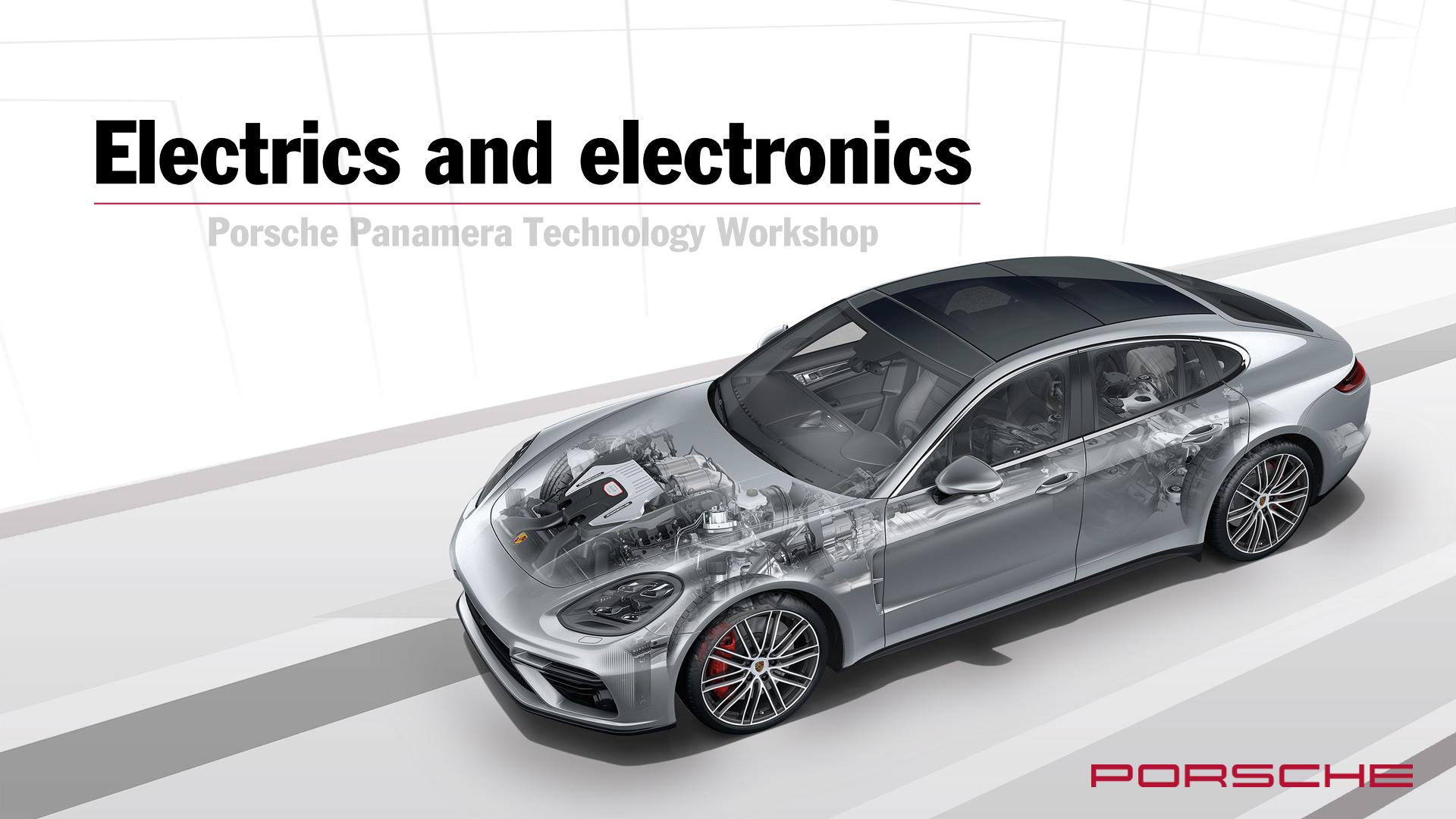
Electrics and electronics

Porsche Panamera Technology Workshop



PORSCHE

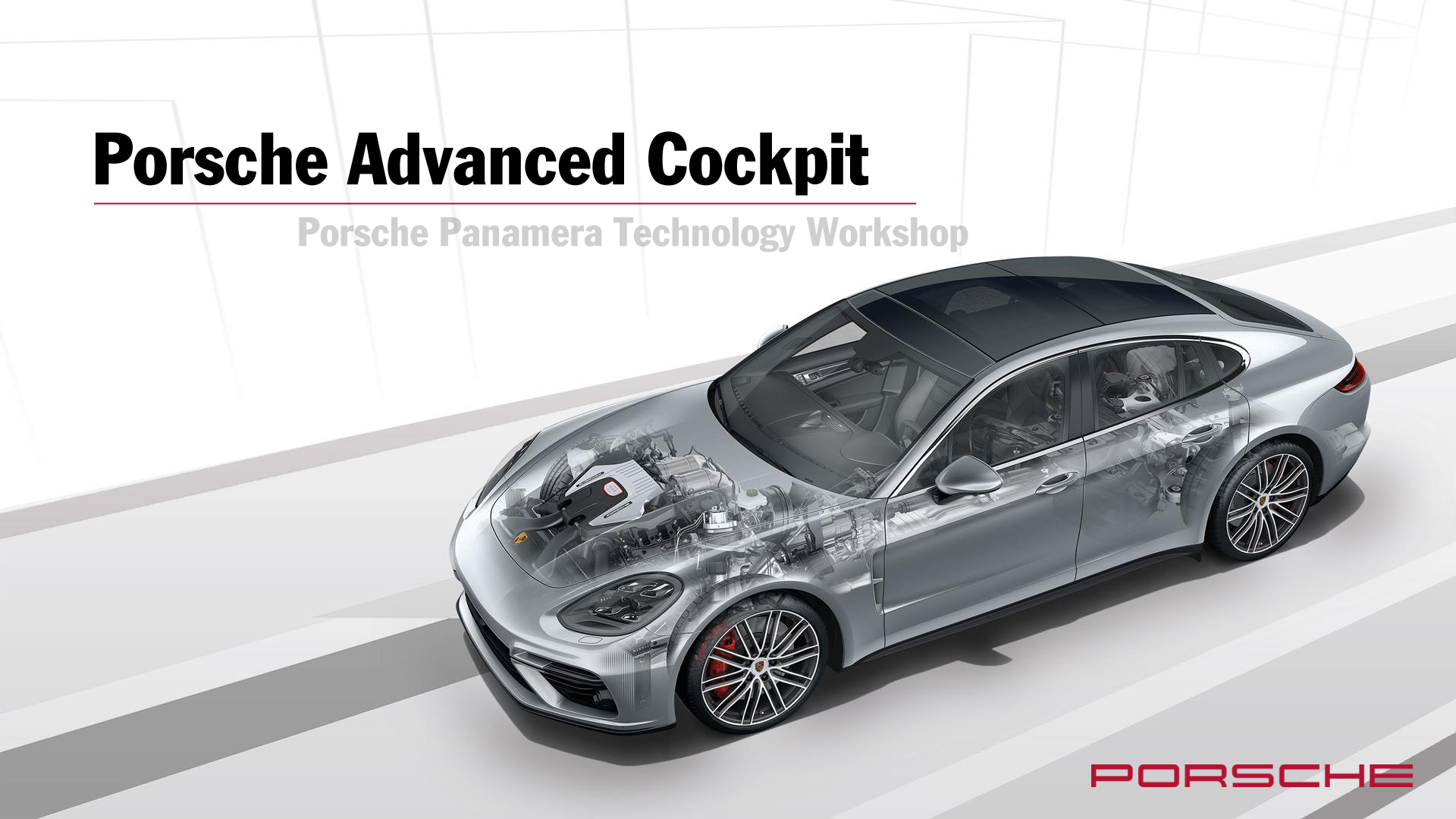
Product highlights of the new Panamera

- New operating concept
- Infotainment
- Porsche Connect
- Sound systems
- Lighting and assistance systems

PORSCHE

Porsche Advanced Cockpit

Porsche Panamera Technology Workshop

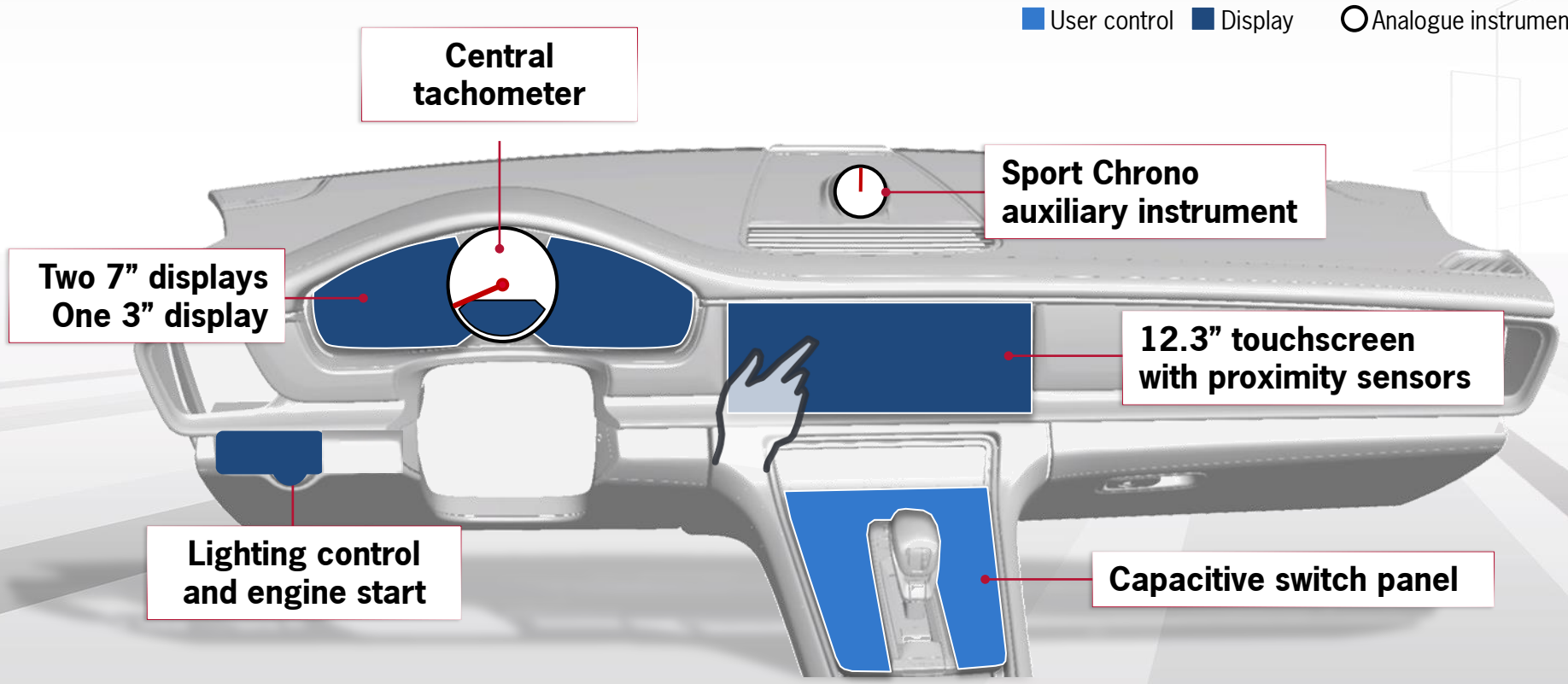


PORSCHE

Porsche Advanced Cockpit

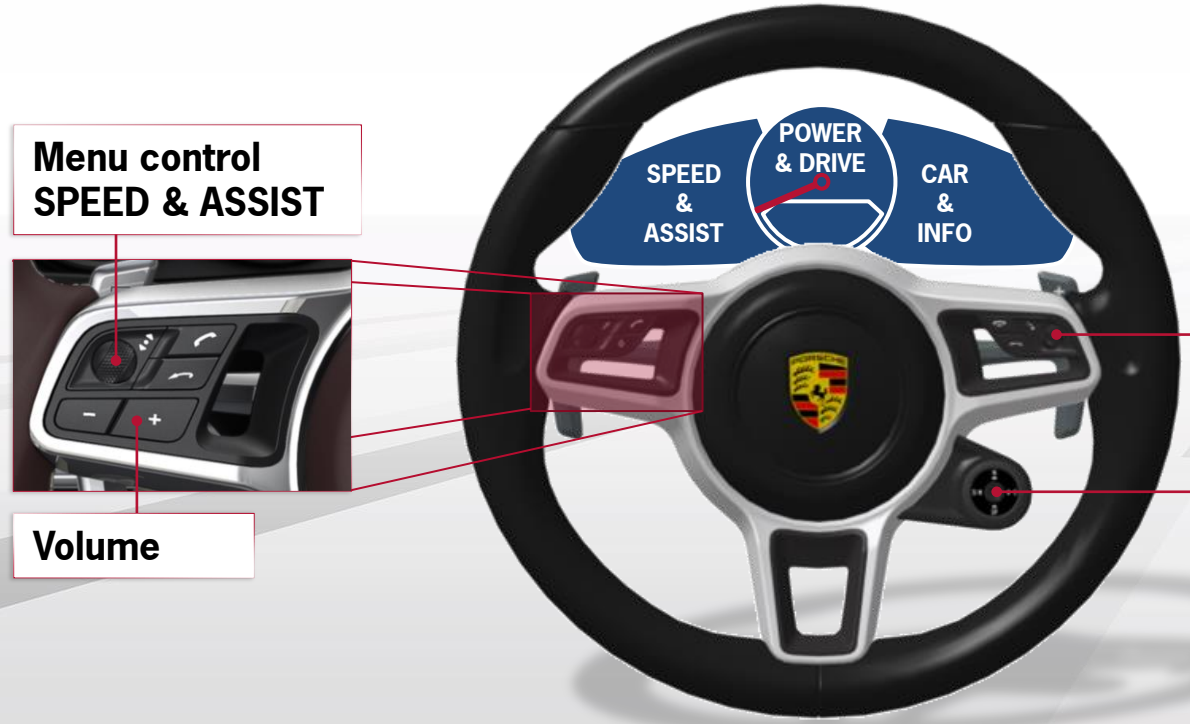
PORSCHE

Porsche Advanced Cockpit: new HMI concept



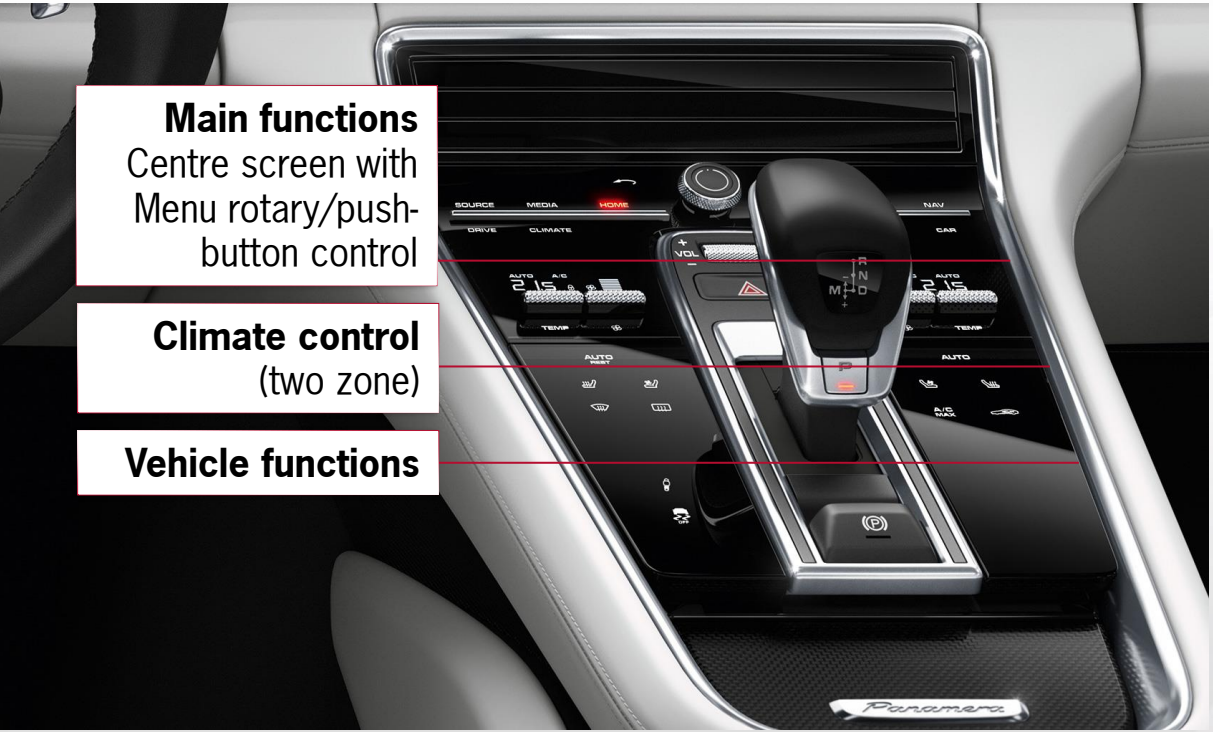
PORSCHE

Core driving functions are located along the operating axis of the instrument cluster



PORSCHE

The number of buttons on the centre console has been reduced



Main functions
Centre screen with Menu rotary/push-button control

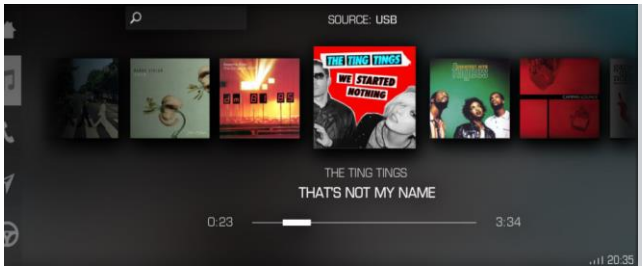
Climate control
(two zone)

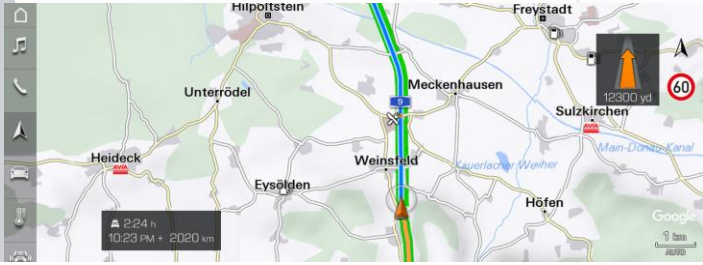
Vehicle functions

12.3” touchscreen with proximity sensors

PORSCHE

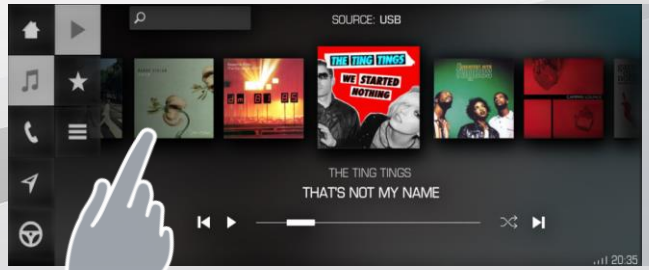
User control fields appear on the display in response to proximity sensors



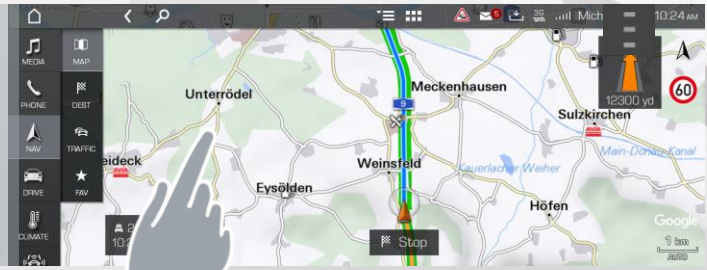


Content shown when approaching

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

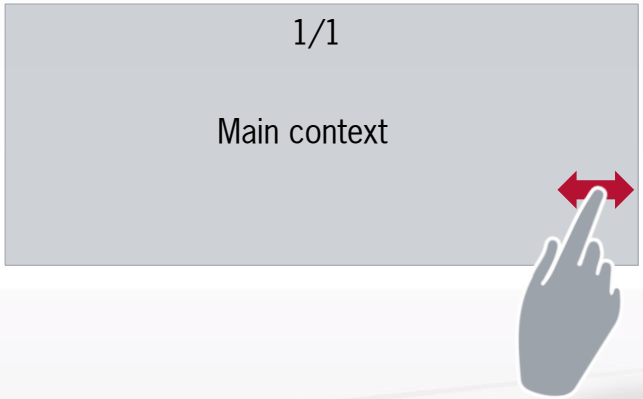


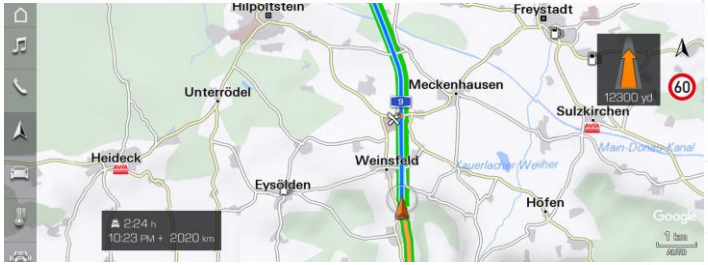
approaching

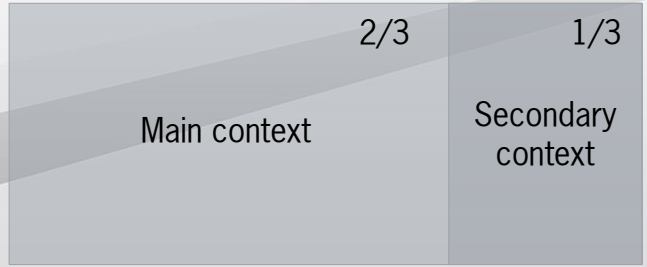


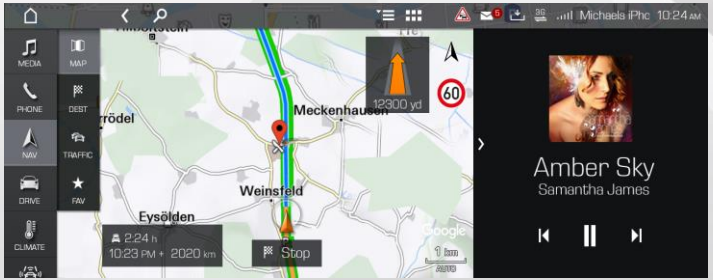
PORSCHE

The user can select the basic screen layout





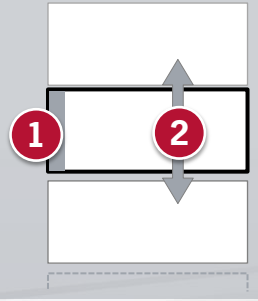




PORSCHE

The context can be switched by: (1) touchscreen buttons, (2) swiping or (3) menu buttons

Full screen view

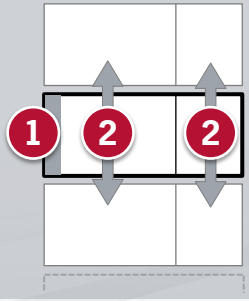


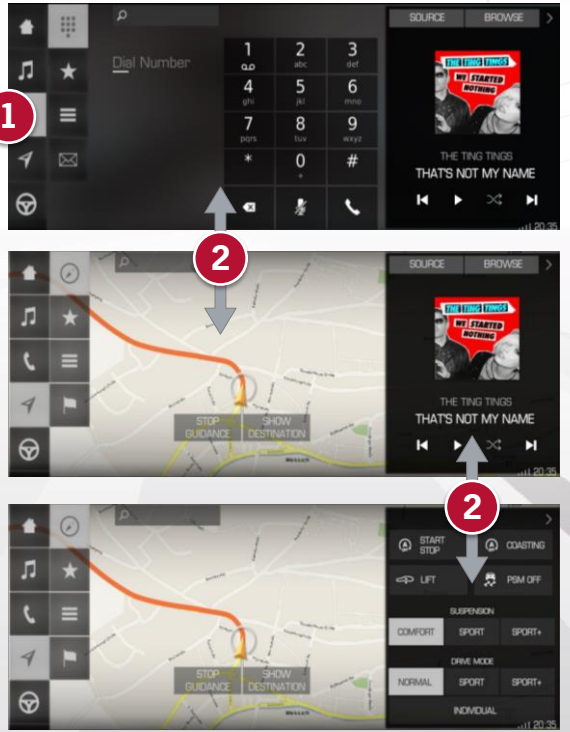
Inactive main context

Active main context

Inactive main context

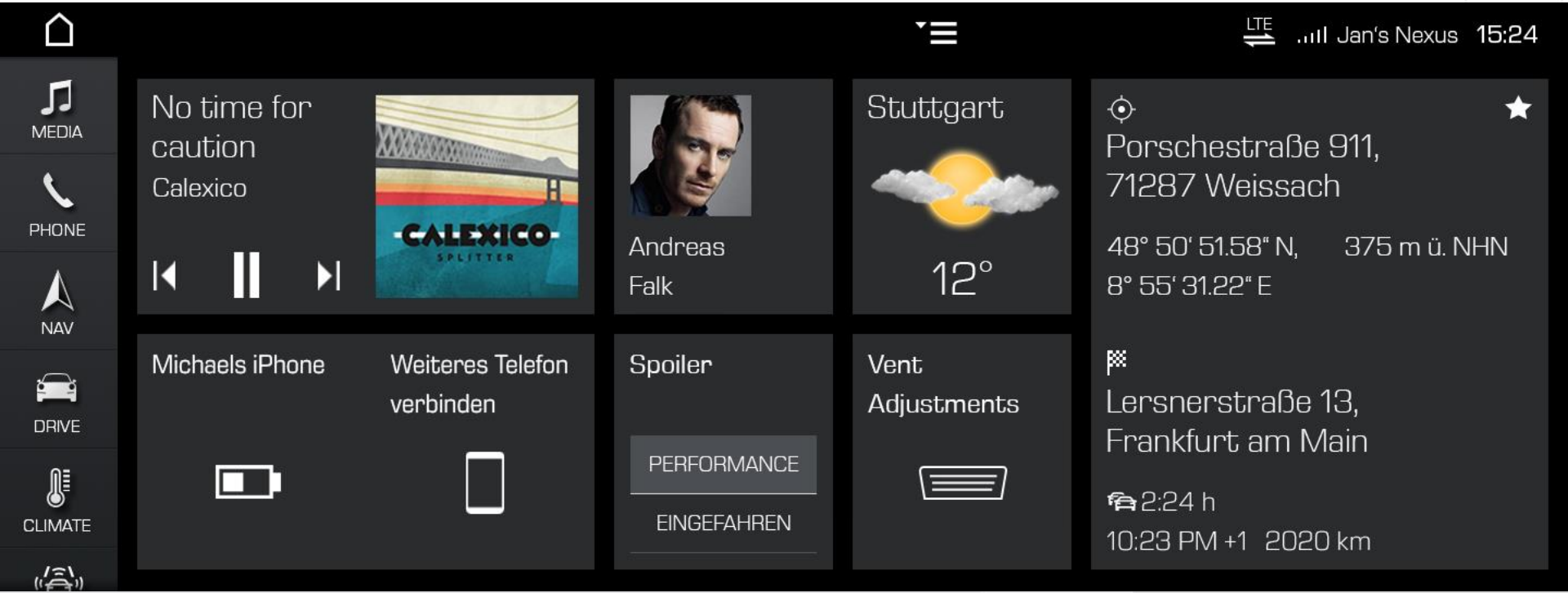
Split screen view





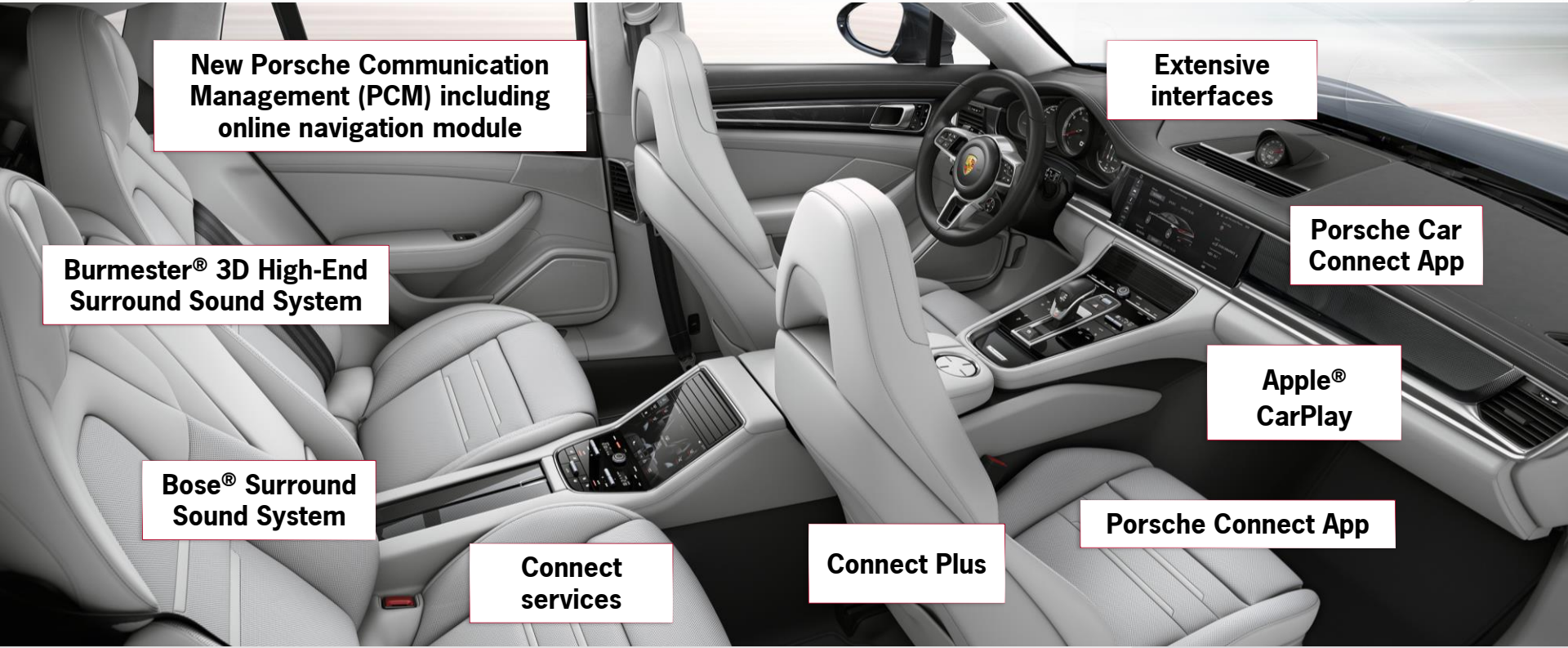
PORSCHE

Individual MY SCREEN configuration for direct access



PORSCHE

Infotainment and connectivity in the new Panamera



The new Porsche Communication Management (PCM)

A standard feature

- Central information and communication system
- High-resolution 12-inch colour touchscreen
- Mobile phone preparation with Bluetooth interface
- Voice control
- Audio interfaces
  → Media-capable USB ports
  → SD-card slots for playing back audio files
- Connect Plus module
- Online navigation module

PORSCHE

The new PCM – Connect Plus module

Google Earth® and Google Streetview®

Apple CarPlay® including Siri

Porsche Connect App
Navigation destinations from a smartphone
Display smartphone calendar entries
Music streaming

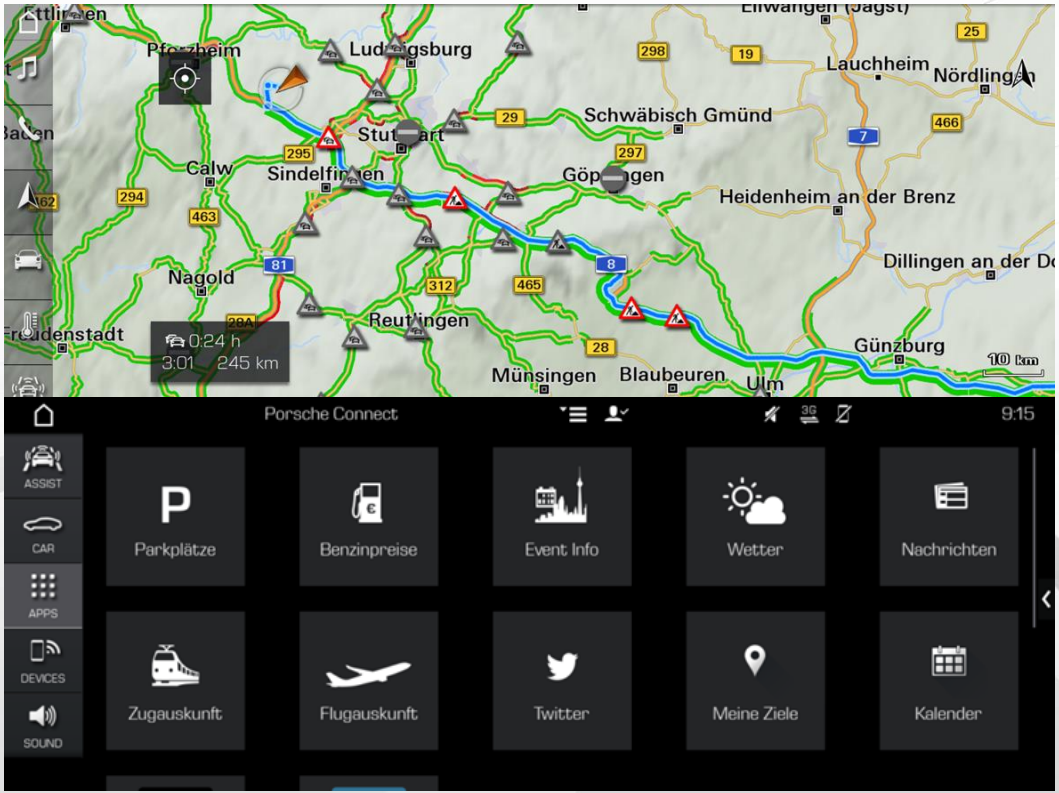
Porsche Car Connect including Porsche Vehicle Tracking System (PVTS) to access and remotely control vehicle data

PORSCHE

The new PCM – Connect Plus module

Apps (country-specific)

- Apple Car Play
- Concierge
- Flight information
- Google Earth
- Google online search
- Google Street View
- Gracenote online
- Internet radio
- Online voice search
- Calendar
- Map update online
- Media streaming
- News
- Parking place search
- Personal POIs
- Dictate SMS text/eMail
- Fuel prices
- Twitter
- Events
- Traffic flow
- Weather
- Destination input
- Train information



Continuation of a success story

Introduction of Burmester® at Porsche in the G1 created a global sensation.

auto motor und sport

"Dynamics that will give you goose bumps"
"... The Burmester system delivers an exceptional listening experience right from the start with its joyful playfulness and airiness ..."

stereoplay

"This is the best car hi-fi that this author has ever heard – and that even includes systems that cost five times as much."

image hifi Award 2010

Burmester + Porsche

Deutsch-deutsches Dreamteam: Burmesters Soundsystem im Porsche Panamera. Die sensationelle 1000-Watt-Installation überzeugt nicht nur mit der Örtlichkeit angemessenen Power und Elegans, sondern in erster Linie durch High-End-Klang.

STEREO

STEREO | Magazin für HiFi, High End & Musik

"And it sounds astonishingly good, either 'smooth' or 'live'. The sound is extremely dynamic and natural, highly transparent and with tremendous power right up to the maximum level of 120 dB."

Frankfurter Allgemeine
ZEITUNG FÜR DEUTSCHLAND

"The 16-channel ensemble works together in perfect harmony. The system creates a virtual sound stage for the listener – delivering a sound that is more direct and tangible than anything offered by the kind of hi-fi system that you would typically see in a living room."

Los Angeles Times

"... and an optional Burmester audiophile sound system, a 1000-watt, 16-channel/speaker unit that is the best road-going audio I've ever heard."

audiophil

"The benefits of the simply outstanding Burmester system can be enjoyed at all volumes thanks to the Sound Conditioing function."
"It provides a perfect musical backdrop for cruising at high-speed to guarantee an exhilarating experience."
"... for me it is the most authentic and enthralling musical experience on four wheels ... ever."

AUTOSOUND
Product of the Year

Burmester/Porsche Panamera System
MSRP: $4,900–$5,900
www.burmester.de
Review in process

I've been fortunate enough to hear some excellent car audio during the past year and a half from B&W, B&O and Naim, but the Burmester system in the new Porsche Panamera is truly a step beyond. The level of dynamics and clarity is unmatched in car audio, and I'm sure this will lead a number of Porsche owners to add Burmester to their home audio systems.

The actual shape of the Panamera is still open for discussion. Some will love it, others will be incensed, but the minute you put a CD in the dash and crank up 1,000 watts of Burmester power through 16 channels, the only argument will be what to listen to more, the 4.8-liter V8 under the hood or Rammstein through the Burmester system.

I'm hoping the line will be expanded to the rest of the Porsche range. I'm a roadster guy...

Systematic advanced development with these focal points:

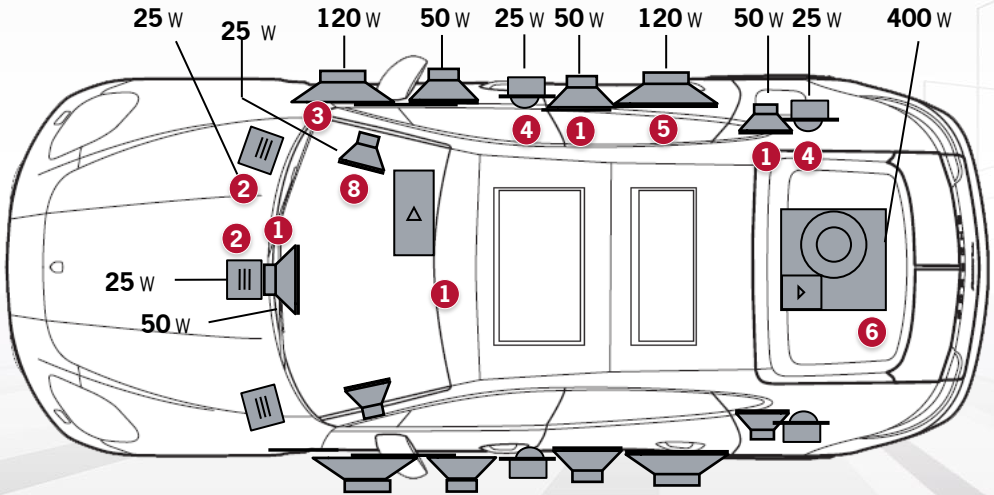
- Preservation of highly emotional Porsche/Burmester **sound-DNA**
- **Spatial effect is enhanced** by **2-way centre d**esign (AMT/100mm)
- Introduction of **3D Sound.** For the first time, a "genuine concert hall atmosphere" in the vehicle.
- Improvement of **Burmester AMT®**. Next generation offers even further **reduced mass** and greater **efficiency**.
- **Higher output power while reducing electrical current consumption.**
- First use of **signal enhancement algorithm** for **improving, at the source**, poor-quality musical material such as MP3, AAC, etc. at low data rates.

PORSCHE

System overview

	Panamera (predecessor)	**New Panamera**
Loudspeaker channels	16 16	**21** **21**
Amplifier output power	1,003 W	**1,455 W**
System weight/per loudspeaker	11.8 kg 0.74 kg	**14.3 kg** **0.68 kg**
Power-to-weight	0.012 kg/W	**0.009 kg/W**
Subwoofer	250 mm 300 W 22 l	250 mm **400 W** **27 l**
Centre	Mono 80 mm	**2-way** **100 mm + AMT**
Technology	Front woofer with cast aluminium basket	**All loudspeakers have cast aluminium basket**
Spatial sound	Matrix surround	**Convolution reverb surround + 3D sound**

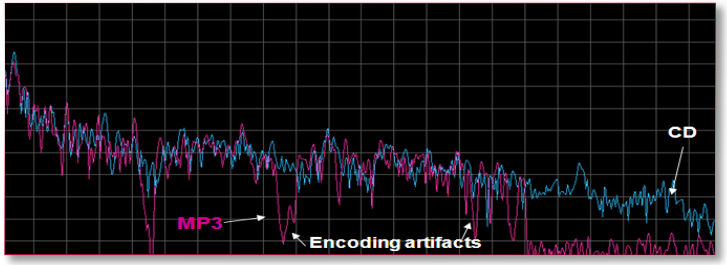
Burmester
ART FOR THE EAR



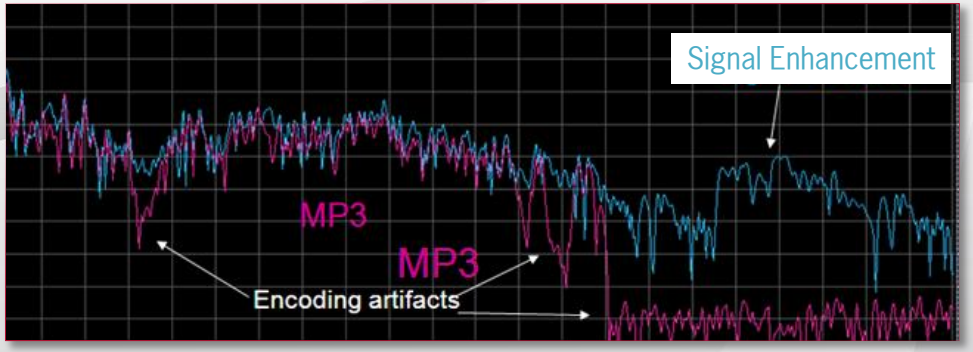
No.	1	2	3	4	5	6	8
Installation location	Dashboard, door front/rear	Dashboard	Door front	Door rear, C-/D-pillar	Door rear	Cargo floor	A-pillar
Type	Midrange	Tweeter	Woofer	Tweeter	Woofer	Subwoofer box	Broadband
Size	100 mm	AMT	220 mm	25 mm	200 mm	250 mm	55 mm

PORSCHE

Signal Enhancement



Restoring of compression losses via **software algorithm.**



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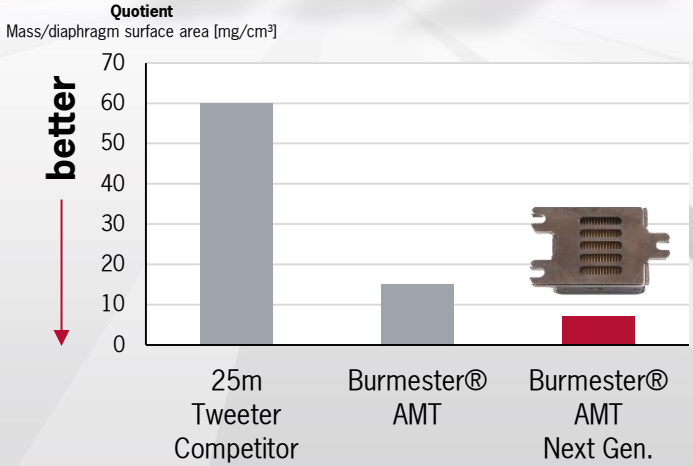
Burmester AMT® – next generation

Porsche still claims exclusive use of the Burmester Air Motion Transformer (AMT) within the **automotive industry**.

The **extremely small** oscillating **mass**, which nonetheless has an extremely **large diaphragm surface** area (folded film), delivers **detailed, clean** and **clear reproduction of highs** without any sort of harshness.

This leads to even better **resolution of high frequencies and precision.** Voices and musical instruments are reproduced with extreme realism and clarity.



PORSCHE

Lighting and assistance systems in the new Panamera

LED Matrix headlights with PDLS Plus

Porsche InnoDrive with adaptive cruise control

Adaptive cruise control

Lane keep assist including traffic sign recognition

Night vision assist

Lane change assist

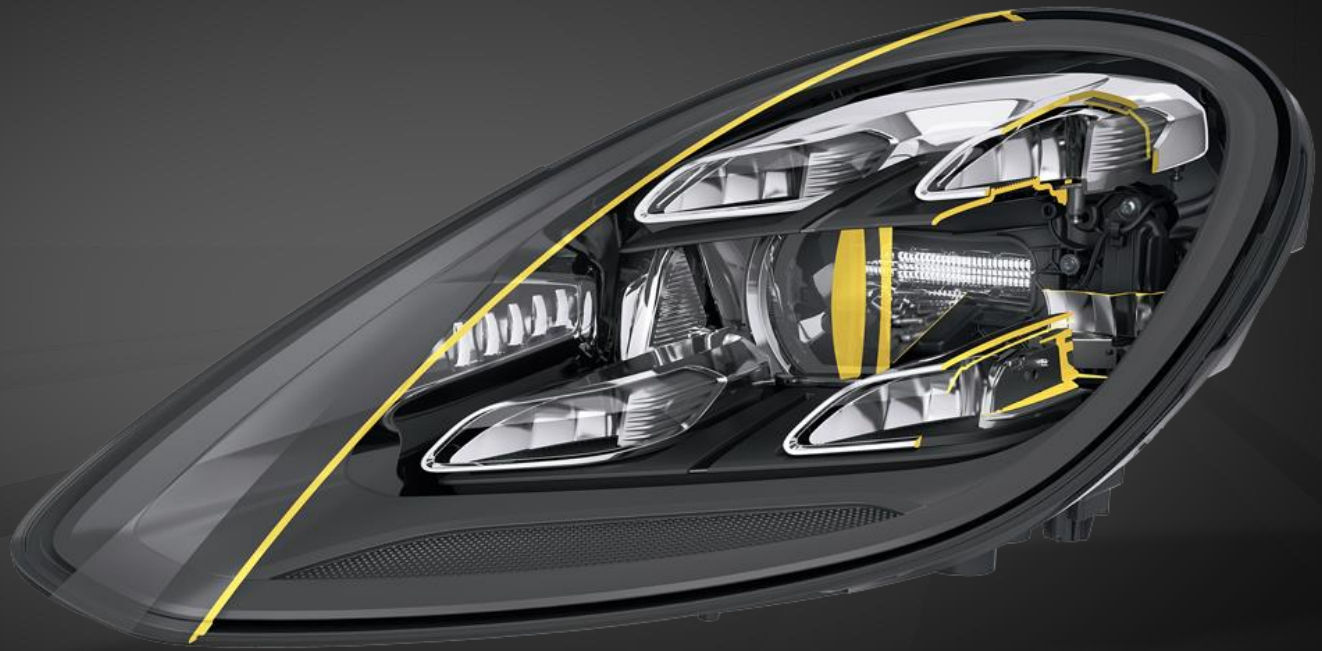
Park assist with surround view

PORSCHE

LED Matrix Headlights

PORSCHE

LED Matrix Headlights



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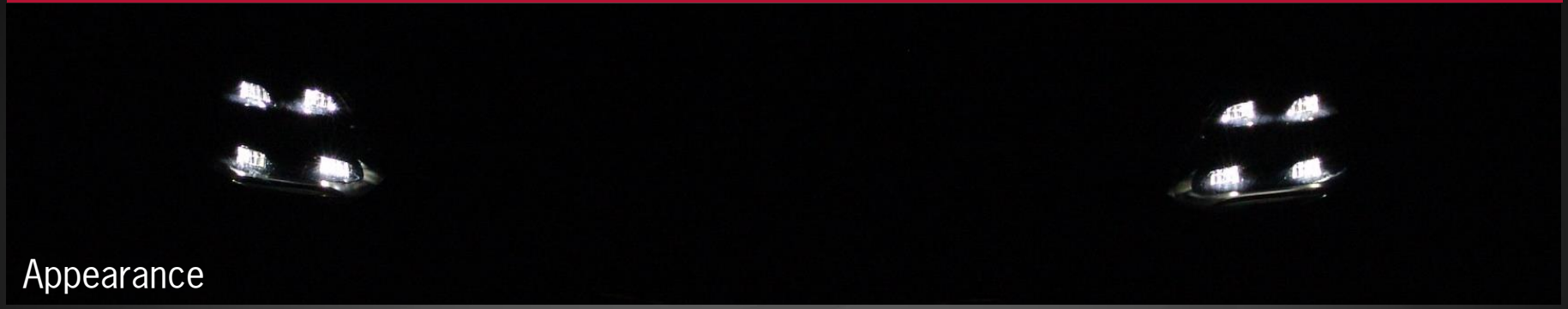
LED Matrix Headlights

Daytime running lights

PORSCHE

LED Matrix Headlights

Coming Home/Leaving Home: four-point dipped beam

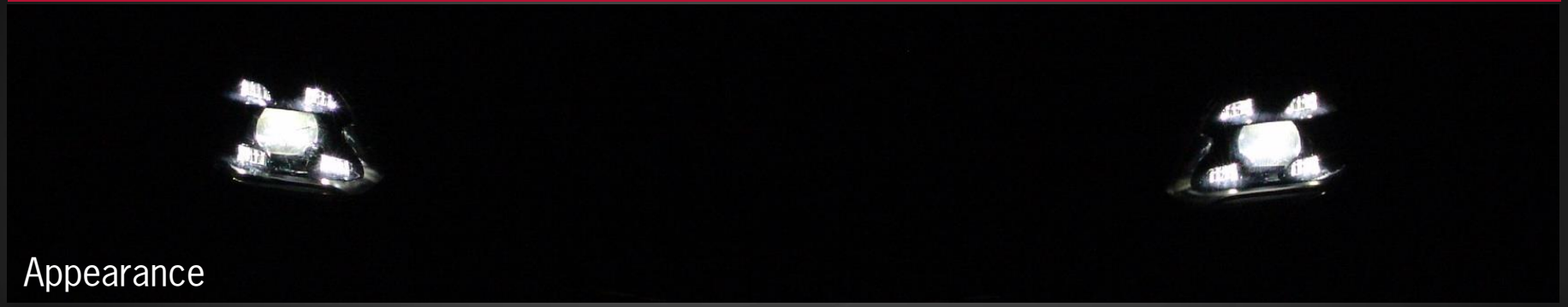


Appearance

Lighting pattern

LED Matrix Headlights

Dipped beam



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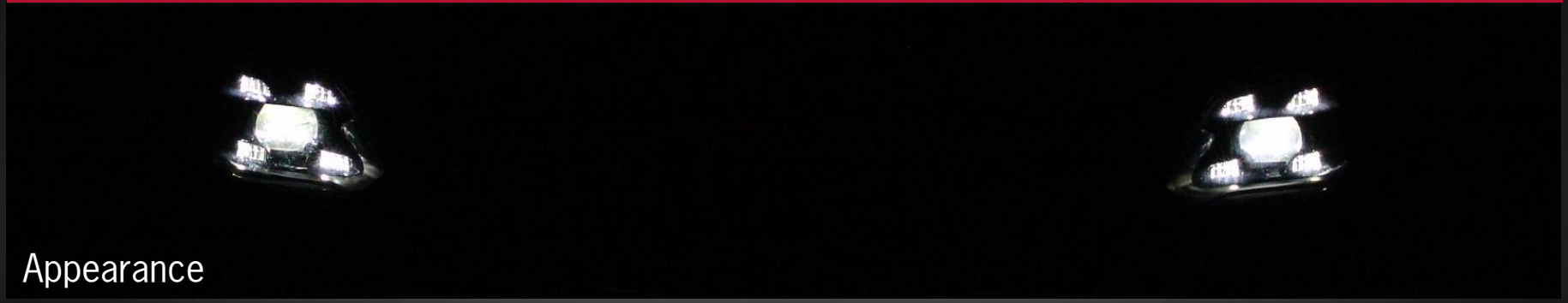
LED Matrix Headlights

High beam – only Matrix



Appearance

Lighting pattern

PORSCHE

LED Matrix Headlights

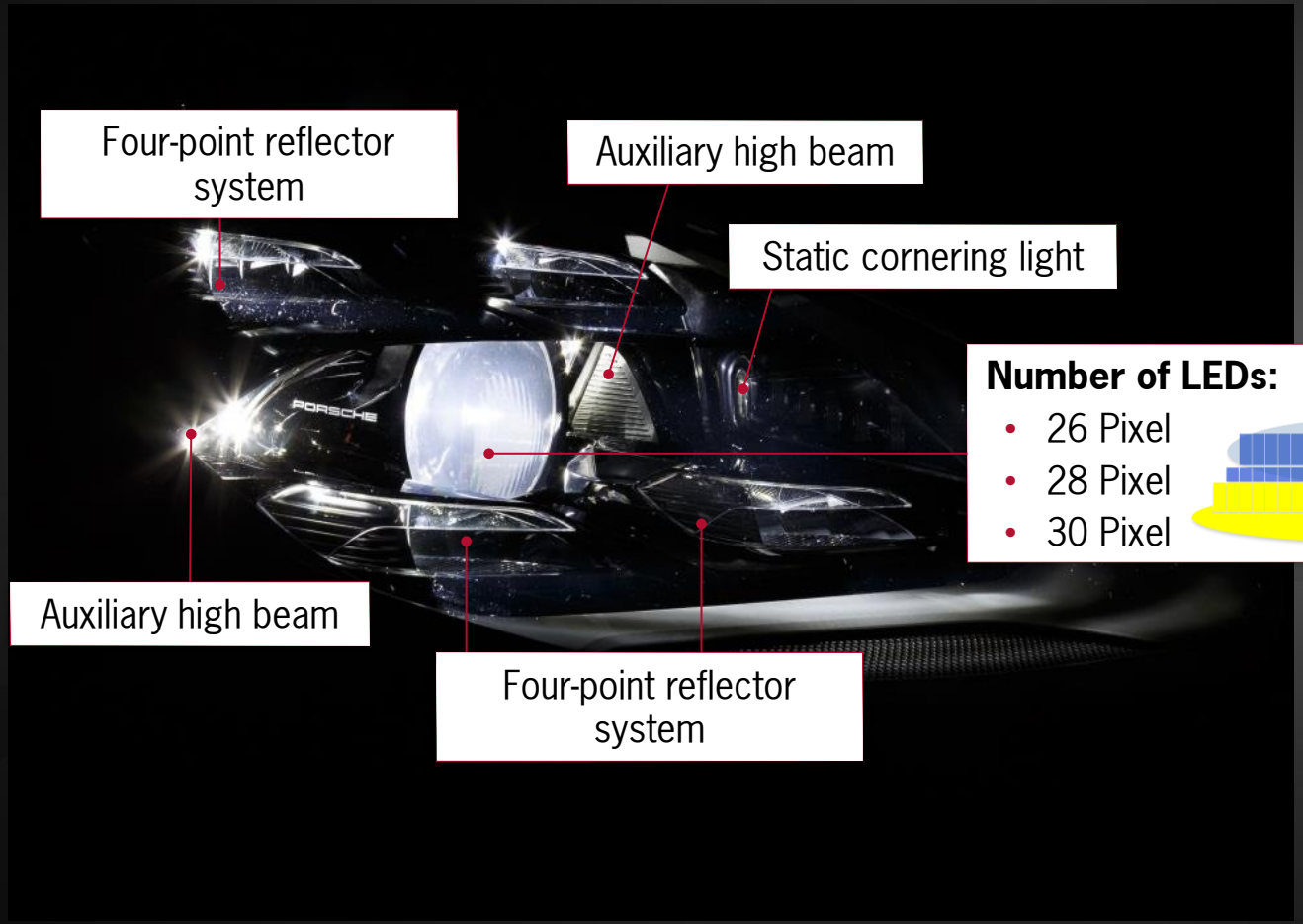
Full high beam with auxiliary high beam: 220 lx @ 1600 lm

Appearance

Lighting pattern

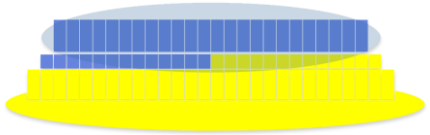
PORSCHE

LED Matrix Headlights



Number of LEDs:

- 26 Pixel
- 28 Pixel
- 30 Pixel

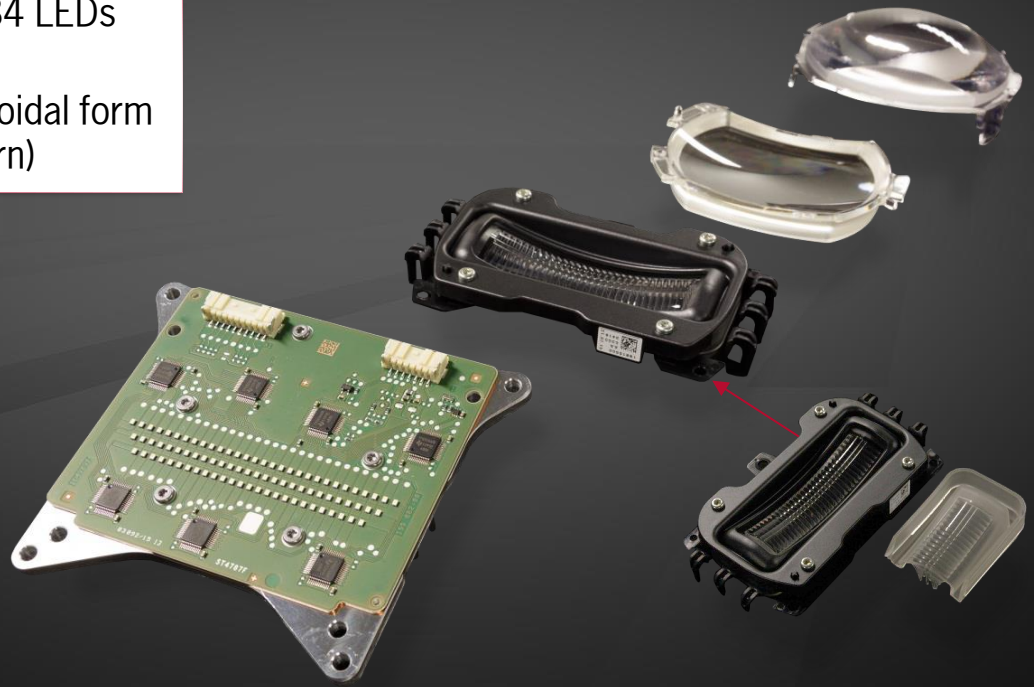


PORSCHE

LED Matrix Headlights

LED PCB with 84 LEDs

- Intelligent Porsche power electronics to drive the 84 LEDs individually
- Layout of LEDs in trapezoidal form (classic high beam pattern)



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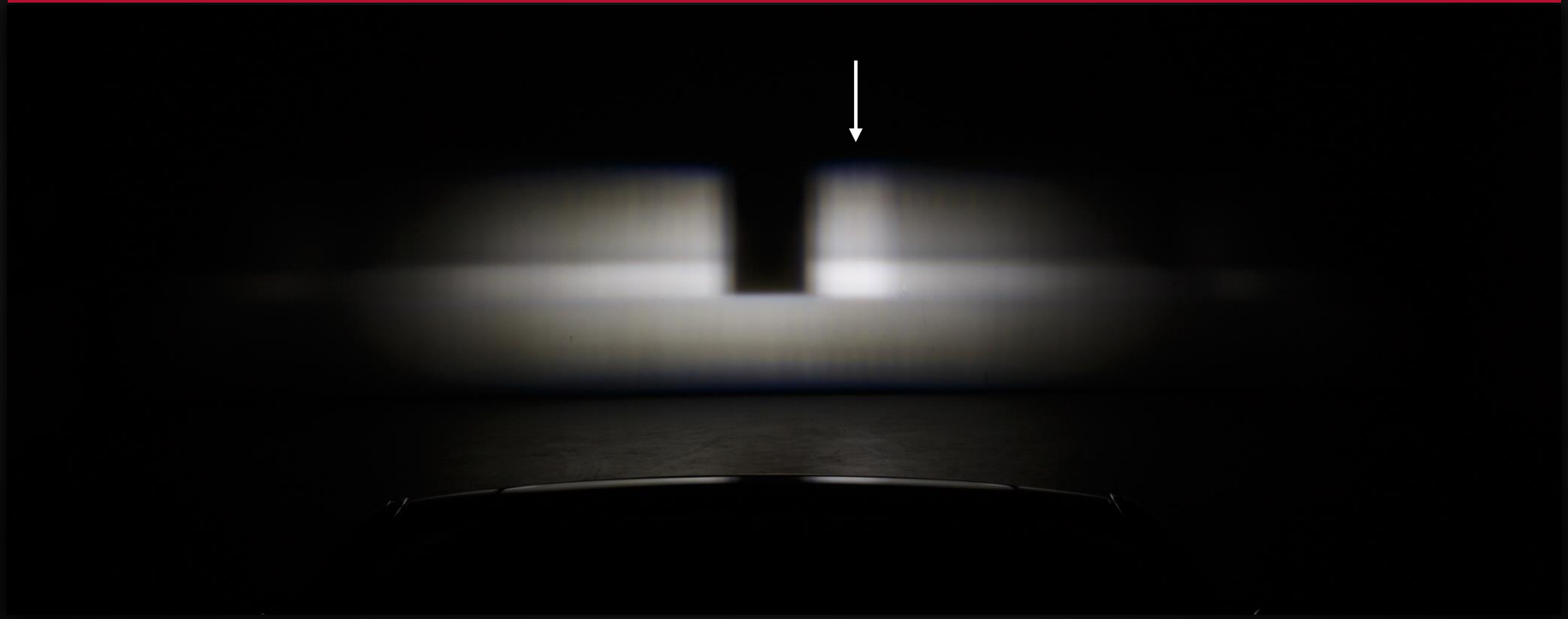
LED Matrix Headlights: new functions

Electronic cornering lights

PORSCHE

LED Matrix Headlights: new functions

Encounter light: assists in guiding the driver's view by intelligent light power control

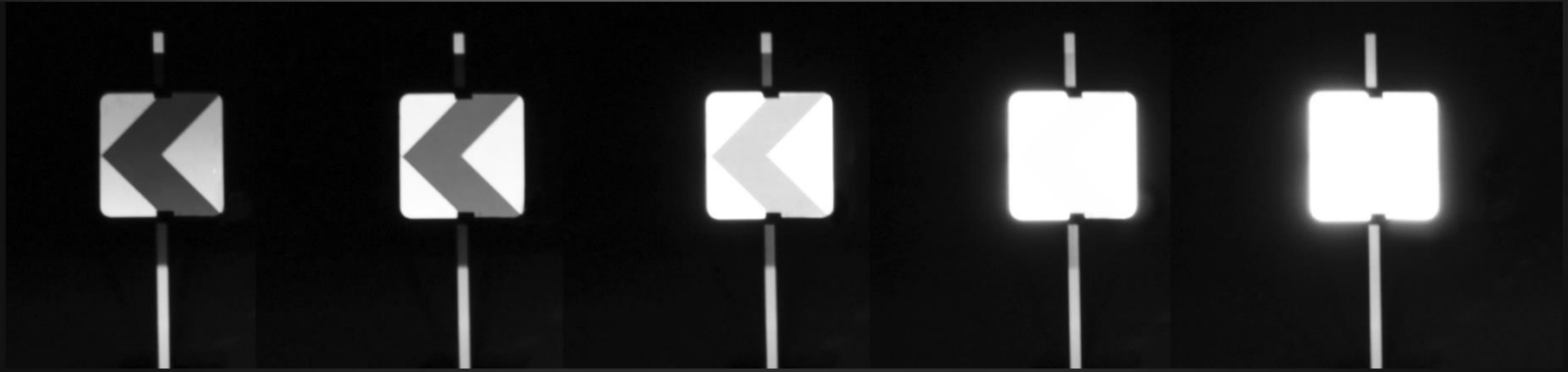


PORSCHE

LED Matrix Headlights: new functions

Adaptive contrast high beam: selective traffic sign anti-glare function

- Reduces glare to driver in powerful headlight systems without any compromises in overall performance



Porsche InnoDrive:
Route preview offers greater efficiency and added driving convenience

ACC

- Constant preset speed
- Automatic braking and acceleration in traffic

ACC 2nd generation

- Better efficiency by use of coasting function
- Incorporates stop/start function

Porsche InnoDrive

- Predictive control of gear selection, coasting and engine load for maximum efficiency
- Offers more convenience and broader range of use because of adaptation to course of the road (bends) and speed limits

2009 — 2013 — 2016

PORSCHE

InnoDrive utilises vehicle sensors and, for the first time, predictive route data from the navigation system

Predictive road data:
Driving speed limiting, inclines, bends – three kilometres in advance

Driver preference:
Comfortable or dynamic

Camera:
Vehicles ahead, traffic signs

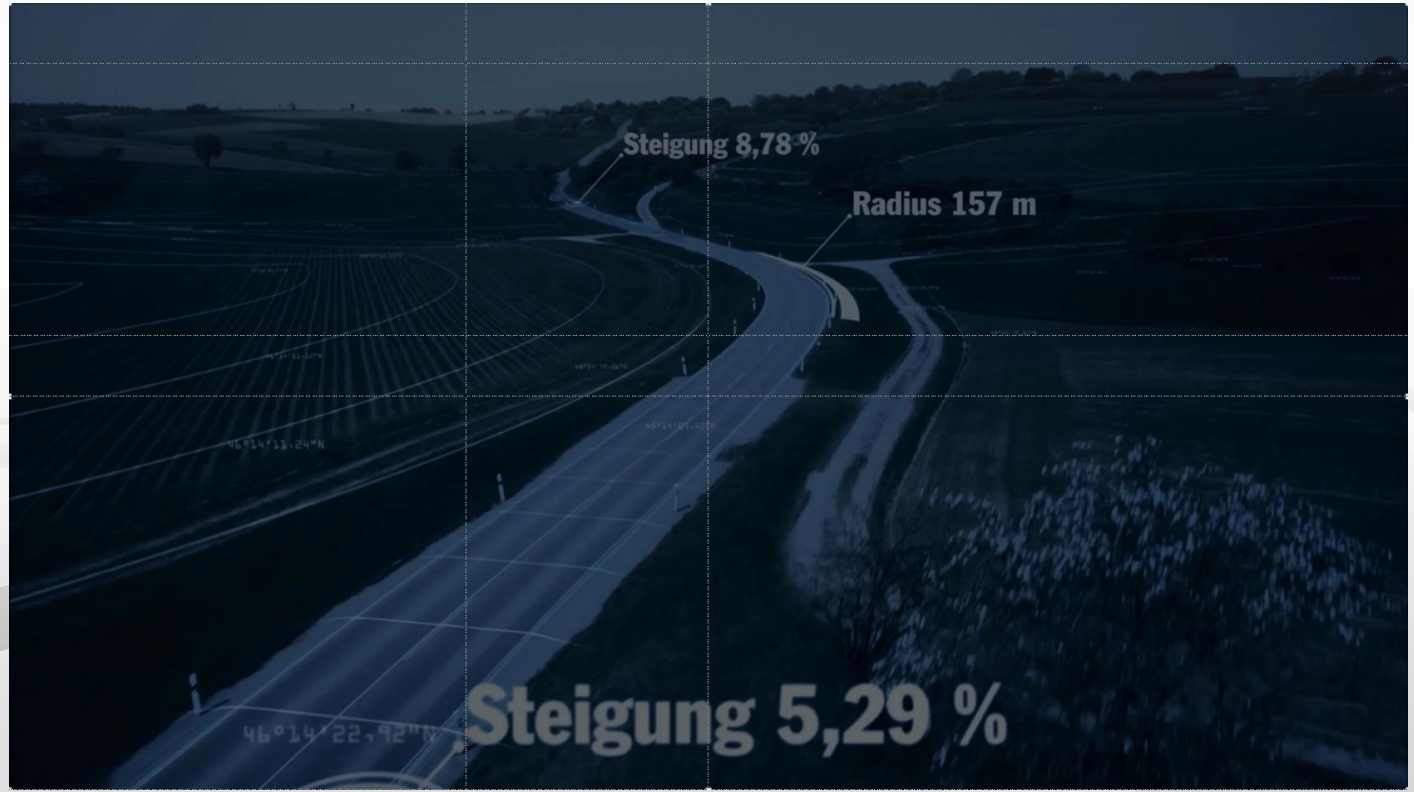
Vehicle sensors:
Payload, vehicle state, slope gradient

Vehicle characteristics:
Efficiency levels of drivetrain

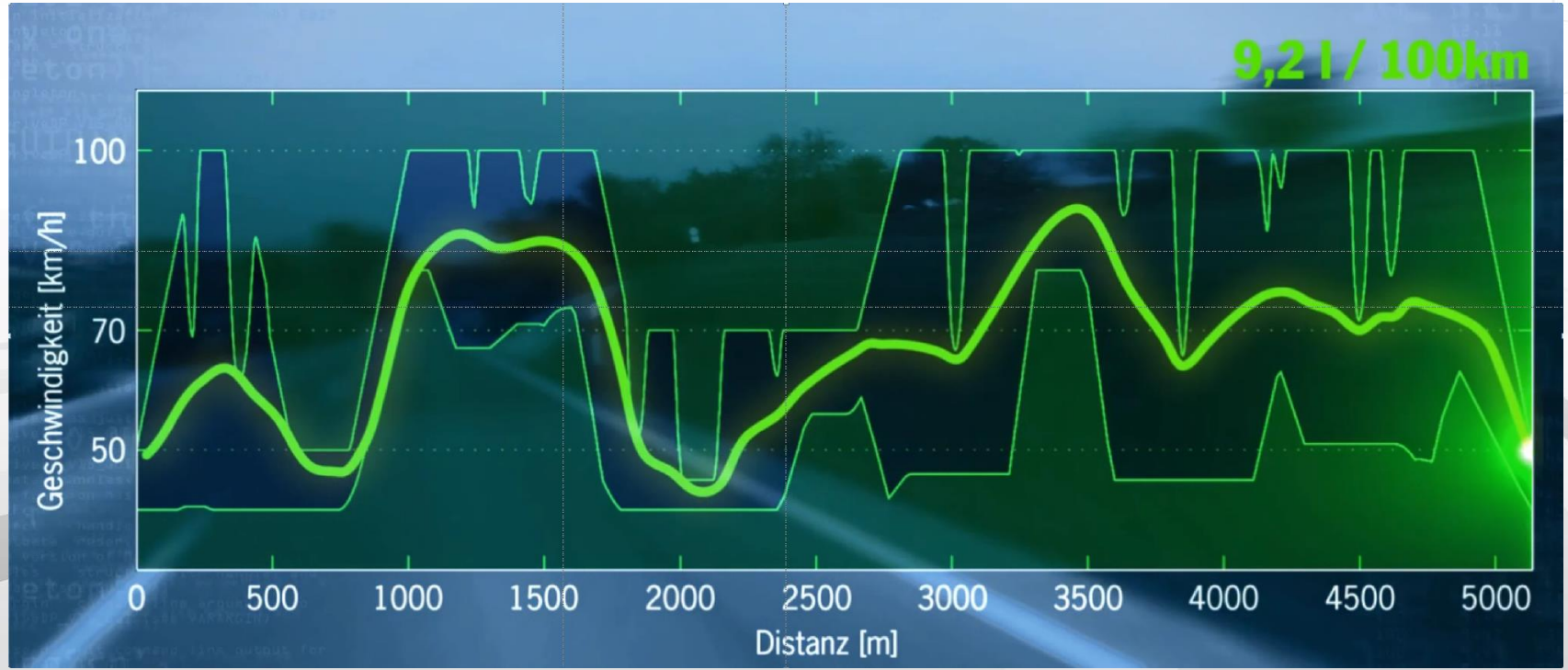
Radar:
Driving behaviour of road users ahead

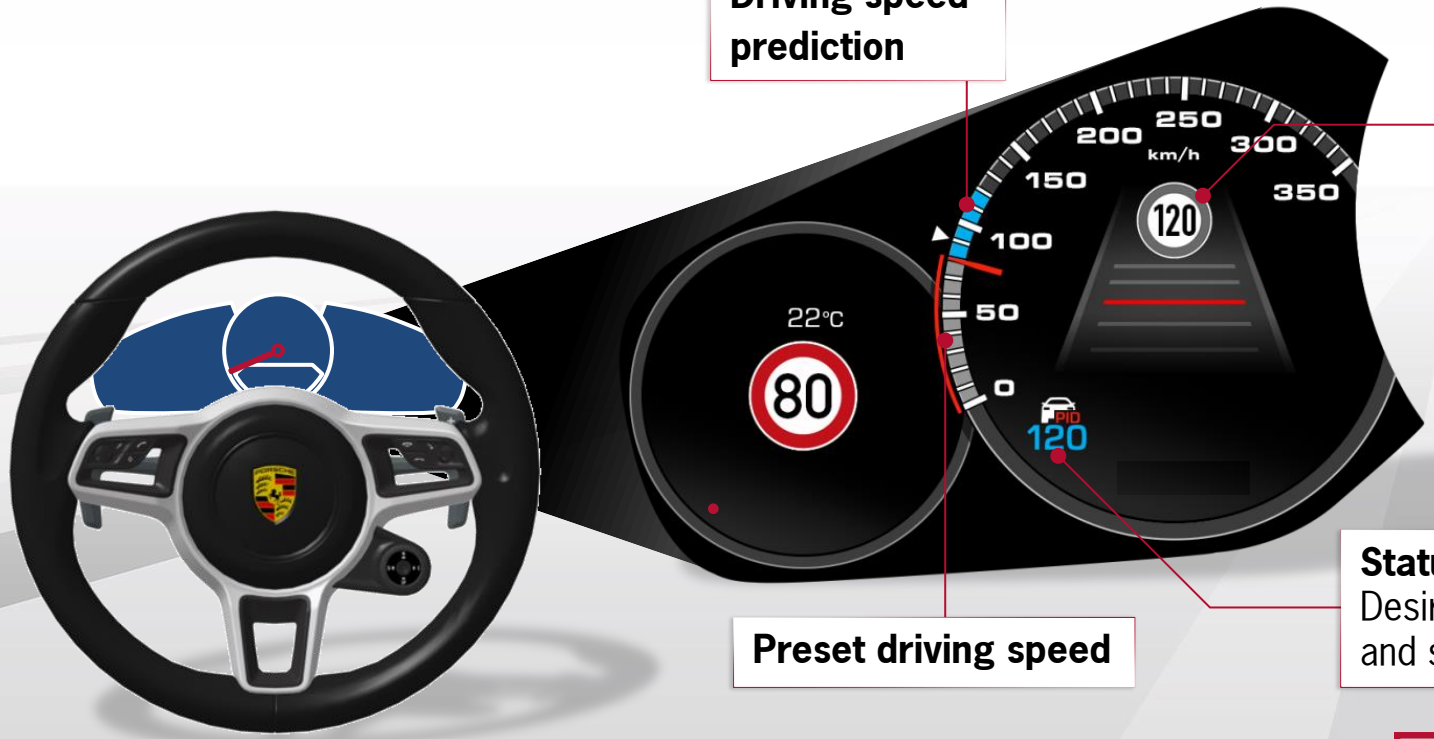
PORSCHE

Porsche InnoDrive



Within the driving speed envelope, the optimal driving strategy is computed in real time – for up to three kilometres in advance



PORSCHE

Like ACC, this system is operated from a steering wheel stalk