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The new 911 Carrera Technology Workshop

Electrics/Electronics

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The new 911 Carrera – Porsche Advanced Cockpit

Instrument cluster with two 7" displays and central analog rev counter

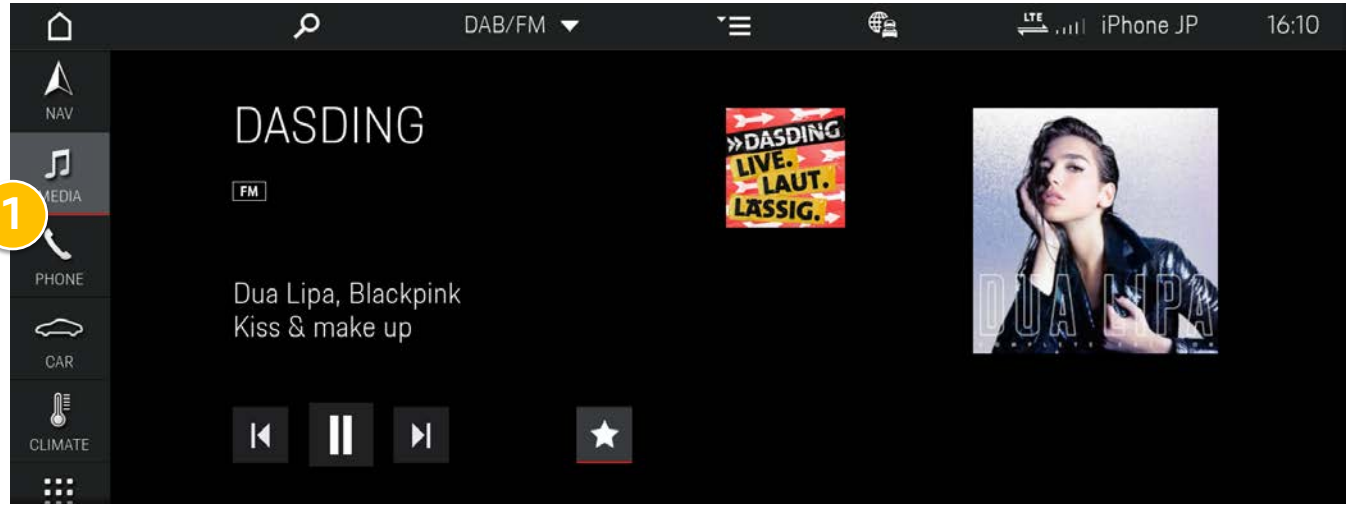
Porsche Communication Management (PCM) with online navigation module and 10,9" Full-HD touchscreen with proximity sensors

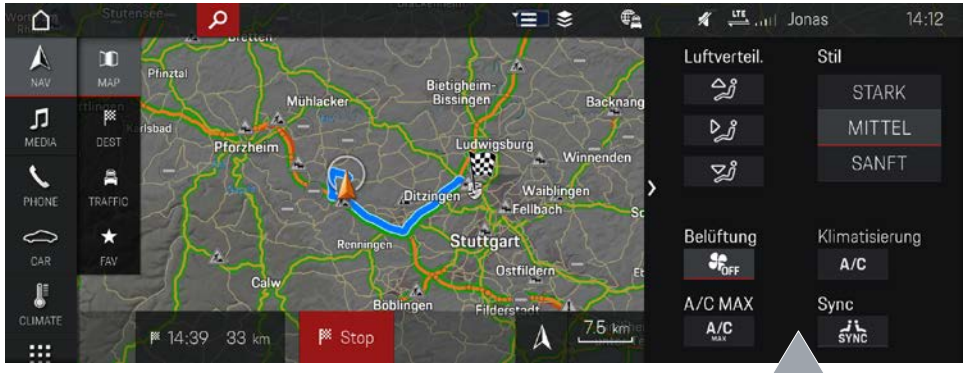
New multifunction steering wheel

Direct Access Keys

Centre console with Direct Touch Control and reduced number of buttons

(1) Touchscreen Buttons, (2) Swiping,
(3) Direct Touch Control





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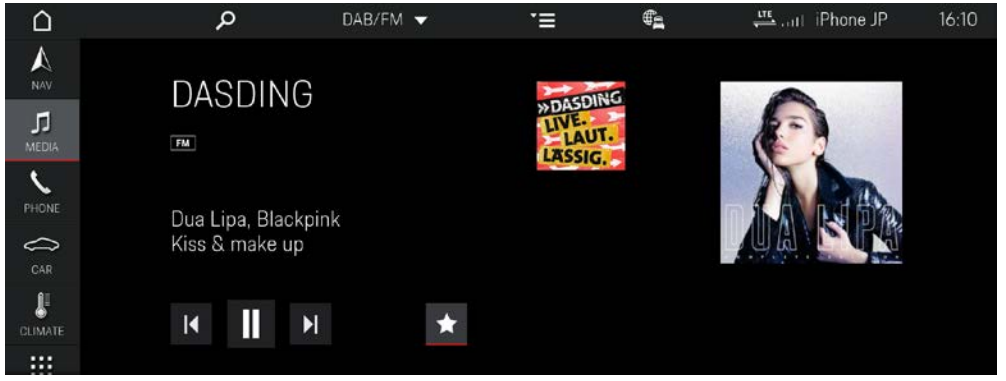
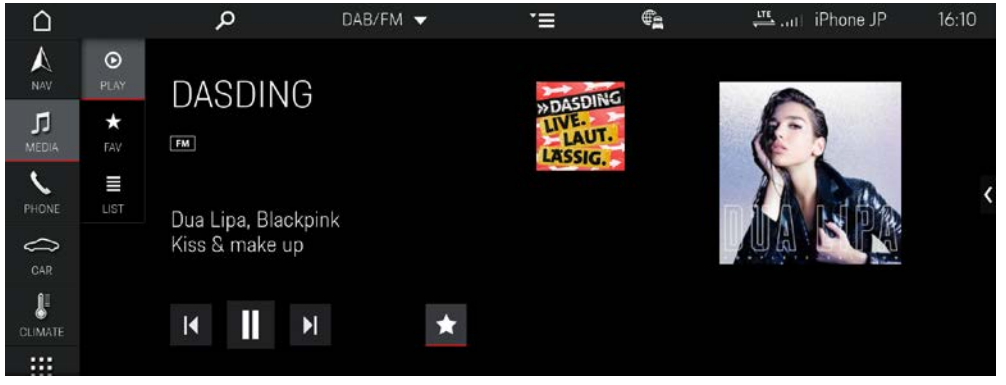


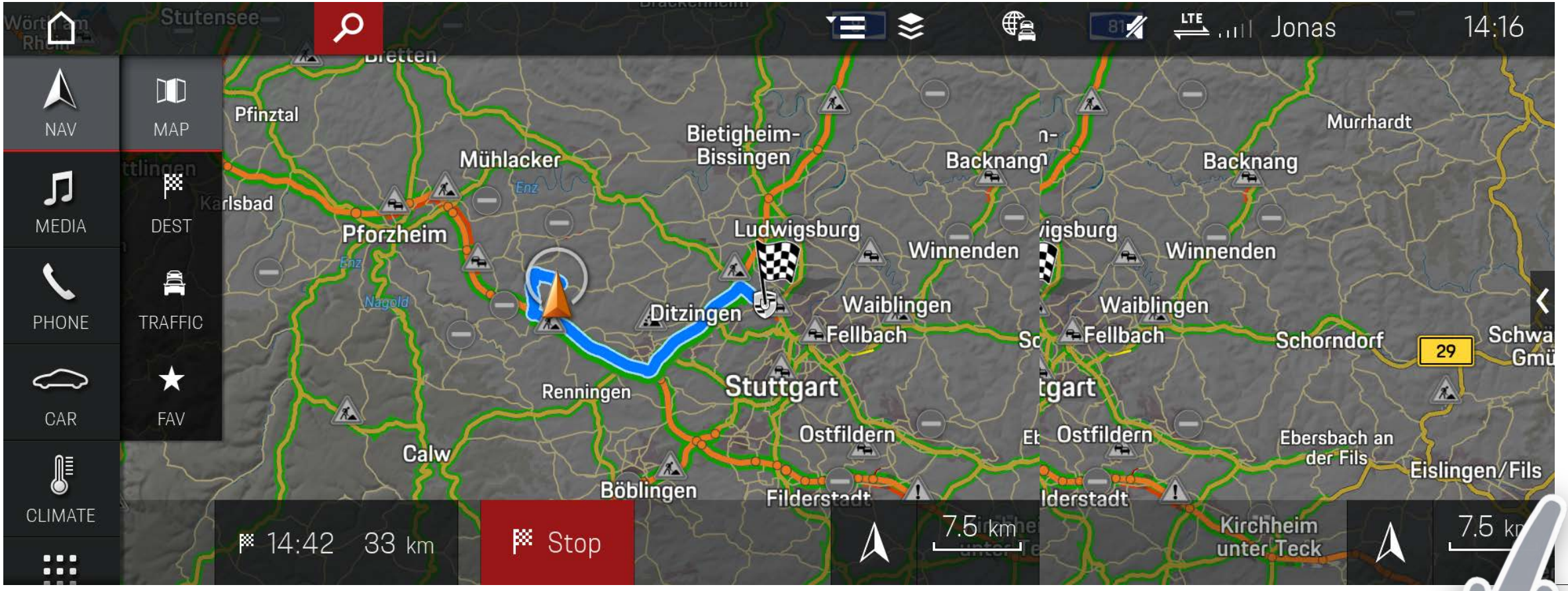
Content shown when approaching

- Menu bar
- Functional touch-sensitive surfaces
- Search field

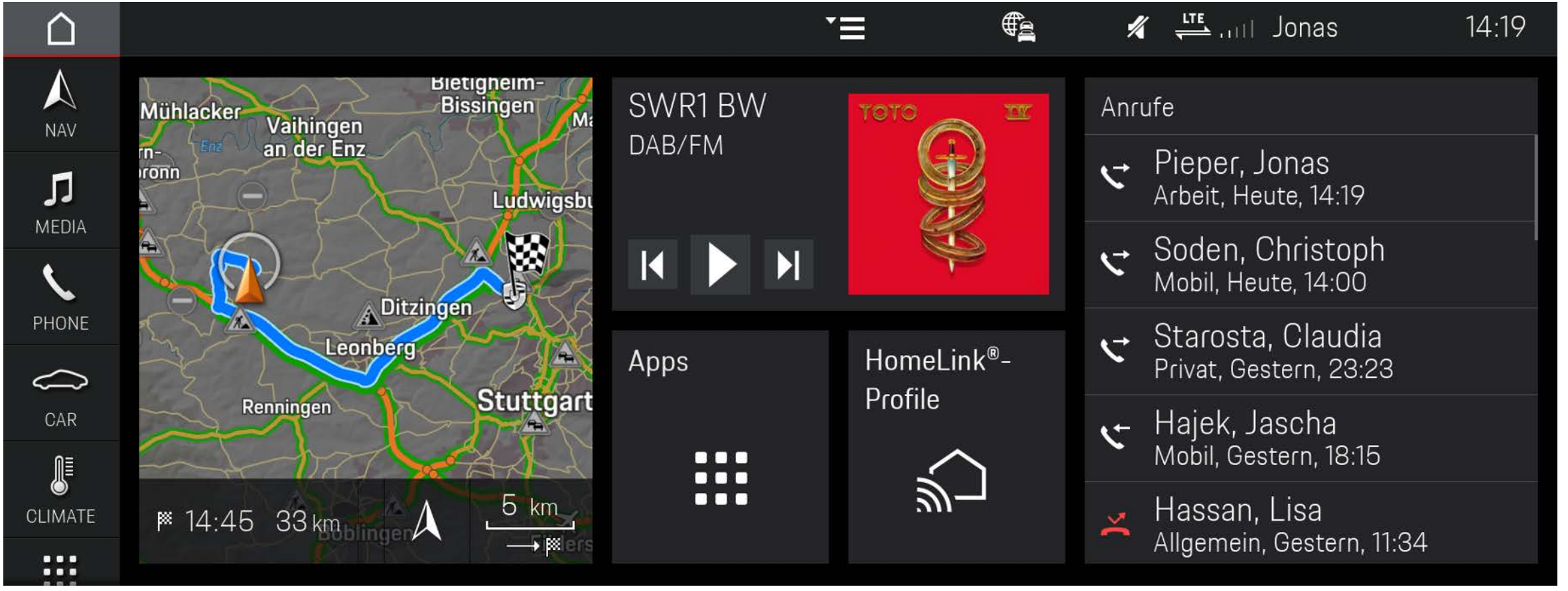


approaching

The user can select the basic screen layout



Individual MY SCREEN configuration for direct access



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The new 911 Carrera – Infotainment and connectivity

- New Porsche Communication Management (PCM) including online navigation module
- Burmester® 3D High-End Surround Sound System*
- Bose® Surround Sound System*
- Connected Navigation, Speech, Media, POI Services
- Porsche Connect App
- Apple CarPlay®
- Extensive interfaces USB, SD, Bluetooth, Wifi
- Mobile Phone preparation with Bluetooth interaction

*Optional

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The new 911 Carrera – Connect Plus module

Connected Navigation

- Online Routing
- Satellite Map
- Online Traffic/RTTI
- Panoramaview
- Online Map Update
- My Destinations
- Smart Routes

Connected POI

- Finder
- Online Search
- Parking Places
- Parking+
- Fuel Prices
- POI Ratings

Connected Speech

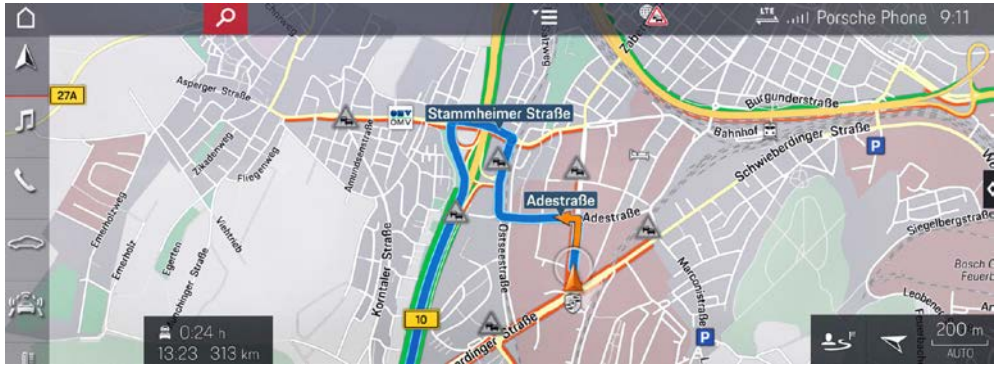
- Voice Pilot
- Natural Language Understanding
- Online Text To Speech
- Climate Control
- Dictate Text/E-Mail
- Voice Barge-In
- External Bluetooth Assistants

Connected Media

- Online radio
- Hybrid radio
- Gracenote online with fingerprinting
- Media streaming
- Flatrate music
- Personalized radio*

Connectivity

- Embedded SIM
- Customer SIM
- Wifi Hotspot



Connected Services

- Porsche ID
- Concierge*
- Breakdown/Emergency Call
- Flight information*
- News/Twitter*
- Events*
- Weather
- System update online
- Smart Home
- Traffic Signs Online*
- Risk Radar*
- Privacy

Connect App

- Remote Car Control
- Navigation Companion
- Media Hub
- Calendar
- Last/First Mile navigation
- Apple Watch support
- 3D Touch® support

Apple® CarPlay

*country specific

Offered in 991 II

Driving

- Cruise control*
- Adaptive cruise control incl. Porsche Active Safe*
- Lane Change Assist*
- Speed limit indicator*

Parking

- Park Assist, rear
- Park Assist, front and rear*
- Park Assist, front and rear incl. reversing camera

Light/sight

- Bi-Xenon main headlights
- Bi-Xenon main headlights incl. PDLS*
- LED main headlights incl. PDLS Plus*

*Optional

Offered in 992

Driving

- Cruise control
- Adaptive cruise control*
- Lane change assist*
- **Warn and Brake Assist incl. anticipatory pedestrian protection**
- **Lake keep assist with traffic sign recognition***

Parking

- Park Assist, front **and rear**
- Park Assist, front and rear incl. reversing camera*
- **Park Assist, front and rear incl. surround view***

Light/sight

- **LED main headlights**
- **LED matrix main headlights incl. PDLS Plus and Automatic Headlight Calibration**
- **Night vision assist***

*Optional

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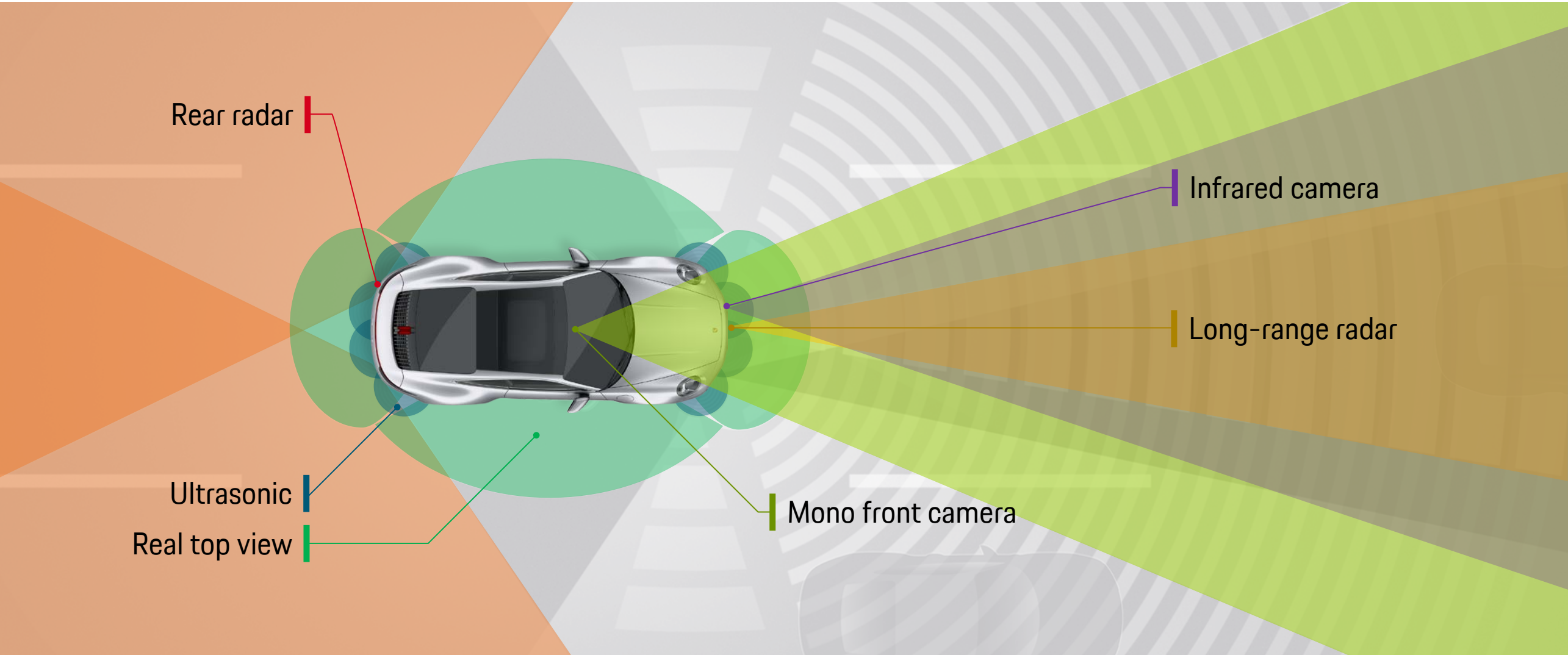
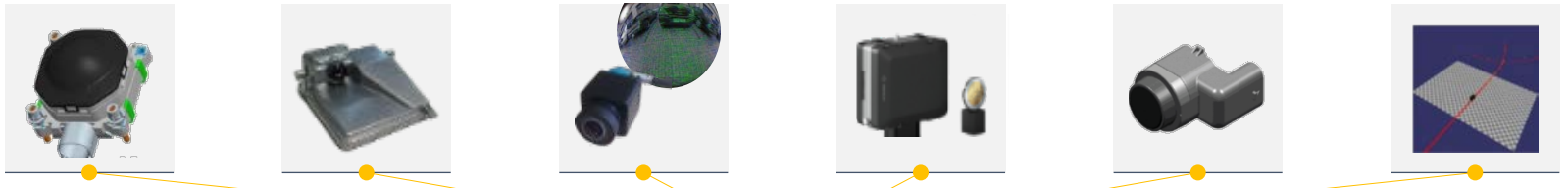
The new 911 Carrera – All-round view of driver assistance systems

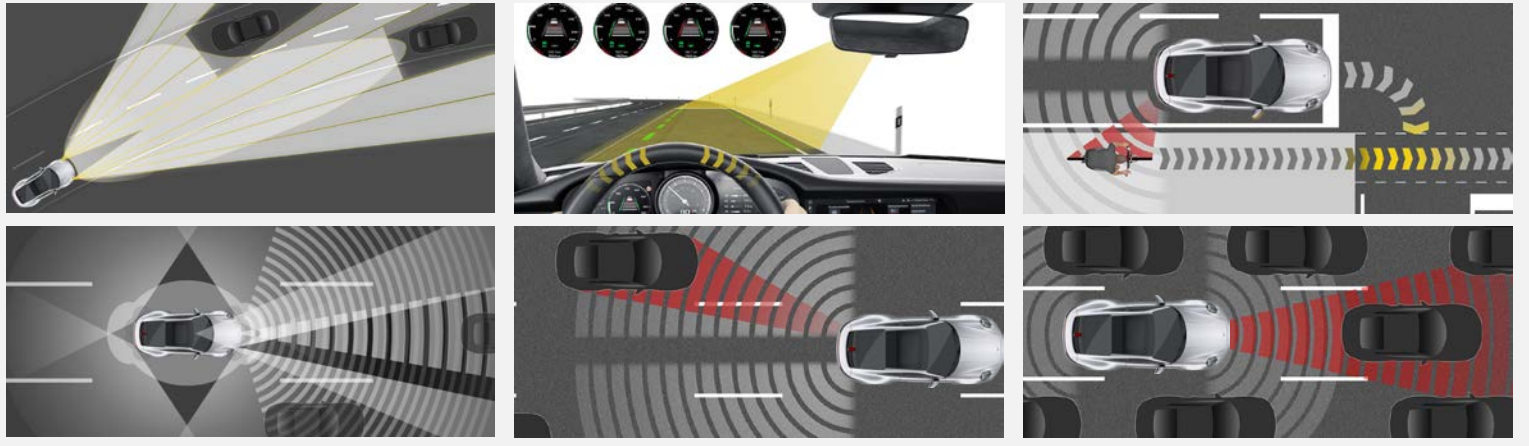


The new 911 Carrera – Central Driver Assistance System Controller



Central sensor data fusion

Map fusion	Object fusion	Fusion infrastructure



Central control unit to implement sensor data preprocessing, sensor data fusion and customer fusion

- High-level integration of multiple ECUs
- Modular architecture decouples application from hardware
- Future viability based on extendibility
- Sensor data fusion maximises consistent representation of the surroundings
- Information is available to all assistance systems centrally

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The new 911 Carrera – Central Driver Assistance System Controller

Customer functions
Lane keep assist
Matrix beam

Sensor data processing
Sensor fusion
Sensor data preprocessing
Ultrasonic preprocessing
Internal gateway

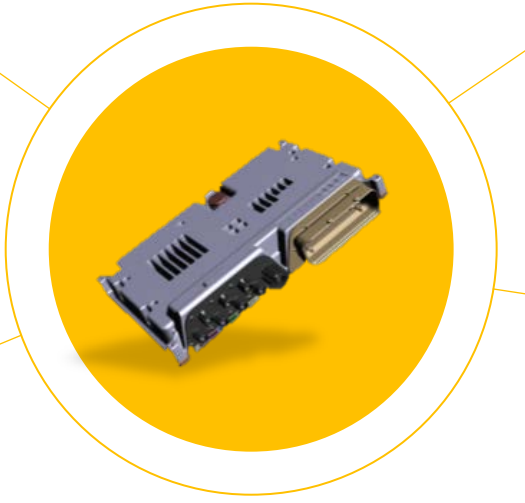


Image processing Parking
Top View image processing
Top View display
Processing of five video streams

Image processing front camera
Traffic sign recognition
Pedestrian detection
Vehicle detection
Light detection
Lane detection

Four high-performance processors
equip the control unit with numerous driver assistance functions

2014

ACC

- Automatically maintains a preset distance to the vehicle ahead in traffic
- Automatically maintains a desired speed when driving without traffic congestion
- Incorporates coasting and stop/start functionalities

2018

Advanced development of ACC

- Stop-and-go functionality extended, enables automatic drive-off from a standstill
- Sensor data fusion enhances driving convenience

Increasing risk of collision

	1st stage	**2nd** stage	**3rd** stage	**Unavoidable**
Vehicle conditioning	Prefill HBA thresholds			
Driver warning	Collision warning (visual/auditory) early average late	Acute warning (brake jolt)		
Brake intervention m/s²		Target braking (driver initiated)	Automatic emergency braking	
Pre crash occupant protection			Reversible belt tensioner and contour conformance	

The new 911 Carrera – Lane Keep Assist with traffic sign recognition

Lane Keep Assist

- Corrective steering interventions assist driver in lane keeping
- May be switched on/off
- Active from 65 to 250 km/h
- Audible warning when leaving lane if configured for this
- Reduces risk of leaving driving lane unintentionally
- Adapted to latest legal requirements

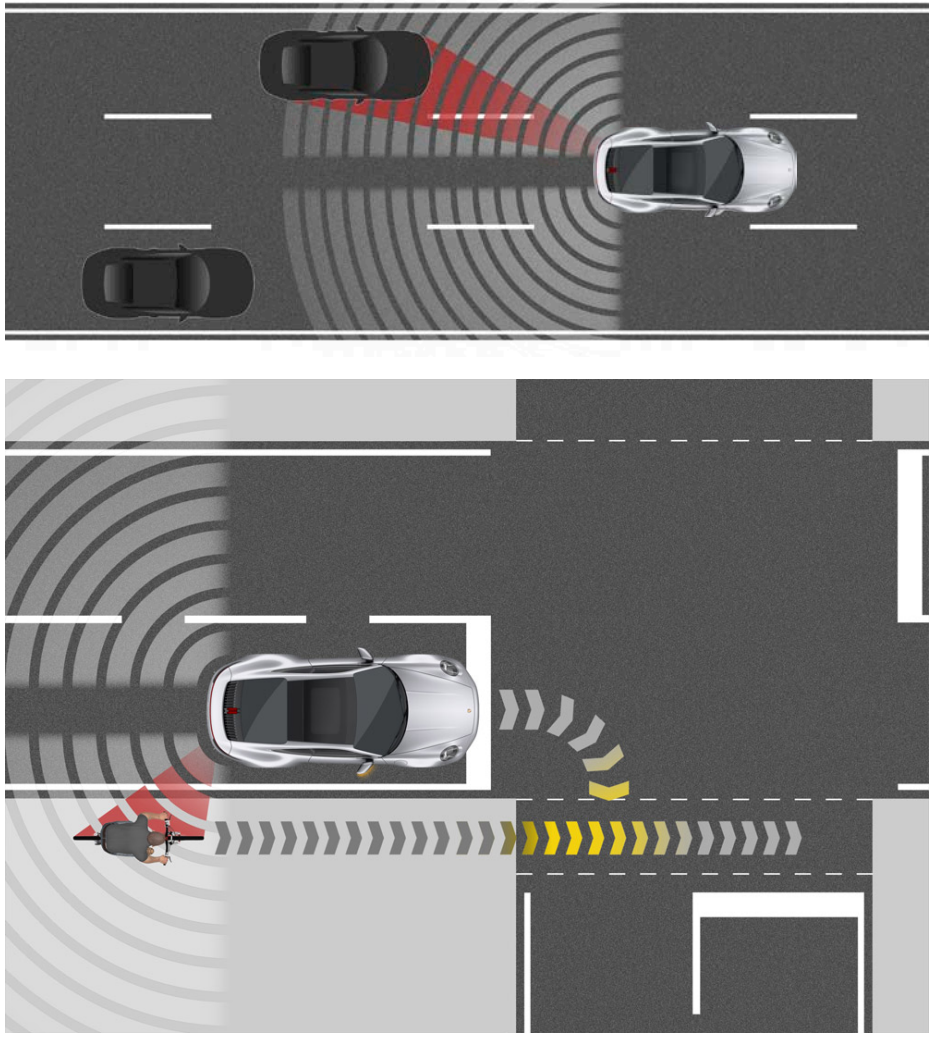
The new 911 Carrera – Lane Keep Assist with traffic sign recognition

Traffic sign recognition

- Uses the same camera as the lane keep assist
- Detects normal speed limits, temporary speed displays, overtaking restrictions and indirect instructions such as place-name signs
- Uses other vehicle systems such as rain sensor and system time to detect weather and time related speed limits
- Fusion with informations from the digital maps
- Corner information in the instrument cluster

The new 911 Carrera – Lane Change Assist

- Assists the driver in changing driving lanes by indicating vehicles approaching quickly from the rear or **vehicles in the blind spot** driving at the same speed.
- This is indicated by lamps in the exterior mirrors.
- The functionality is activated via Porsche Communication Management (PCM) and is available over the speed range from approx. 15 km/h to 250 km/h.
- Below this speed, the supplemental **Turn Assist Rear** assists the driver in turning situations, also by monitoring the rear zone of the vehicle.



Park Assist

- Visual and auditory warnings when manoeuvring and parking
- Use of ultrasonic sensors at front and rear

Reversing camera

- Utilises camera in rear bumper
- Zone behind the vehicle is shown on Porsche Communication Management display
- Assists in parking and leaving parking spaces as well as in manoeuvring

Surround View

- A 360° view of the surroundings is computed from four individual cameras
- Assists in parking and leaving parking spaces as well as in manoeuvring
- Displayed on the Porsche Communication Management screen

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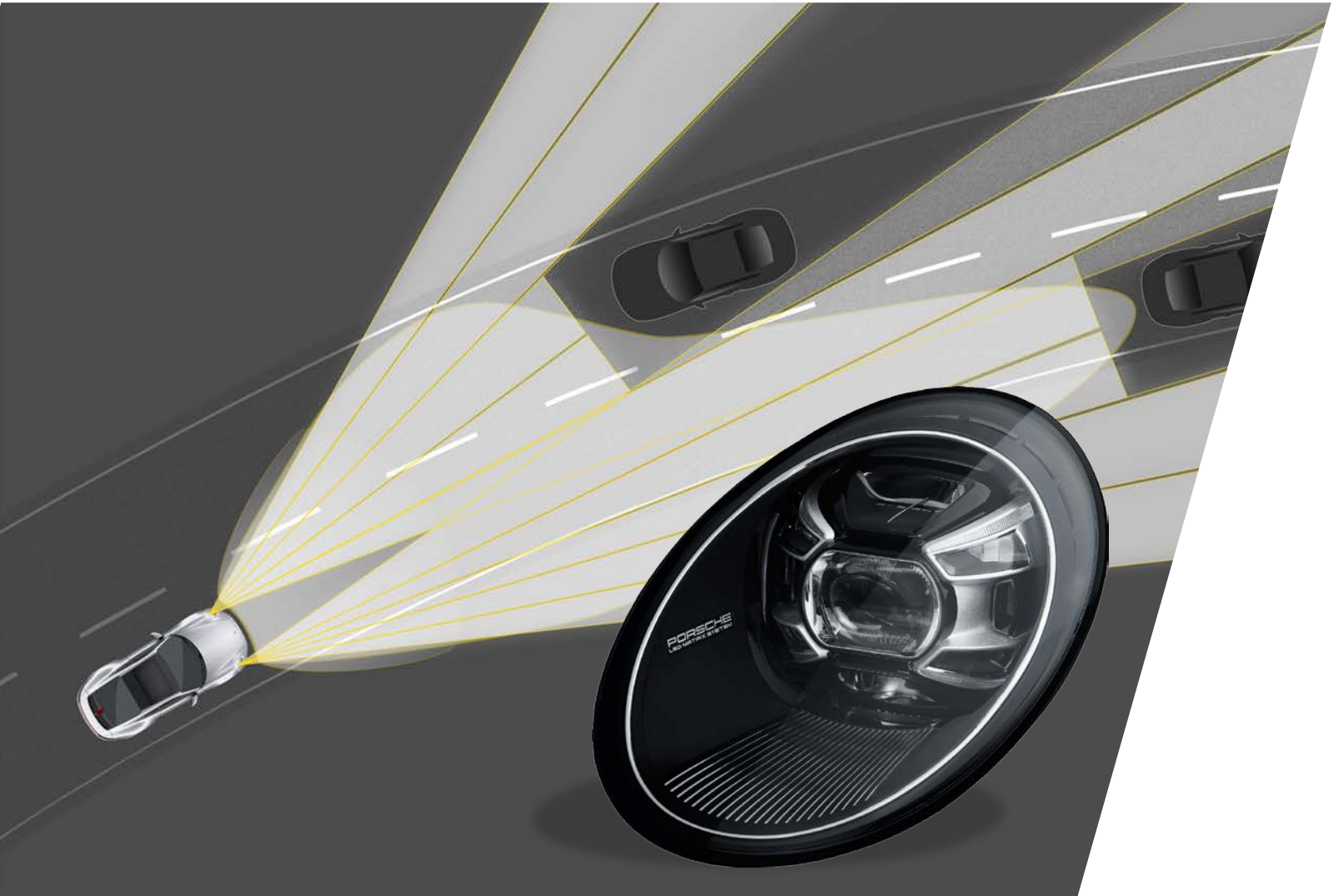
The new 911 Carrera – Night Vision Assist

- Display of an infrared image in the instrument cluster showing heat differences.
- Gives the driver information beyond headlight range in night driving.
- Detected **pedestrians** and **larger wild animals** are highlighted in yellow.
- Pedestrians within critical range are highlighted in red, and the driver is warned (visually and audibly).
- In conjunction with LED Matrix headlights incl. Porsche Dynamic Light System Plus (PDLS Plus) there is also a marking light function for detected pedestrians.

Animal warning

Pedestrian warning

The new 911 Carrera – LED Matrix Headlights including PDLS Plus



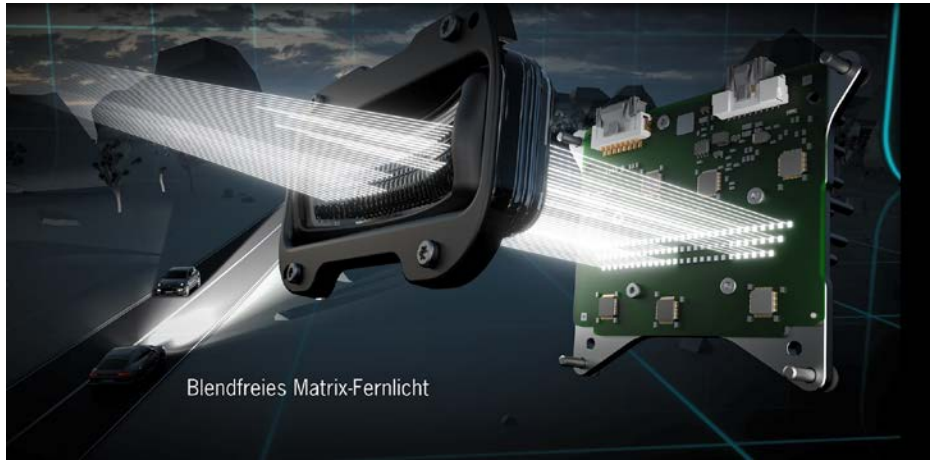
Light styling

- Consistent advancement of brand identity with four-point lighting graphic

Technology and functions

- Powerful illumination with over 300 lx in main beam
- Highly complex 84-pixel system for matrix beam
- New main beam functions compared to previous matrix systems:
  - Very long lighting range
  - Traffic sign dipping
  - Marker lights in conjunction with night vision assist

The new 911 Carrera – Automatic Headlight Calibration (AHC)



AHC mode of operation

- Automatic headlight calibration for matrix beam
  - Faulty headlight settings are found via the FAS camera
  - Calibration can be performed while vehicle is stationary with active country lighting and suitable projection surface (minimum distance 5 m)
  - Calibration starts automatically if there are no objects in the traffic zone
  - During calibration, customer perceives synthesized cornering light that repeats a right-to-left sweep
- Calibration figures are used directly in the lighting algorithm