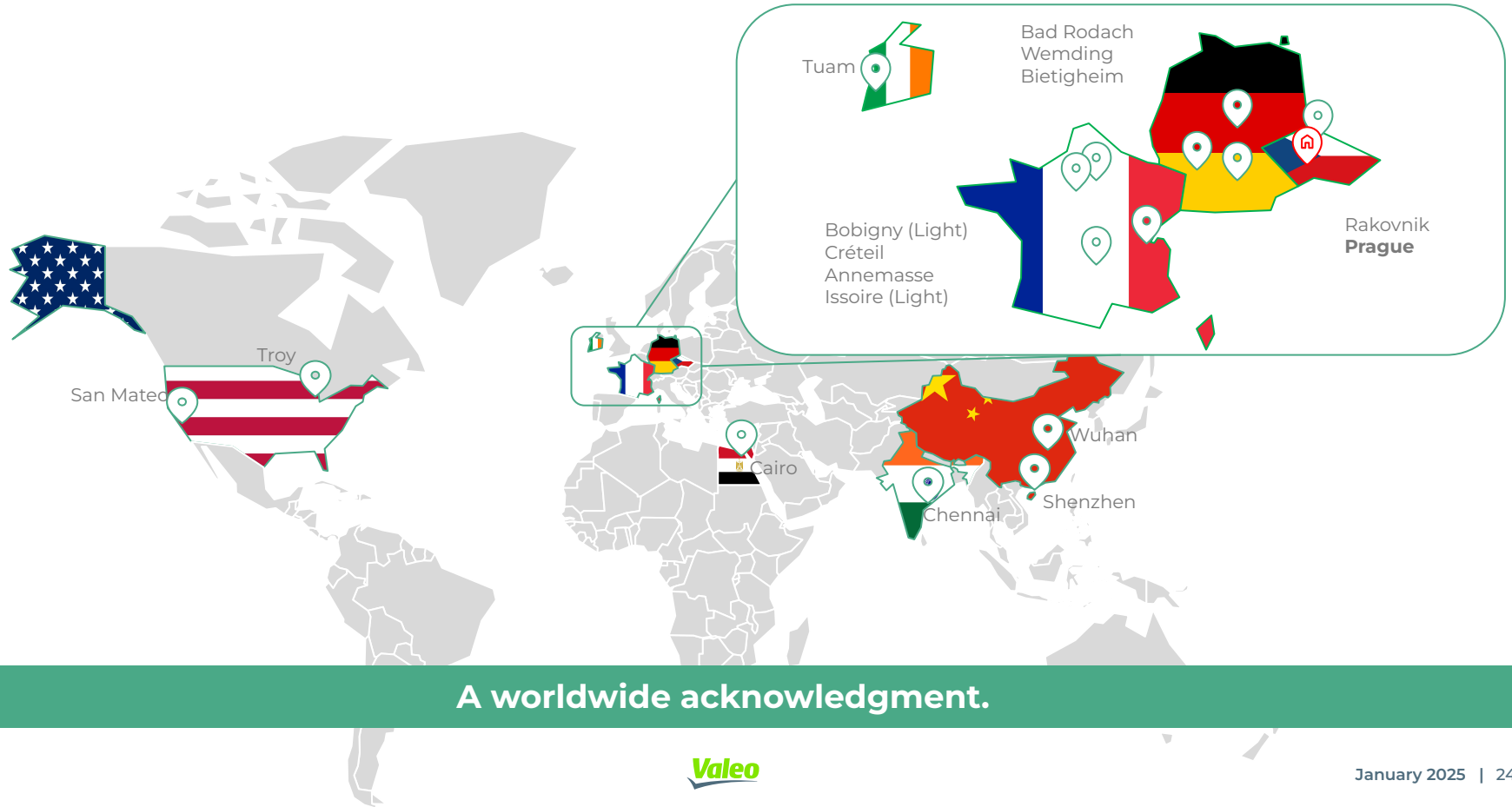
Prototype stations for Lidar optical alignment and characterization

Optics

Prototype stations



Prague Site Worldwide Collaborations



A worldwide acknowledgment.

The future is bright!

Budoucnost v záři světla!

L’avenir est lumineux!

Valeo

SMART TECHNOLOGY
FOR SMARTER MOBILITY

Donald Peyrot	Cameras, advanced optical technologies, photonics	donald.peyrot@valeo.com
Tomáš Němeček	Lidars, Time of Flight	tomas.nemecek@valeo.com
Ares Aybar	Interior Control Panels, HUD	ares.aybar@valeo.com
Jan Gřunděl	Advanced industrial technologies	jan.grundel@valeo.com
Vít Kadubec	Rain/light sensors, primary contact	vit.kadubec@valeo.com