DriveTech
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Whitepaper:

ADAS (Advanced Driver Assistance Systems) – attraction or distraction?

Do you know what they all are and what they do to help?

With grateful thanks for a significant contribution from
Dr. Lisa Dorn, Research Director at DriverMetrics

drivetech.co.uk

Introduction

Advanced driver-assistance systems (popularly abbreviated to "ADAS") are systems designed to help the driver in an increasingly technology-assisted mobile world.

More and more road vehicles have built-in driver assistance technology either fitted as standard or offered as after-market fitment options. Of course, many of them may be optionally turned on or off by the driver, but by default it is likely that many are on as the standard setting.

The endgame might be the fully autonomous (driverless) vehicle, but in the meantime, driver assistance systems are intended mainly to improve safety on the road. However, as they appear increasingly on new vehicles, does the driver really understand them, their benefits and their best use?

Interestingly, in a JD Power 2019 U.S. Tech Experience Index Study, it was noted that some alerts on ADAS are so annoying or bothersome that many drivers disable the systems and may even try to avoid them on future car purchases. Confusion and frustration are commonly cited.

As we move to more screen based technology interfaces, what is the difference between the use of a modern smartphone in-vehicle and the increasing adoption of large single tablet computer style screens with variable functions that appear depending on mode – versus the fixed location of more traditional buttons to control key aspects of the vehicle to help minimise distraction.

And what are the distinct behavioural and attitudinal impacts on drivers? We are exceptionally grateful for a collaborative input to this paper from Dr Lisa Dorn of Cranfield University and DriverMetrics who assesses this area with a helpful summary of academic studies and reports, and some key observations about the prospective development of the driver training curriculum.

The Road Safety Challenge

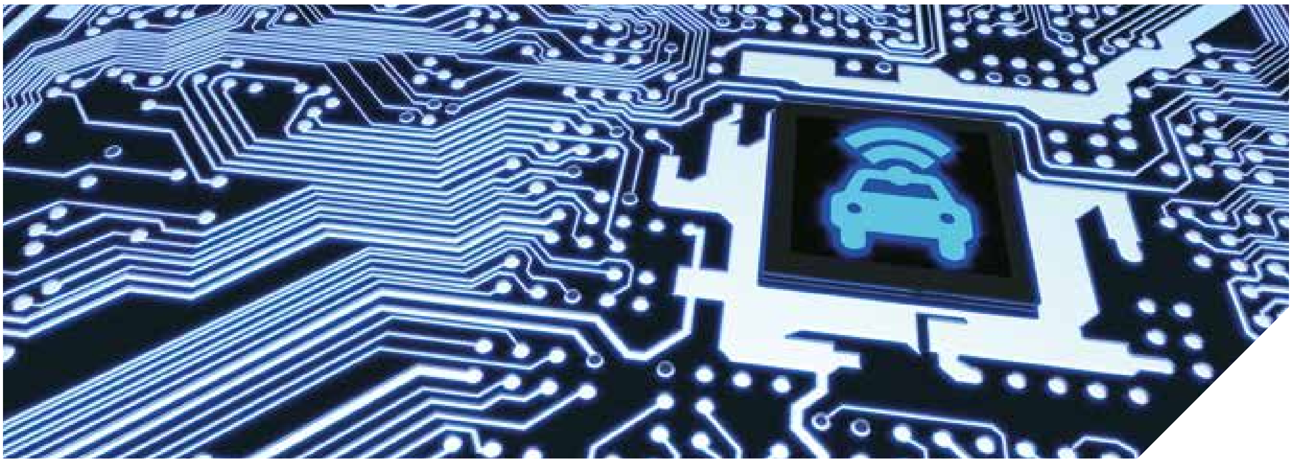
Safety features are designed to avoid collisions by offering technologies that alert the driver to potential hazards by implementing safeguards and taking over control of the vehicle. Adaptive features may automate lights, provide adaptive cruise control and collision avoidance, pedestrian crash avoidance mitigation (PCAM), incorporate satnav/traffic warnings, connect to smartphones, alert drivers to other cars or dangers, lane departure warning system, automatic lane centering, or show what is in blind spots.

Many drivers are becoming increasingly reliant on ADAS systems which in frequent cases may not even be working after the fitted vehicle has been involved in a harsh collision, compromising their safety against what may be a backdrop of poor basic driving skills. Drivers often misunderstand or misuse the systems and, in particular, may over-rely on them, which can lead to more crashes ironically (imagine a scenario where one's regular vehicle has parking sensors front and rear, and then an older vehicle is driven without these aids. It can be difficult to revert to parking without assistance – especially when these skills can fade over time).

Professional and accurate recalibration of ADAS (for example after a collision or major electronics investigation work) is important because, for example, an un-calibrated replacement windscreen could fail to warn drivers of potential road hazards in a timely manner. Even just a tiny inaccuracy in the position of a windscreen camera can significantly impair the effectiveness of one or more ADAS systems. This is an issue that the insurance industry, and the wider automotive sector are facing. As vehicle servicing and maintenance becomes significantly transitioned from mechanical and engineering expertise to precision electronic device calibration, it inevitably poses reliability, liability and warranty issues.

Whilst the dynamics of road safety is complex combining human behaviour, road infrastructure, road use regulations and policing, and increasing vehicle technology – notably including ADAS, it is interesting, if not concerning, that after a period of virtually static recorded annual road deaths and serious injuries (Department for Transport - DfT), the most recent annual provisional figures indicate a slight worsening of the road death figures.

Thatcham Research hold an eminent research position in the motor industry – with the specific aim of containing or reducing the cost of motor insurance claims while maintaining safety standards. Richard Billyeald, Thatcham Research Chief Technical Officer, comments: "The whole industry needs to work together to make sure ADAS repairs are safe and vehicles are returned to the road quickly and efficiently. Equipment suppliers must ensure that verifiable evidence of a successful calibration is provided. Repairers must invest in training to ensure competent persons are reinstating ADAS safely. And Vehicle Manufacturers must provide ADAS fitment data and consistent advice around which repair scenarios will result in successful ADAS calibration."



Systems Range

Typically, ADAS relies on inputs from multiple data sources, including automotive imaging, LiDAR*, radar, image processing, computer vision, and in-car networking. Additional inputs are possible from other sources separate from the primary vehicle platform, such as other vehicles, referred to as Vehicle-to-Vehicle (V2V), or Vehicle-to-Infrastructure (such as mobile telephony or Wi-Fi data network) systems.

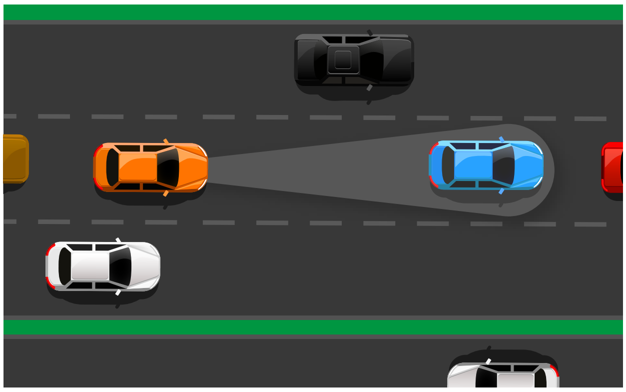
*LiDAR – stands for Light Detection and Ranging, and is a remote sensing method that uses light in the form of a pulsed laser to measure ranges and distance to a target).

The range of different systems is wide and growing! Just some are listed here and we've highlighted a few of the more popular ones including a brief indicative description.

Don't forget DriveTech can help provide driver training for your business drivers to include knowledge and a full appreciation of the systems prevalent in their own vehicles.

Increasingly Popular & Prevalent ADAS Systems:

Adaptive Cruise Control (ACC)



Switch on the adaptive cruise control and put in the maximum speed you want to drive and the distance at which you're comfortable following other cars. As long as there's no one in front of you the car will maintain that speed without any driver input. When you inevitably come across a slower vehicle, or even stop and go traffic, the vehicle will automatically brake and accelerate to keep up with traffic.

CON: This system tries to always keep the pre-set distance to the car in front of you. This can often lead to significant braking and acceleration, which can create a poor road usage capacity, and might also increase fuel consumption.

Anti-lock braking system

Possibly one of the earlier ADAS introductions, an anti-lock braking system (ABS) is a safety anti-skid braking system used on aircraft and on land vehicles, such as cars, motorcycles, trucks, and buses. ABS operates by preventing the wheels from locking up during braking, thereby maintaining tractive contact with the road surface.

Automatic Parking

Automatic parking is an autonomous car-manoeuvring system that moves a vehicle from a traffic lane into a parking spot to perform parallel, perpendicular, or angle parking. The automatic parking system aims to enhance the comfort and safety of driving in constrained environments where much attention and experience is required to steer the car. The parking manoeuvre is achieved by means of coordinated control of the steering angle and speed which takes into account the actual situation in the environment to ensure collision-free motion within the available space.

Automotive navigation system with typically GPS* and TMC* for providing up-to-date traffic information.

An automotive navigation system is part of the vehicle controls or a third-party add-on used to find direction. It typically uses a satellite navigation device to get its position data which is then correlated to a position on a road. When directions are needed routing can be calculated. On the fly traffic information can be used to adjust the route. *GPS - Global positioning system. *TMC – Traffic Message Channel

Automotive Night Vision

An automotive night vision system uses a thermographic camera to increase a driver's perception and seeing distance in darkness or poor weather beyond the reach of the vehicle's headlights. This may help to highlight humans and other objects that wouldn't otherwise be seen as clearly with just normal vehicle headlights. Such systems are offered as optional equipment on certain premium vehicles.

Blind Spot Monitor

The blind spot monitor is a vehicle-based sensor device that detects other vehicles located to the driver's side and rear. Warnings can be visual, audible, vibrating, or tactile.

Blind spot monitors are an option that may do more than monitor the sides and rear of the vehicle. They may also include "Cross Traffic Alert", "which alerts drivers backing out of a parking space when traffic is approaching from the sides.

CON: Every system will have serious consequences when not operating properly, but with the blind spot information system the consequences are catastrophic. When drivers count on the proper function of the system in high speed traffic situations if the system is broken people will be seriously injured or even worse.

Collision Avoidance System (Pre-Crash System)

Also referred to as forward collision warning (FCW), or collision mitigating system, it typically uses RADAR or LiDAR or camera (or a combination of these technologies) to detect an imminent crash and works to avoid the impact completely, or at least reduce the magnitude of impact – normally by automatically cancelling acceleration and applying the brakes. GPS sensors can detect fixed dangers such as an approaching stop sign at a dangerous T-junction through a location database.

CON: Collision mitigation is based on algorithms that are inserted by the developer of the system. These algorithms cannot always represent all the possible things that could go wrong in traffic.

Crosswind Stabilisation

Crosswind stabilisation is among the relatively new ADAS, aiming to compensate for strong crosswinds. It uses sensors to detect forces acting on the vehicle through side wind gusts – be it on a bridge or when overtaking a truck. The system's response also takes account of vehicle speed, vehicle load and steering characteristics of the driver. Brakes are applied to the wheels on the side of the vehicle facing the wind, depending on the situation, and counteract the side wind interference.

Cruise Control

Another increasingly prevalent/standard fit, cruise control (sometimes known as speed control or autocruise, or tempomat in some countries) is a system that automatically controls the speed of a motor vehicle. The system is a servomechanism that takes over the throttle of the car to maintain a steady speed as set by the driver.

Dashcam

Increasingly popular, mainly as a standalone accessory for windscreen (and/or rear screen) affixing, the ability for dashcam systems to help record on road events might be regarded as an assistance system, not so much to assist live driving but to record events in the event of an insurance issue or similar on road incident. It can be argued that the mere presence of a recording device will influence many drivers to conform to good driving practice and observe the Highway Code. Some models include warnings of 'hazards' or landmarks ahead.

Driver Drowsiness Detection

Driver drowsiness detection is a car safety technology which helps prevent accidents caused by the driver getting drowsy. Various studies have suggested that around 20% of all road accidents are fatigue-related, up to 50% on certain roads. See the AA Drowsy Driver campaign video here www.drivetech.co.uk/news-and-resources/aa-trust-supported-by-drivetech-launches-new-drows

Some of the current systems learn driver patterns and can detect when a driver is becoming drowsy. One example of the benefits of lane departure warning is to warn when the driver becomes tired or is distracted. A question that rises is that the system might cause this inattention just by making the driver aware that something is controlling him.

Driver Monitoring System

The Driver Monitoring System, also known as Driver Attention Monitor, is a vehicle safety system first introduced by Toyota in 2006. The system uses infrared sensors to monitor driver attentiveness. Specifically, the Driver Monitoring System includes a CCD camera placed on the steering column which is capable of eye tracking via infrared LED detectors. If the driver is not paying attention to the road ahead and a dangerous situation is detected, the system will warn the driver with flashing lights and warning sounds. If no action is taken, the vehicle will apply the brakes (a warning alarm will sound followed by a brief automatic application of the braking system).

Electric Vehicle Warning Sounds Used In Hybrids & Plug-In Electric Vehicles

Electric vehicle warning sounds are sounds designed to alert pedestrians to the presence of electric drive vehicles such as hybrid electric vehicles (HEVs), plug-in hybrid electric vehicles (PHEVs), and all-electric vehicles (EVs) travelling at low speeds. Warning sound devices were deemed necessary by some government regulators because vehicles operating in all-electric mode produce less, if not virtually no, noise than traditional combustion engine vehicles and can make it more difficult for pedestrians, the blind, cyclists, and others, to be aware of their presence.

Emergency Driver Assistant

Emergency Assist is a driver assistance system that monitors driver behaviour by observing delays between the use of the accelerator and the brake. Once a preset threshold of time has been exceeded the system will take control of the vehicle in order to bring it to a safe stop. This is on the assumption that the driver has, for example, fallen asleep at the wheel.

Forward Collision Warning (FCW)

A collision avoidance system, also known as a pre-crash system, forward collision warning system, or collision mitigating system, is a vehicle safety system designed to prevent or reduce the severity of a collision. It uses radar (all-weather) and sometimes laser (LIDAR) and camera (employing image recognition) to detect an imminent crash. GPS sensors can detect fixed dangers such as approaching stop signs through a location database

Hill Descent Control

When the driver is descending a hill at a slow speed, by selecting Hill Descent Control (a dashboard button typically) the vehicle will be restrained to not allow gravity to naturally accelerate the vehicle downhill. When on, the vehicle will descend using the anti-lock braking system (ABS) to control each wheel's speed. If the vehicle accelerates without driver input, the system will automatically apply the brakes to slow down to the desired vehicle speed. Cruise control buttons can adjust the speed to a comfortable level. Applying pressure to the accelerator or brake pedal will override the HDC system when the driver requires.

Hill Start Assist

This feature can prevent roll back on an incline by holding the brakes while you switch between the brake and acceleration pedals. Some versions can also prevent your car from rolling forward on a decline. Sensors in the vehicle are used to detect when a vehicle is on an incline. The hill start assist maintains the brake pressure for a set period of time as you switch from the brakes to the accelerator pedal. Once you press the accelerator, it releases the brake. In cars with manual transmission that have this feature, the hill start assist will also maintain brake pressure until the driver releases the clutch.

Intelligent speed adaptation or intelligent speed advice (ISA):
Intelligent speed adaptation (ISA), also known as alerting, and intelligent authority, is any system that ensures that vehicle speed does not exceed a safe or legally enforced speed. In case of potential speeding, a human driver can be alerted, or the speed reduced automatically. Intelligent speed adaptation uses information about the road to determine the required speed. Information can be obtained from knowledge of the vehicle position, taking into account speed limits known for the position, and by interpreting road features such as signs. ISA systems are designed to detect and alert a driver when a vehicle has entered a new speed zone, or when different speed limits are in force according to time of day and conditions.

Intersection Assistant
Junctions in cities can be major accident black spots. The collisions here can mostly be put down to driver distraction or misjudgement. Whereas humans often react too slowly, assistance systems are immune from the brief moment of human hesitation. The system monitors cross traffic in an intersection/road junction. If this anticipatory system detects a hazardous situation of this type, it prompts the driver to start emergency braking by activating visual and acoustic warnings and automatically engaging brakes.

Lane Centering
Lane centering, also known as auto steer, is a mechanism designed to keep a car centered in the lane, relieving the driver of the task of steering. Lane centering is similar to lane departure warning, but rather than warn the driver, or bouncing the car away from the lane edge, it keeps the car centered in the lane.

Lane Departure Warning System (LDW):
A lane departure warning system is a mechanism designed to warn the driver when the vehicle begins to move out of its lane (unless a turn signal is on in that direction) on motorways and arterial roads. These systems are designed to minimize accidents by addressing the main causes of collisions: driver error, distractions and drowsiness.

Parking Sensor
Parking sensors are proximity sensors for road vehicles designed to alert the driver of obstacles while parking. These systems use either electromagnetic or ultrasonic sensors and their signal (sound and sometimes visual indicators) tend to accelerate in frequency and volume when the obstacle becomes nearer.

Pedestrian Protection System
These are developing all the time but might consist of redesigns to the vehicle itself (e.g. bumper, bonnet and windshield pillars, and/or the provision of exterior airbag systems to minimise the damage to pedestrians on impact.

Rain Sensor

An automatic sensor that detects rain on the windscreen and activates the wipers without necessary manual intervention by the driver.

Surround View System
Omniview technology (also known as “surround view” or “bird view technology”) is a vehicle parking assistant technology that is a vehicle parking assistant technology that is designed to help drivers park a vehicle in a small or confined space.

Tyre Pressure Monitoring

A tyre-pressure monitoring system (TPMS) is an electronic system designed to monitor the air pressure inside the pneumatic tyres on various types of vehicles. A TPMS reports real-time tyre-pressure information to the driver of the vehicle, either via a gauge, a pictogram display, or a simple low-pressure warning light.

Traffic Sign Recognition

Traffic-sign recognition (TSR) is a technology by which a vehicle is able to recognise the traffic signs put on the road e.g. “speed limit” or “children” or “turn ahead”. The technology is being developed by a variety of automotive suppliers. It uses image processing techniques to detect the traffic signs. The detection methods can be generally divided into colour-based, shape-based and learning based methods.

Turning Assistant

The system monitors opposing traffic when turning left at low speeds. In critical situations, it brakes the car. This is a common scenario at busy city intersections as well as on highways, where the speed limits are higher.

Vehicular Communication Systems

Vehicular communication systems are computer networks in which vehicles and roadside units are the communicating nodes, providing each other with information, such as safety warnings and traffic information. They can be effective in avoiding accidents and traffic congestion.

Wrong-Way Driving Warning

In the case of signs imposing access restrictions, through the wrong-way driver warning function an acoustic warning is emitted together with a visual warning in the instrument cluster.

Behavioural Responses to Advanced Driver Assistance Systems

Dr. Lisa Dorn, Research Director
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DriverMetrics®

Introduction

As already highlighted in this paper, Advanced Driver Assistance Systems (ADAS) are defined as technologies which can assist drivers with relevant information (for example, a lane departure warning system) and can assume control over a single vehicle function (for example, an adaptive cruise control system) or a combined vehicle function (for example, an adaptive cruise control system combined with a lane centring system). These are labelled as vehicle automation levels 0, 1, and 2 by NHTSA (2013). ADAS is expected to improve safety by reducing human error. This is achieved by removing some elements of the driving task including increasing safety margins that would be larger than those tolerated by a human driver or reacting faster in dangerous situations than a human driver could. In its most simplistic form, a calculation of safety would just assume that these kinds of systems would reduce the number of crashes caused by the type of error which the system takes account of.

However, different systems offer different levels of safety improvements and some systems even appear to show unintended consequences and can have a detrimental effect on driving performance. Studies show that drivers change behaviour in response to new technology and the intended safety benefit is not always realised. Unwanted behavioural changes for Intelligent Speed Adaptation (ISA) show that drivers reduce their maximum speed but accept smaller gaps when merging and spend more time at short headways (Comte, 2000). Drivers using Antilock Braking System (ABS) adapt their behaviour by driving faster in built up areas and wet road conditions (Sagberg, Fosser & Sätermo, 1997); and increase their speed (Hoyes, Dorn, Desmond and Taylor, 1996). Studies have also found that vehicles fitted with ABS were significantly more likely to be involved in crashes fatal to their own occupants and were less likely to be involved in crashes fatal to occupants of other vehicles. Overall, antilock brakes seemed to have little effect on fatal crash involvement (Farmer et al, 1997; Farmer, 2001).

Behavioural Responses to Adaptive Cruise Control (ACC)

Studies investigating the effectiveness of ACC have also reported some surprising findings. ACC is a longitudinal support system that can not only maintain a chosen velocity as with Cruise Control, but also keep a safe distance to a lead vehicle. ACC has been commercially available since 1998 and the driver only has to steer while the system manages vehicle speed and distance to make it easier to comply with speed limits and to keep safe distances especially on long trips, predominantly on motorways and A-roads, requiring fewer speed changes.

Whilst field studies have shown that ACC leads to increased distances towards leading cars and to following speed limits better, there is also strong evidence that drivers have difficulties keeping an adequate level of situation awareness which leads to prolonged response times in some situations. They may also shift their attention away from driving and engage in secondary tasks and attentional resources may be diminished by reduced workload (Young and Stanton, 2002). It appears that mental workload decreases because ACC takes over a part of the driving task and the driver withdraws their attention. This means that the driver has less capacity to observe relevant cues for hazards.

In a driving simulator study on a motorway with and without ACC, smaller headways were chosen with ACC compared with manual driving and all drivers drove faster with ACC (Hoedemaeker and Brookhuis, 1998). In the study by Törnros et al. (2002), drivers drove longer in the overtaking lane with ACC and the minimum time-to-collision was reduced. ACC can also encourage faster speeds on narrow curves and lead to poorer lane keeping performance (Buld and Krüger, 2002). Rudin-Brown and Parker (2004) found that while driving with ACC drivers performed better in a secondary task, but the response time to brake increased when a safety hazard was introduced. Cho et al. (2006) also found that drivers tended to shift their attention away from driving when they used ACC. Finally, when ACC fails and does not adapt speed correctly, drivers have significantly longer reactions times than in similar situations when driving without ACC (Young and Stanton, 2007).

Stanton and Young found in a series of studies (Stanton et al., 1997; Stanton and Young, 2000, 2005; Young and Stanton, 2002a,b, 2004) that while a reduction of workload when driving with ACC might be described as a positive effect, situation awareness when driving with ACC is also reduced. Situation awareness is defined as "...the perception of the elements in the environment within a span of time and space, the comprehension of their meaning and the projection of their status in the near future" (Endsley, 1995, p. 36). As drivers rely on the ACC system they do not monitor the surrounding as carefully and lose some of their situation awareness.

In summary, ACC can lead to behavioural changes that can counteract the intended safety effect as drivers become less engaged in the driving task and more reliant on technology and adapt their behaviour and take greater risks in so doing. The evidence clearly shows then that driver behaviour is influenced when using various systems and that the driver assistance system is not always being used as planned by its designers.

Delayed Skill Development and Skill Decay

Previous research has shown that drivers demonstrate lower levels of skill when using ADAS due to their adaptation to the assistance offered and the evidence suggests that these performance decrements can carry over into other driving task situations. The difference between the adaptation effect and the arrested skill development effect is that for adaptation, high skill has been achieved but is not applied, because the driver has learned a different behaviour.

The adaptation effect is thus a more rapid effect than arrested skill. This can be seen in experiments where the effect is apparent between situations for the same drivers (Hoedemaeker & Brookhuis, 1998). As automation increases, drivers will have less opportunity to develop their driving skills, and therefore their driving experience and skills will not increase as fast compared with driving in fully manual mode. Delayed skill development will have the same kind of effect as skill decay but stems from a different source. Over-learned skills are less prone to decay but with regular fully autonomous driving, skill decay can be expected within a few months.

Our relationship with vehicles and how we drive for work then is changing. New technology in vehicles is being introduced with little understanding about its effect on driving for work. ADAS technology has many advantages, such as providing drivers with important information, relieving drivers by occasionally taking over parts of the driving task, and sometimes providing added control to aid drivers in critical situations. These advantages could potentially augment driver performance and reduce crash rates. This represents an opportunity for driver training to step up and deliver new structure and content.

Evolving the Driver Training Curriculum

The essential driving sub-tasks is evolving and using ADAS is quite different to the task taught in conventional driver training courses. First, speed control is often applied through instant adjustments of the cruise control settings on the steering wheel and this means that the instruments of control move from foot-pedals to hand operated buttons. Second, although steering is still applied through the wheel, lane-keeping assistance alters the characteristics of a driver's response from the steering system, while warning systems add potentially distracting auditory elements too. ADAS also means that more driving subtasks are taken away and studies reported here have shown that this can lead to driver disengagement. Plus, with increasing automation driver skills will be lost and new skills will be needed.

It's clear that the driver needs to be trained differently for the task of driving than is currently the case. Driver training needs to address the requirements for driving in today's vehicles so that drivers are prepared for full automation. Training will be required to upskill drivers and avoid the dangers of delayed skill development and skill decay when switching to manual mode in emergency situations or for driving as a leisure activity. Importantly, driver training must focus on how to ensure that drivers remain alert and vigilant whilst using ADAS. Given the behavioural responses discussed, training fleet drivers must take into account the impact of time pressure to complete schedules, deliveries and appointments on time whilst simultaneously using ADAS. How to avoid unwanted behavioural responses to in-vehicle systems must be part of the fleet driver training curriculum if ADAS is to realise its potential to improve road safety.

Conclusions

There is an increasing proliferation of ADAS on vehicles, many of which are sold as terrific breakthrough driver aids but are literally unknown or misunderstood by the vast majority of drivers acquiring and driving these vehicles. The tendency to abbreviate the names of many of these new assistance systems doesn't help basic appreciation and understanding.

There is little if no explanation of these features and benefits at point of purchase, and therefore a driver gets behind the wheel of this new 'fully loaded' vehicle often not knowing what the additional sounds and indications mean, never mind how they can help keep the roads safer. This is more acceptable/forgiveable when users purchasing a state-of-the-art new computer only typically use about 10% of the functionality available. It is a very different proposition when the new purchase is a "speeding bullet" with humans both inside and surrounding it.

This uncertainty around some new ADAS, and in fact confusion and annoyance, around some systems documented in the JD Power 2019 U.S. Tech Experience Index (TXI) Study indicates that drivers get turned off, and then literally switch them off.

There is a body of academic study evidence provided here by Dr Lisa Dorn perversely indicating that human behaviour doesn't always work the way the new ADAS designers and engineers envisaged and intended. In overall summary, the presence of a particular driver aid system can create a real false sense of security and infallibility – which is a very dangerous state when in control of a fast-moving vehicle.

The driver is still the single default owner of the safety imperative in a vehicle and should not feel that they have delegated this responsibility to "assistance" systems. The systems are there to assist – not override – and the driver must be clearly aware that he or she makes the final call for safety's sake.

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About DriveTech

DriveTech is the world leader in fleet risk and safety management, and driver training. It is also the UK's largest provider of driver offender retraining courses.

With a track record built over the last 25 years, DriveTech now delivers fleet consultancy, driver assessment and training services in over 95 countries, in 35 languages through over 40 partners.

Our fleet solutions improve driver safety, reduce fleet running costs and ensure compliance with legal and duty of care responsibilities. Our customers range from companies with small fleets through to large corporate customers where driver training is a core activity, an understanding of their sector required and a clear return on investment is demanded.

DriveTech is part of the Automobile Association.

About Dr Lisa Dorn & Driver Metrics

Dr Lisa Dorn is an Associate Professor of Driver Behaviour at Cranfield University and Research Director for DriverMetrics. Lisa has conducted research on driver behaviour for over 30 years and has won more than £2.5 million in research revenues as Principal Investigator. She has worked on a range of EU, EPSRC, ESRC and consultancy projects particularly focusing on behavioural interventions to reduce the risk of crash involvement for vulnerable road users. Currently, Lisa is Principal Investigator on a Horizon 2020 Framework Programme for Research and Innovation funded by the European Commission called MeBeSafe (Measures for Behaving Safely in Traffic) to develop in-vehicle and infrastructure nudges towards safer road use.

DriverMetrics was established by Dr Dorn at Cranfield University in 2005, to make scientific research into employee driver safety more widely available. Today, its portfolio of scientifically validated driver risk assessments, together with integrated eLearning and driver coaching interventions are used worldwide by hundreds of organisations including Unilever, Greyhound Bus, Shell and the emergency services.

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