

Digital ADAS 2.0

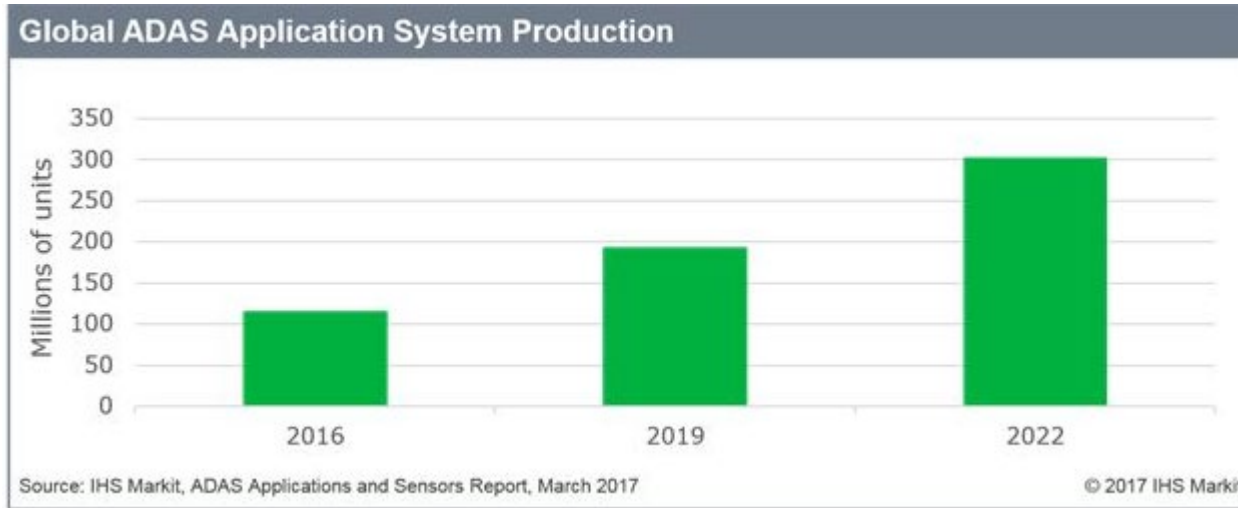
Cinzia Bigliardi | 2021/10/14

WE SHAPE FUTURE MOBILITY



MAHLE

ADAS market current situation



Today in Europe:

- 500 models ADAS-equipped
- ADAS on the 25% of the car fleet 0-5 y.o.
- ADAS on the 60% of the car fleet 0-3 y.o.

➤ UE:

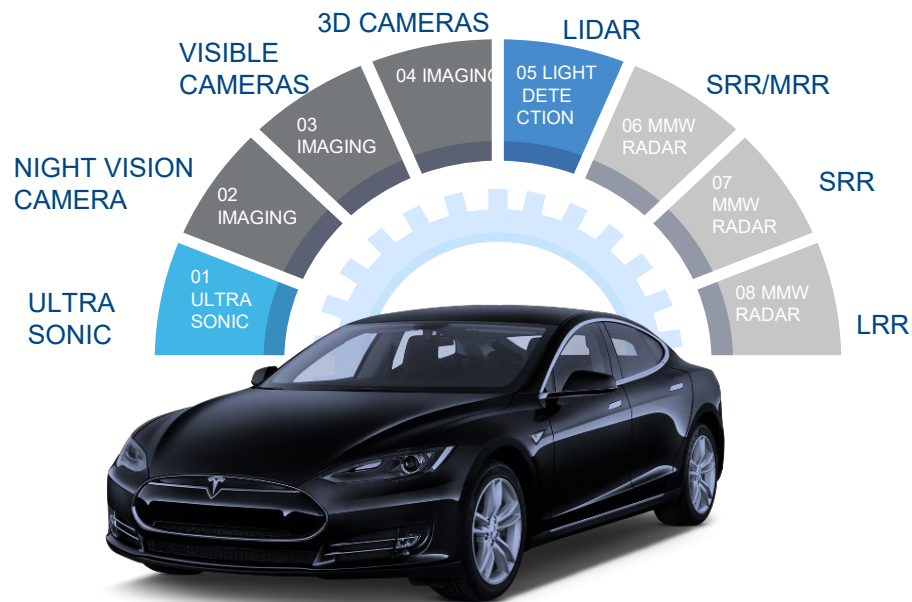
From July 2022, many ADAS (ACC, AEB, Lane Assist, etc.) will become mandatory for new car homologation

From 2024, the obligation will be extended in EU to the whole car production.

Advanced Driver Assistance System(s)

ADAS systems **assist** the driver while driving, preventing accidental collisions.

They work through **sensors** that have the role of recognizing unusual objects/situations in a known scenario.



Common ADAS systems in today's circulating car fleet



ACC
Adaptive Cruise Control
principally: RADAR | LIDAR



FCW
Forward Collision Warning system
principally: RADAR | LIDAR



AEB
Autonomous Emergency Braking
principally: RADAR | LIDAR



IPA
Intelligent Parking Assistance
principally: CAMERA | ULTRASONIC.



BSD
Blind Spot Detection
principally: RADAR
Less common: LIDAR | CAMERA | ULTRASONIC



LCA
Lane Change Assist
principally: CAMERA | LIDAR.

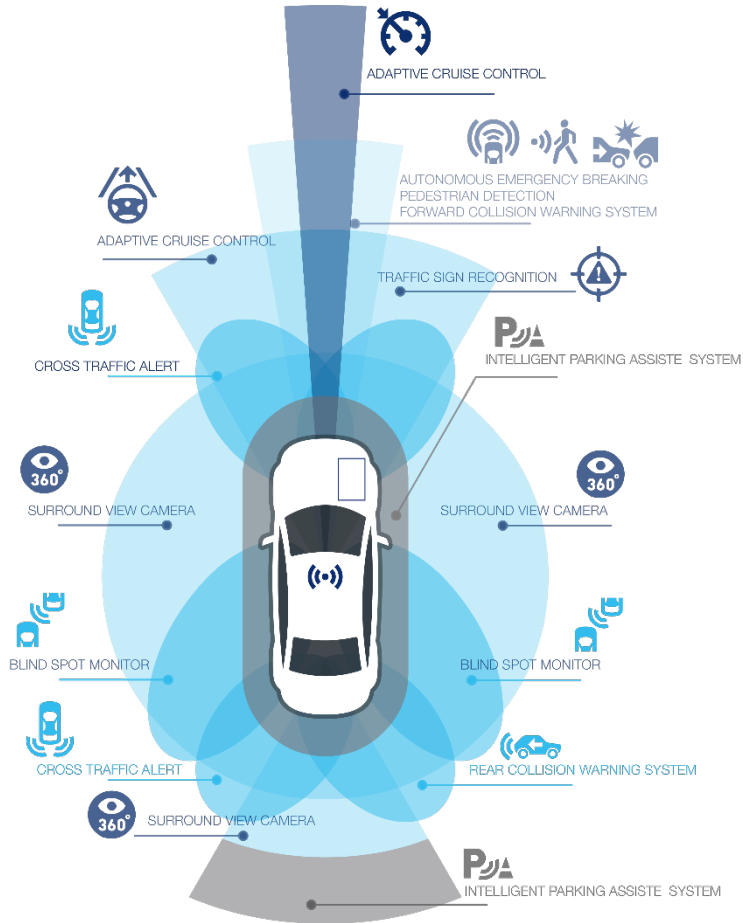


CTA
Cross Traffic Alert
principally: RADAR
Less common: LIDAR | CAMERA | ULTRASONIC

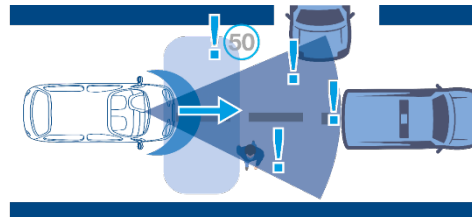


RSW
Rear Collision Warning system
mainly based on RADAR and LIDAR sensors.

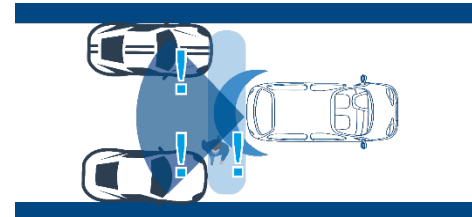
ADAS – 360° monitoring using cross-strategies



Front Camera



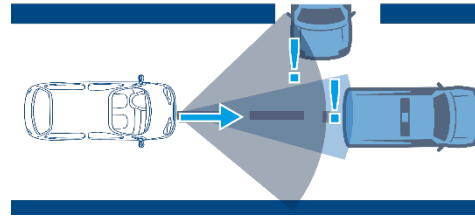
Rear Camera



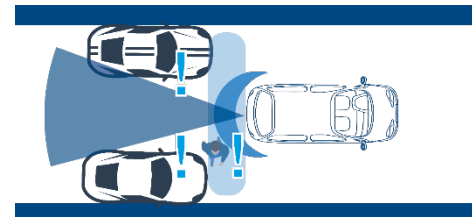
Night vision



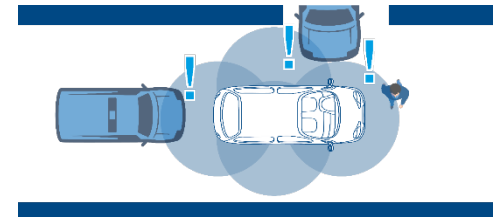
Front Radar



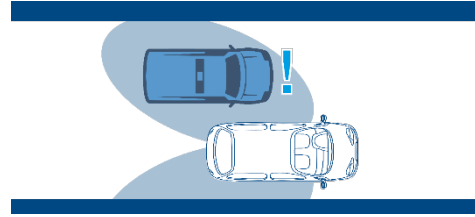
Rear Radar



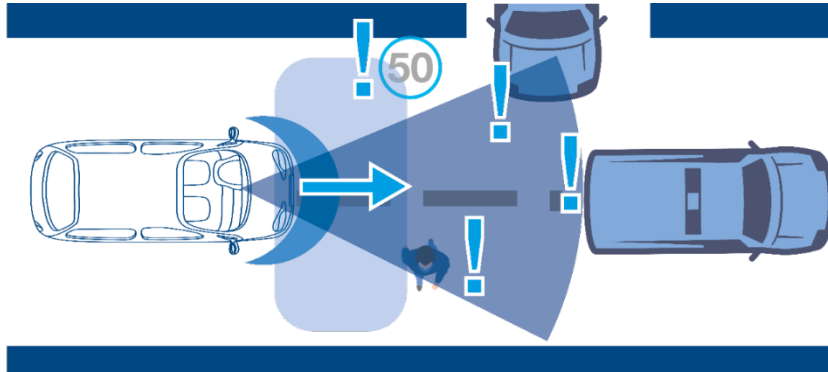
360° camera



Park Assist



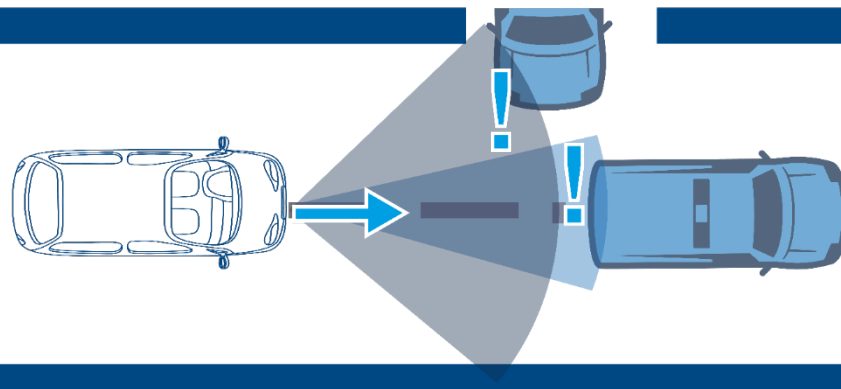
ADAS – How they work



Front Camera

Records and analyzes what is happening in front of the car

- Anti glare system
- Assisted driving in traffic
- Emergency braking system
- Lane crossing warning system (lane assist)
- Road signs recognition
- Park assist
- Pedestrian Shapes recognition



Front Radar

It makes sure there are no obstacles in the path

- Adaptive cruise control (ACC)
- Blind spot assistant
- Lane change assist
- Collision warning systems
- Parking assist

When is necessary a calibration

Replacement of the windscreen
Camera replacement
Changes in trim/rims

When is necessary a calibration

Replacement of the windscreen
Camera replacement
Changes in trim/rims

ADAS – the market

The components of ADAS systems shall be calibrated in the case of:

- glass replacement
- any interventions on cameras / radar
- collisions or micro collisions (parking)
- vehicle body work (bumpers)
- vehicle suspension interventions (electronic suspension)
- alignment of vehicle intervention
- replacement of tyre rims (for example 17" to 18")



- Multibrand Workshops
- Carglass repair shops
- Tyre repair workshops
- Assurance networks

The Digital ADAS Technology by MAHLE

Fast

User-
friendly

Space -
saving

Profitable







Certified

The Digital ADAS Technology by MAHLE



Professional
Profitability
Userfriendly



-  time-saving in use
-  space-saving (garage and storage)
-  maintenance-free (automatic update)
-  step-by-step uniform procedures for every make
-  calibration target front camera included
-  tax benefits (hyper-amortisation)

2.0 | A new chapter for the Digital ADAS line.



Digital ADAS: Leading technology in ADAS calibration systems

Universally recognized as the most innovative and revolutionary solution for ADAS calibrations, it allows to break down numerous barriers to the insertion of the service within the workshops.

In recent years it has defined a new category of market and consequently has influenced the expectations of car repairers.



From today, not «only»...



Being "Digital" doesn't just mean using images instead of physical targets

For MAHLE Aftermarket being digital means being able to implement numerous IT and electronic strategies to allow the simplification of each operation related to the calibration procedure.

Our mission: to bring the ADAS calibration service to every workshop

Targetless:

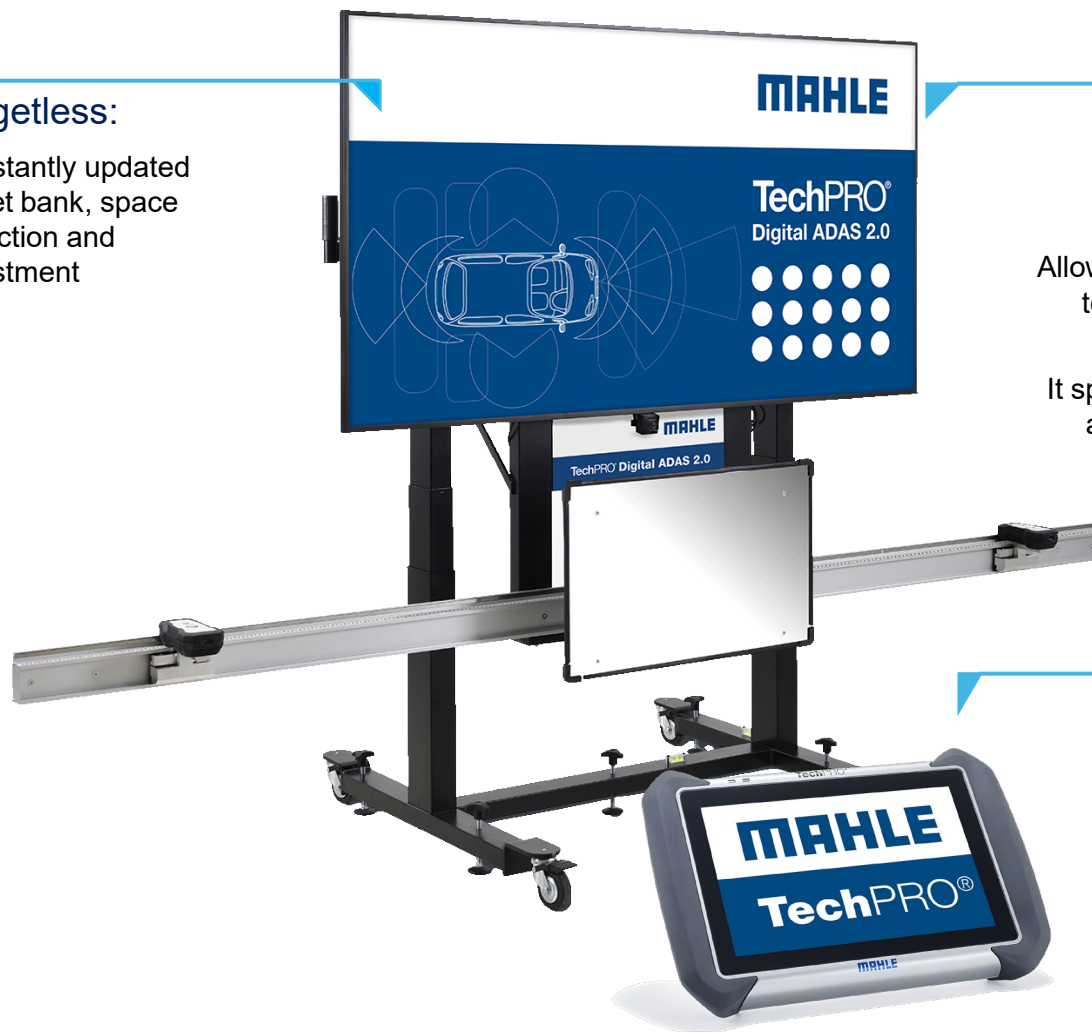
Constantly updated target bank, space reduction and investment

Keystone®

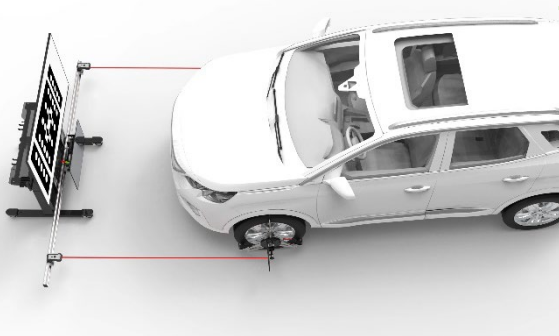
The heart of the system is the patented MAHLE technology. Allows the adaptation of the target to the actual camera and radar angle to be calibrated. It speeds up the whole procedure and allows extreme precision .

CONNEX®

The "brain" of the procedure . It manages all calibration operations, in full security with the Digital ADAS .



... but above all ...!!!



3D tutorial

Clear and comprehensive 3D tutorials can be called up on the Digital ADAS 2.0 monitor to clarify any calibration procedure.



Full automatic monitor height positioning

The height of the monitor is set automatically and at the simple confirmation click on Connex

Camera for license plate recognition

Vehicle identification by automatic plate identification

3 mt Bar

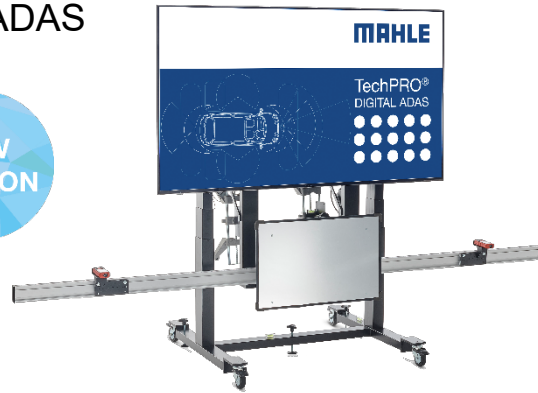
New modular solution for the measuring bar, which has a central joint to allow easier transport

Laser meters with wireless transmission

The new laser meters, which slide on the magnetic strip, allow to acquire on Connex the parameters of alignment of the vehicle in a completely automatic way.

The new line

Digital ADAS



Digital ADAS 2.0



Technology Keystone	Yes	Yes
Anti-reflective monitor	Yes	Yes
Bar with joint - 3 mt	Yes	Yes with magnetic stripe
Calibration of the camera	Yes	Yes
Calibration Radar	Yes	Yes
Laser meters	Analog	Full automatic with automatic data transmission to Connex
Monitor height adjustment	Automated	Automated with remote control from Connex
Camera for license plate recognition	--	Optional
Online guide with video tutorial	--	Yes

Benchmark with the general market

Digital ADAS 2.0



Competitors

Technology Keystone	no	Yes
Targets	Analogic or Digital	Digital
Horizontal bar	2700 mm in average	3000 mt
Video Tutorial	no	Yes, for every procedure
Frame height control	Manual	Automatic
Laser Meters	Manual values detection	Full automatic with automatic data transmission to Connex
Vehicle Identification	manual	Automatic plate recognition possibility

Thank you and drive safe!

MAHLE