ADVANCED DRIVER ASSISTANCE SYSTEMS (ADAS)

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BNP PARIBAS GROUP

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A Guide to Advanced Driver Assistance Systems

As technology becomes more advanced, a growing number of vehicles are being built with intelligent systems to help motorists. Advanced Driver Assistance Systems, or ADAS, is a term used to describe these smart features.

ADAS includes relatively simple features like rear view cameras to help with parking through to more complicated systems like Lane Departure Warning (LDW) that can detect a vehicle's surroundings. These advanced systems can actually take some control of the vehicle, such as Autonomous Emergency Braking (AEB).

In this guide, we describe the ADAS technology available and their benefits, which could be useful when you and your drivers are selecting your next vehicle.

What is ADAS?

Whether your car has adaptive high beams, a collision detection system or autonomous night vision, these are all classed as Advanced Driver Assistance Systems (ADAS).

If you and your drivers understand what these smart features are and what they do, you can get the most benefit from them, improving your driving experience and making other road users safer.

Please be aware that the information in this guide is correct as at June 2019 but things move fast in this area.

Light Assisted Technology
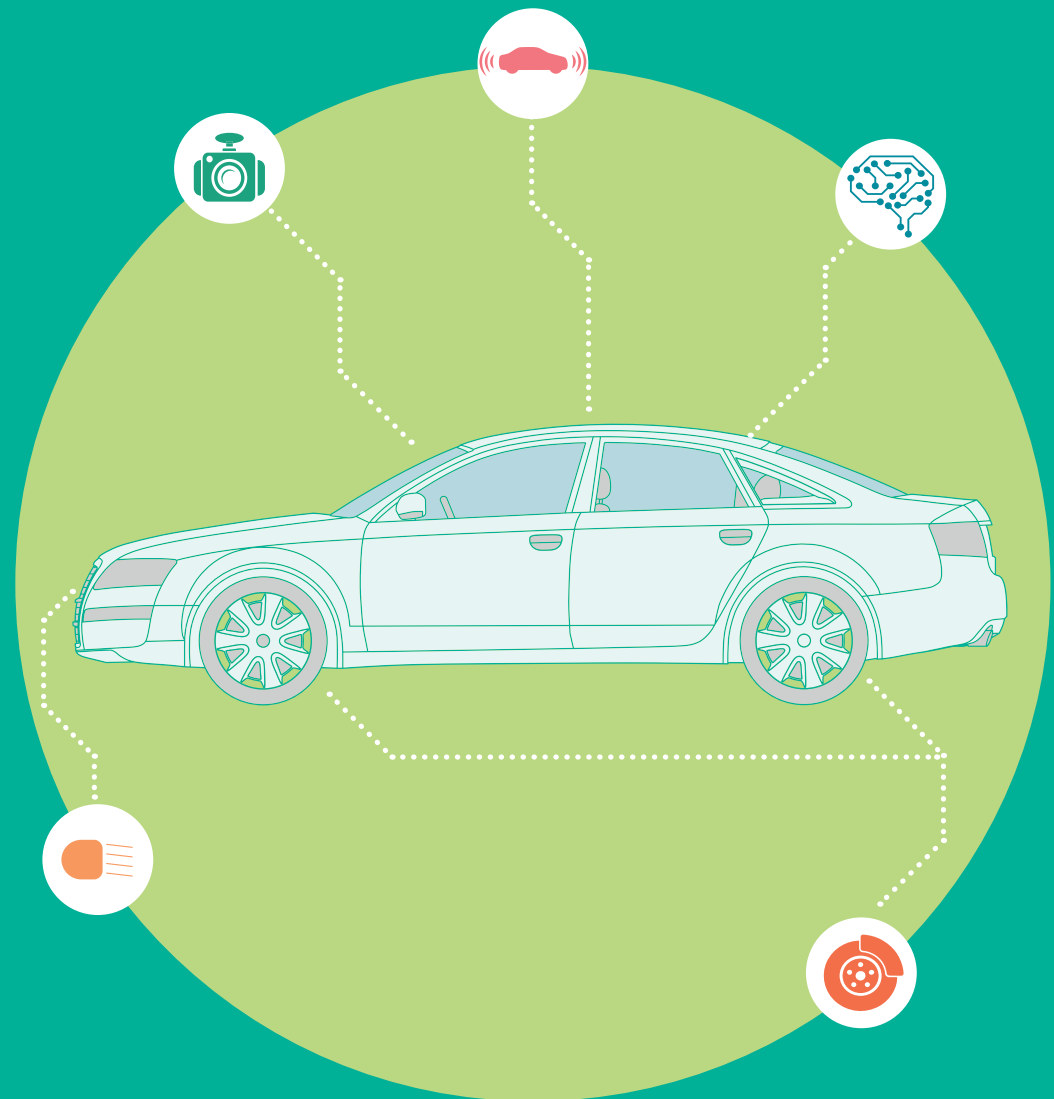
■ AFLS - Adaptive Front Lighting System

System that automatically turns the headlight beam to the right or left dependent on the vehicle's direction.

■ AHBC – Adaptive High Beam Control
ALC - Adaptive Light Control

Detects oncoming traffic and vehicles in front, automatically adjusting the headlamp beam high and low.

■ HLA – Head Lamp Assist
GFHB - Glare-Free High Beam
IHBC - Intelligent High Beam Control
LA - Lighting Automation

Allows driving with the high beam on at all times. If the camera detects other traffic on the road, the distribution of light from the high beams is adjusted so as not to blind the approaching driver.

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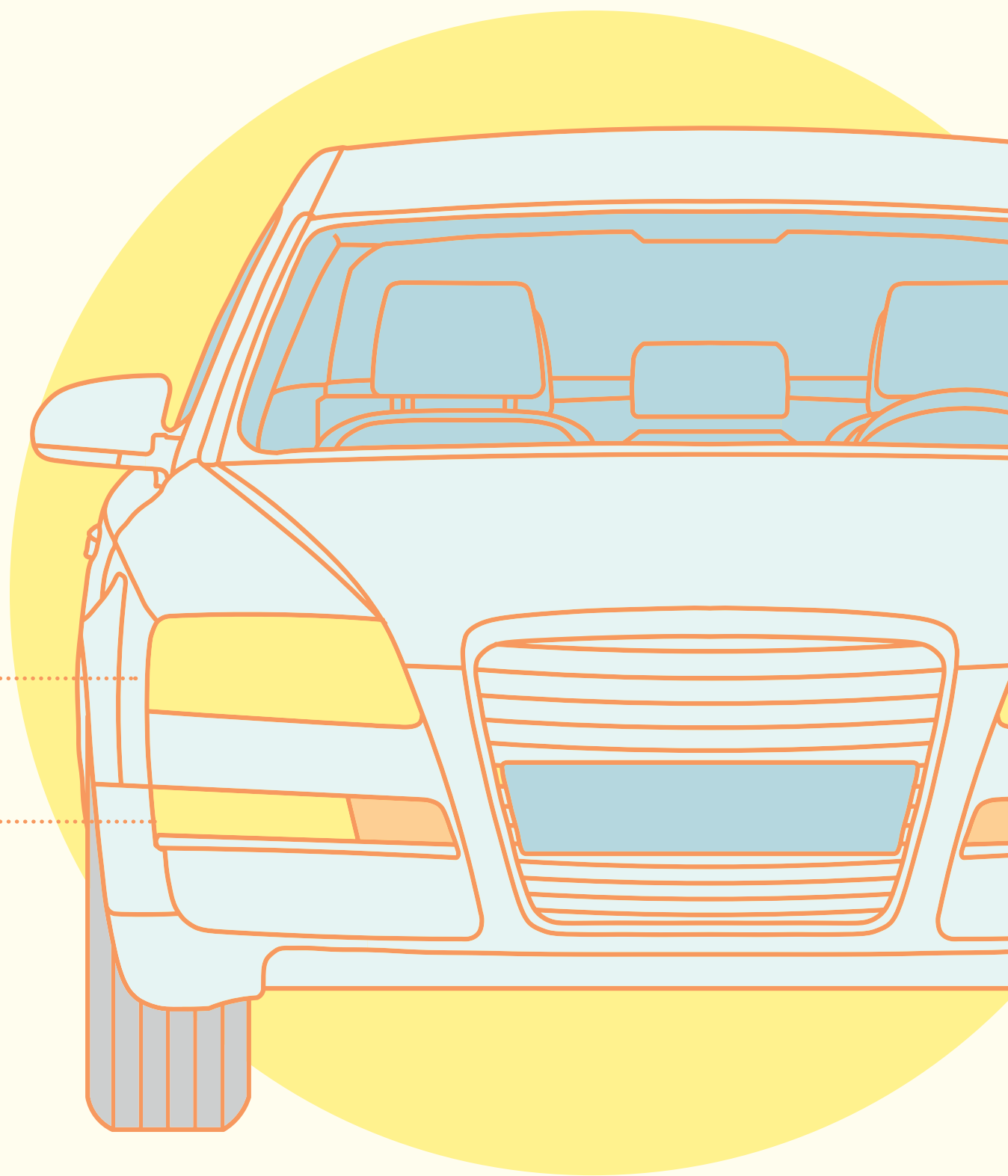
Sensor Assisted Technology

ACC – Adaptive Cruise Control

Cruise control system that automatically adapts speed to maintain a safe distance from vehicles in front.

BSD – Blind Spot Detection
BSM – Blind Spot Monitoring
BSW – Blind Spot Warning

These systems provide vital information about blind spots, areas that cannot be seen easily by the driver. Some of these systems will sound an alarm if they sense the presence of an object within a blind spot; others include cameras that transmit images to a display in the dashboard.

See also **Lane Change Assist.**

CAS – Collision Avoidance System
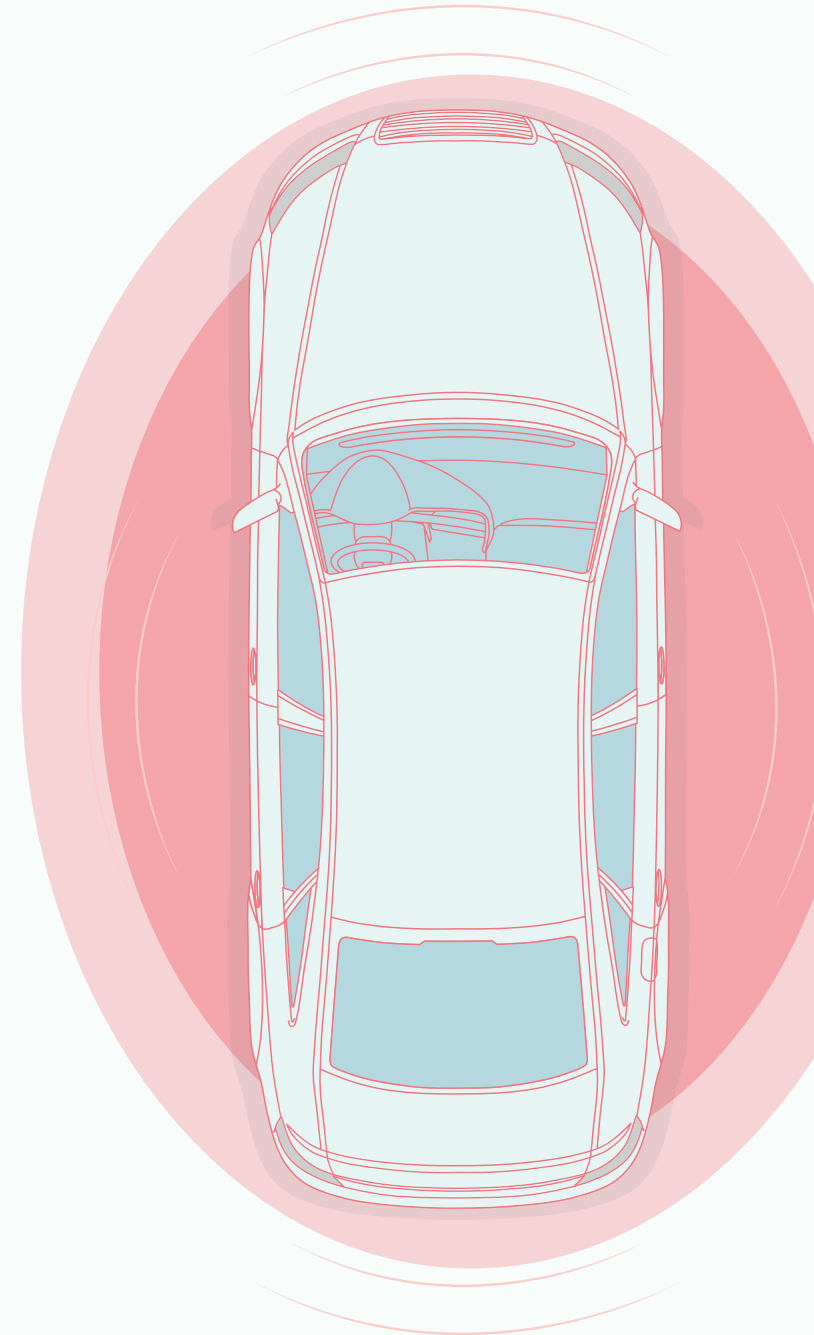## CDW - Collision Detection Warning

Uses a variety of sensors to determine whether a vehicle is in danger of colliding with another object. These systems sense the proximity of other vehicles, pedestrians, or other objects on the road. When the vehicle is in danger of colliding with another object, the collision avoidance system will warn the driver and take preventive actions, such as pre-charging the brakes, applying tension to the seat belts, or taking over steering.

Similar to **Crash Imminent Braking.**

CTA – Cross-Traffic Alert

Multiple sensors or wide angle cameras are located near the front or rear of the vehicle, detecting traffic that comes from the side, typically in car park situations.

See also **Rear Cross-Traffic Alert.**

Sensor Assisted Technology

EVWS – Electric Vehicle Warning Sound

A system that makes sounds designed to alert pedestrians to the presence of electric vehicles that make very little noise.

FCW – Forward Collision Warning
FCWS – Forward Collision Warning System
FCA – Forward Collision Avoidance

These systems sense the proximity of other vehicles, pedestrians, or other objects on the road. When the vehicle is in danger of colliding with another object, the collision avoidance system will warn the driver and take preventative actions, such as pre-charging the brakes, applying tension to the seat belts, or taking over steering.

HDC – Hill Descent Control

A system that adjusts speed by applying the brake or shifting to lower gears while driving down a hill.

HUD – Head-Up-Display

A transparent display that shows information on the front windscreen, allowing drivers to keep their eyes on the road, instead of having to look away toward information on the dashboard.

LCA – Lane Change Assist

Senses a vehicle approaching in a neighbouring lane while you signal for a lane change. The vehicle can alert the driver with a flashing indicator in the side mirror.

See also **Blind Spot Detection.**

AI Assisted Technology
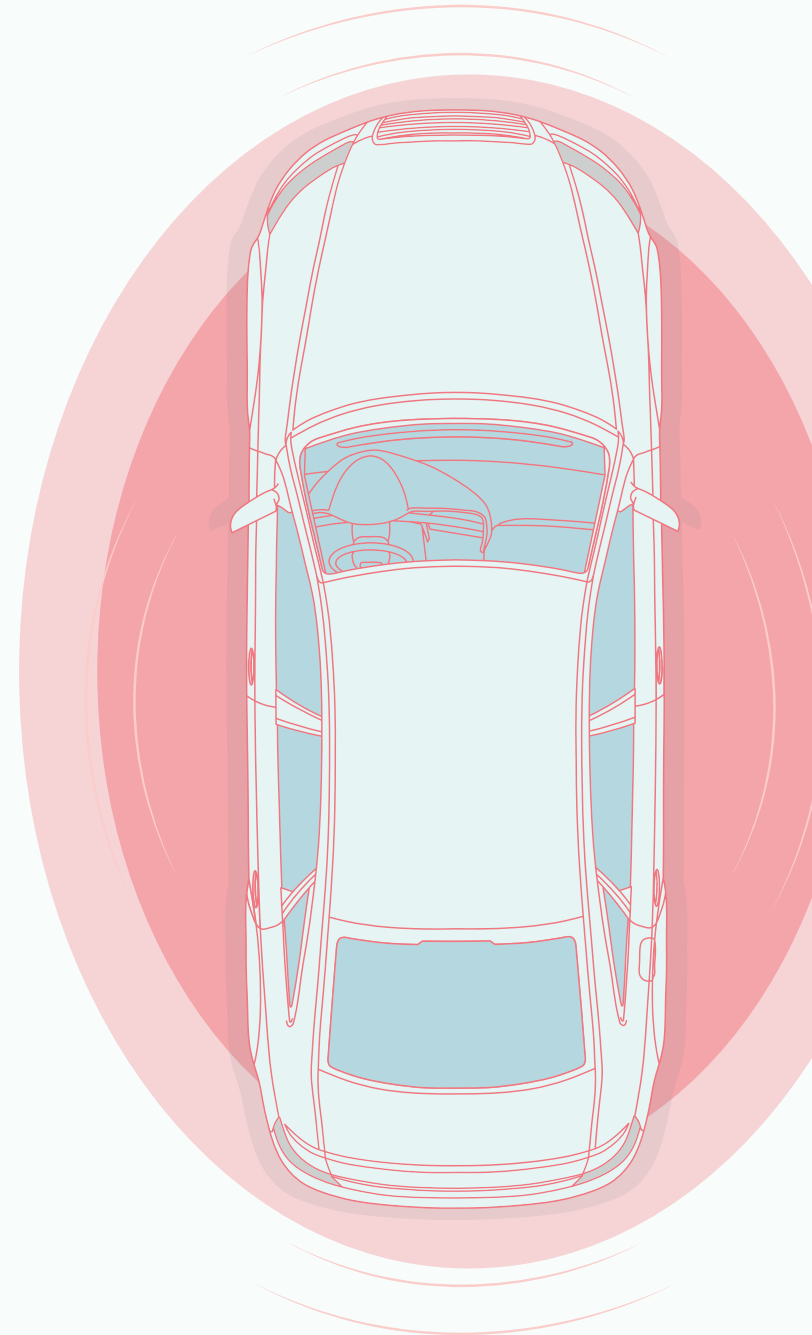
APS – Automatic Parking System
IPAS - Intelligent Assist System
PA - Parking Assistance

Designed to help a driver park. Some perform the entire job automatically, while others simply provide advice so that the driver knows when to turn the steering wheel and when to stop.

EDA – Emergency Driver Assistant

A system that monitors driver behaviour. If the system concludes that the driver is no longer able to safely drive the vehicle, the car takes control of the brakes and the steering to bring the vehicle to a stop.

ISA – Intelligent Speed Adaptation or Intelligent Speed Advice

A system that monitors vehicle speed, warning the driver to adjust their speed if it is higher than the allowed limit. Typically uses Traffic Sign Recognition and map data to determine the speed limit.

SAD – Semi-Autonomous Driving

A driving system that is primarily autonomous, but requires the driver to monitor and take control of the vehicle in case the automated driving system cannot safely operate the vehicle.

TJA – Traffic Jam Assist

Keeps the vehicle at a safe distance, adapts speed and optionally takes control of steering in lower-speed, dense traffic situations.

TA – Turning Assistant

Monitors traffic when turning at low speeds, even autonomously applying the brakes in unsafe situations.

UPA – Ultrasonic Park Assist

A Parking Assist system that solely uses ultrasonic sensors. Ultrasonic sensors, which detect distance, but can't detect smaller objects well, nor can they find parking spot markers.

See also **Automatic Parking System.**

Camera Assisted Technology
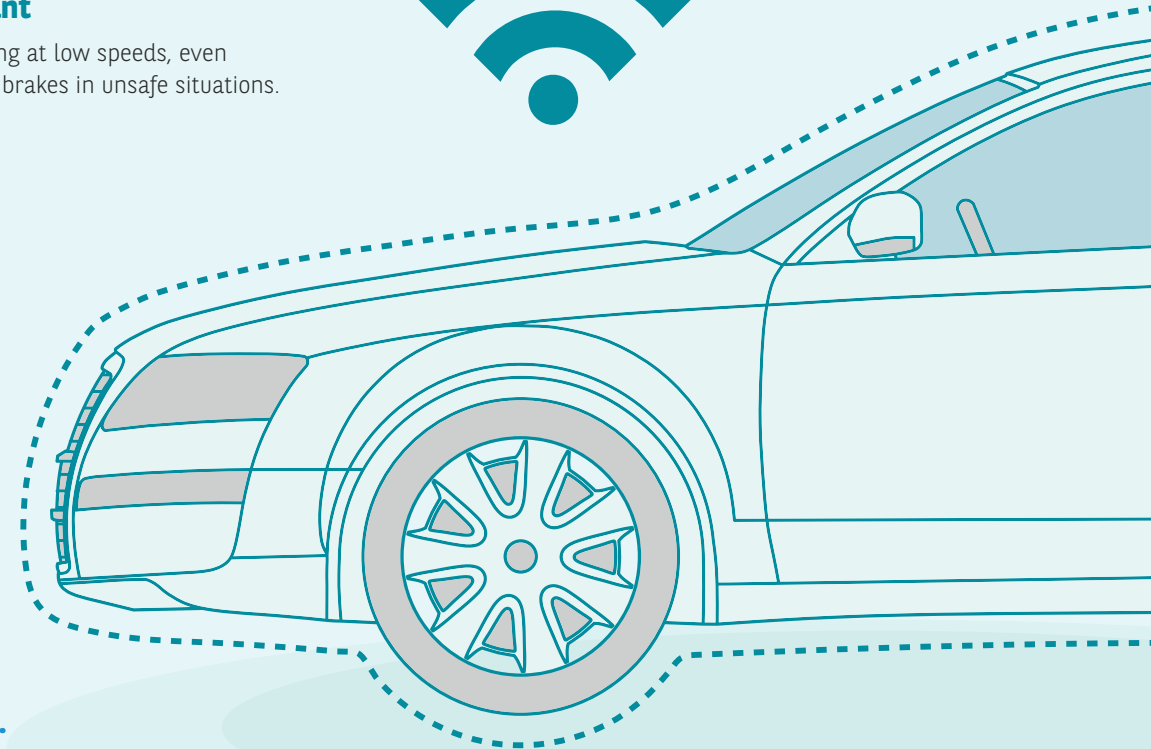
ANV – Automotive Night Vision
NVA - Night View Assist

Captures images using a thermal camera or active infrared lighting and presents it on a dashboard display. This increases the driver's perception and viewing distance distance at night.

BOP – Back-Over Protection or Back-Over Prevention

Can combine both ultrasonic and rear-view camera technologies to increase safety while reversing ensuring the driver doesn't hit a pedestrian, vehicle or other object.

CMS – Camera Monitor System

A system that adds monitors or displays to the car presenting the view of externally mounted cameras. For instance, rear view cameras or mirror replacement cameras that remove the need for left, right, or rear-view mirrors, and present a better view of the vehicle's surroundings.

DDW – Drowsy Driver Warning
DFW – Driver Fatigue Warning
DDD – Driver Drowsiness Detection
DMS – Driver Monitoring System

Use cameras or other sensors to determine if a driver's attention is still on the road and operating the vehicle safely. Most systems track eye blinking rates and gaze direction whilst others look for the driver's head to nod in a tell-tale motion that indicates sleepiness. When this happens typically a warning buzzer will sound, then progress to a louder noise with a light displayed on the dashboard. This continues until the driver interacts with the system to cancel it.

LCA – Lane Centring Assist
LKA - Lane Keeping Assist

Combines a forward-facing camera to detect lane markings with an electric steering system, keeping the vehicle in the centre of the lane.
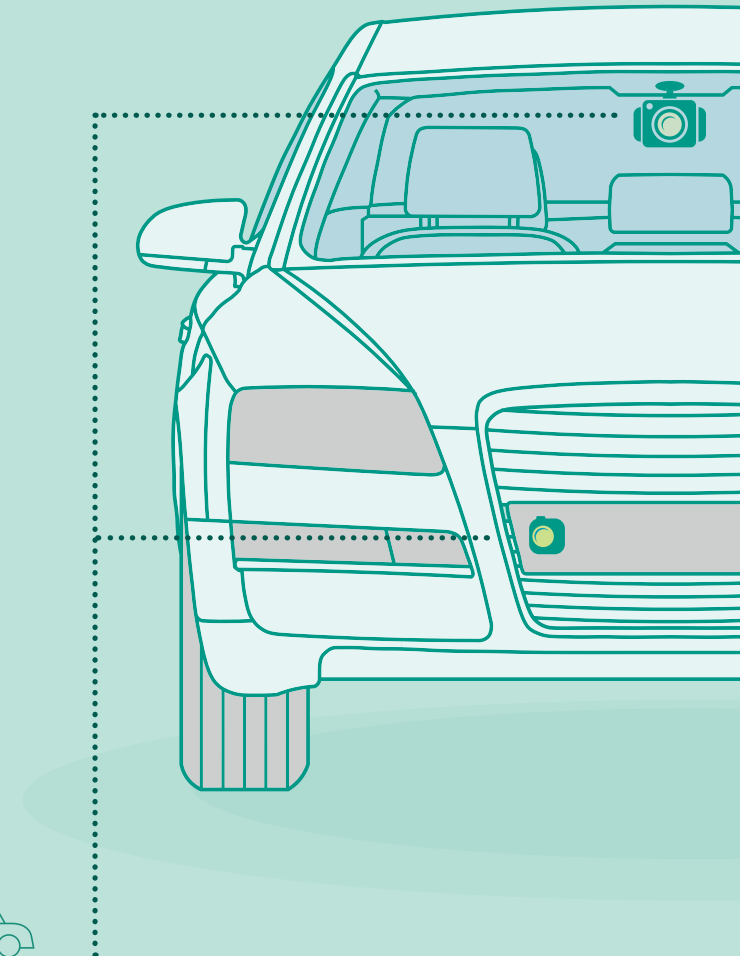
See also **Lane Keeping Assist.**

LD – Lane Detection

Uses a forward camera to detect lane markings on the road.

LDW – Lane Departure Warning
LDWS – Lane Departure Warning System

Uses a forward-facing camera to detect lane markings, warning the driver if the vehicle leaves the lane without proper use of the indicators.

Camera Assisted Technology

■ MOD – Moving Object Detection

A system that detects moving objects around the vehicle, normally during parking or slow manoeuvring. Typically uses multiple cameras located around the vehicle.

■ OC – Online Calibration

A camera-based system that calibrates itself either during start-up or in real-time. This is in contrast to a camera system that needs to be calibrated in the factory or garage.

■ OD – Object Detection

A computer vision algorithm that detects objects in view of a camera: for example pedestrians, vehicles, animals, or cyclists.

■ OSD – Optical Surface Dirt

A camera system that automatically detects whether the camera lens is dirty and warns the driver or takes other appropriate action.

■ PLD – Parking Line Detection
PSMD - Parking Slot Marking Detection

A system that detects markers on the road surface in order to determine the exact location of parking spaces.

See also Parking Slot Marking Detection.

■ PD – Pedestrian Detection
PDS – Pedestrian Detection System

A system that detects pedestrians in front or behind the vehicle, usually through the use of cameras.
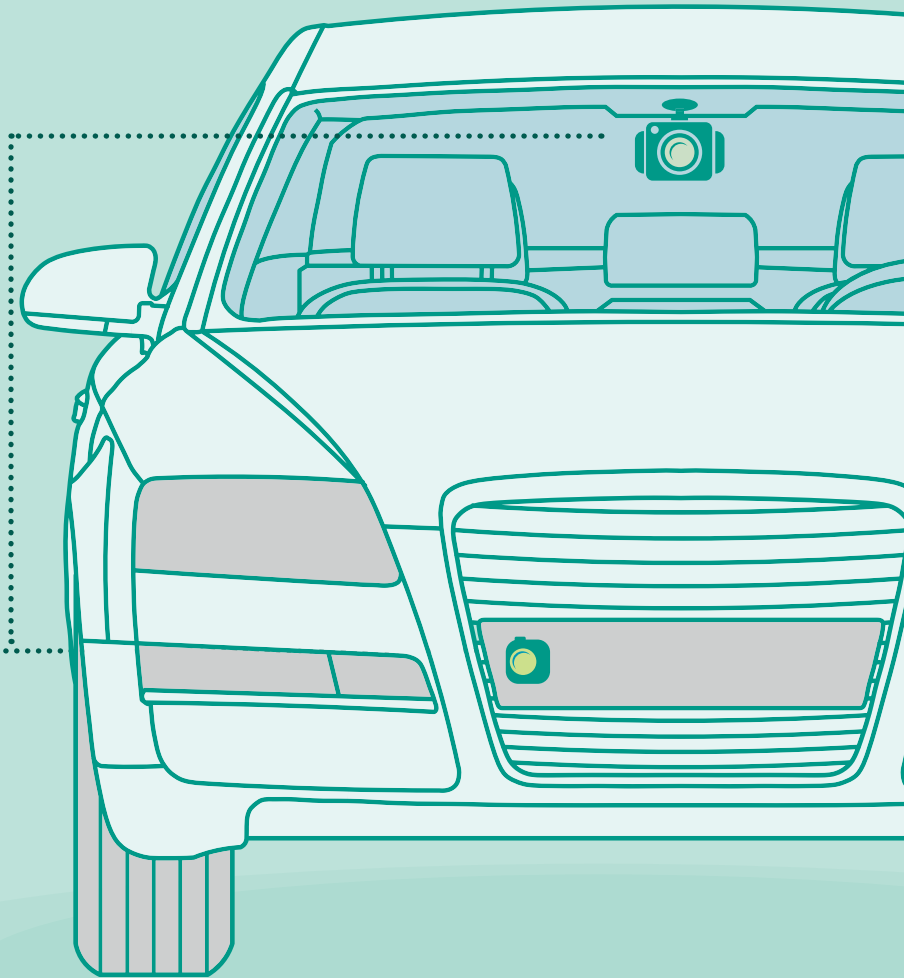
Camera Assisted Technology

RCTA – Rear Cross-Traffic Alert

These systems let you know if you're about to back into oncoming cross traffic. Multiple sensors or wide angled cameras are located near the rear of the vehicle, detecting traffic that comes from the side, typically in car park situations.

See also **Cross-Traffic Alert.**

RVC – Rear View Camera

A camera that's mounted in the rear of the vehicle, facing backward.

SVC – Surround View Camera
SVPA - Surround View Park Assist

Capture and display the area surrounding the vehicle in a single integrated view on a display in the dashboard.

## TLR – Traffic Light Recognition

A camera-based technology that detects and analyses traffic lights, either to inform the driver or to provide information to the vehicle for autonomous driving.

TSR – Traffic Sign Recognition

A camera-based technology that detects and analyses the traffic signs next to the road. Speed limit signs can for instance be used to control the speed of the vehicle. Often the important traffic signs are shown on the dashboard.

WWDW – Wrong-Way Driving Warning
WWDA - Wrong-Way Driving Alert

A system that warns the driver when they are travelling in the wrong direction. Typically uses a Traffic Sign Recognition system to detect wrong-way traffic sign indicators.
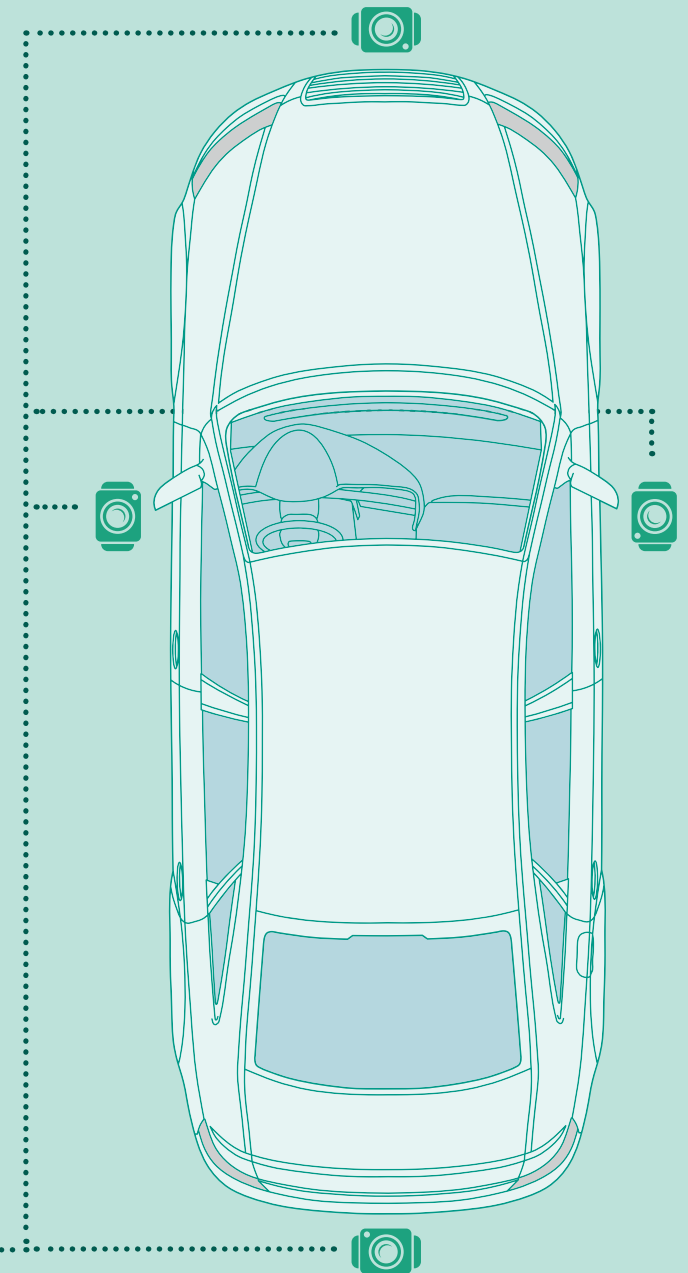
Brake Assisted Technology

■ **AEB – Automatic Emergency Braking or Autonomous Emergency Braking**

Monitors the proximity of vehicles in front, detecting situations where a collision is imminent. Braking is then automatically applied to avoid the collision or mitigate its effects.

■ **CIB – Crash Imminent Braking or Collision Imminent Braking**

CIB systems automatically apply the brakes in a crash imminent situation if the driver does not respond to warnings.

Similar to **Collision Detection Warning** or **Collision Avoidance Systems.**

■ **PAEB – Pedestrian Automatic Emergency Braking**

A system that performs automatic braking if a pedestrian is detected in front of the vehicle.
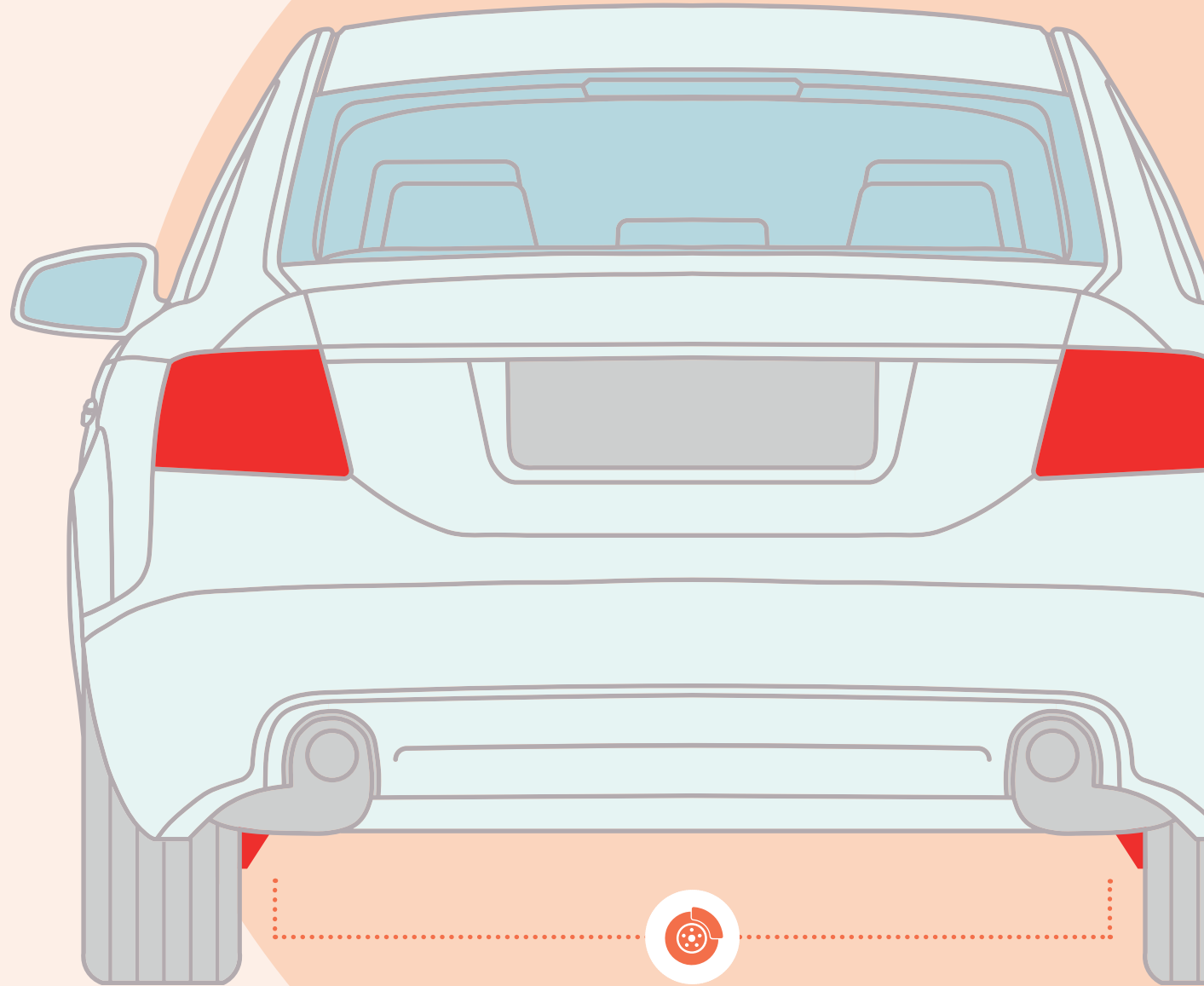
FOR MORE INFORMATION

Please refer to your vehicle handbook or contact the manufacturer if you have any questions.

Information corrrect as at June 2019

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