Recommendations

for the

Statement of Safety Principles

for

Automated Vehicles

National Motorcyclists Council

British Motorcyclists Federation

Version 2.0 July 2025

BMF and NMC position on safety principles for automated vehicles

The proportion of new vehicles fitted with systems which automate parts of the driving task is growing steadily but there is virtually no regulation applied to such systems. It is generally assumed that such automation will make driving safer but there is currently no system or process to ensure that this is so. There is, however, evidence that automated driving can injure and kill other road users, even when it is used correctly[1]. As more and more of the driving task can be automated it is essential that regulation is put in place.

The BMF and NMC cannot support the introduction of automated vehicles on UK roads unless it is clear that such vehicles will not increase risk to any other road user, especially vulnerable road users. In particular, any automated vehicle must always be capable of correctly identifying and responding to motorcycles, whose riders regularly change lanes and position on the road whilst completing overtaking and filtering manoeuvres, and automated vehicles must also be able to detect low-impact collisions on any part of the vehicle.

The Automated Vehicles Act is primarily a framework Act. It requires the Secretary of State for Transport to develop a Statement of Safety Principles which will be specifically designed to assess whether a vehicle is capable of travelling autonomously and safely.

The BMF/NMC have considered what principles should be applied to validating the use of automated driving, particularly on public roads, to ensure that no third party should be put at additional risk by the use of an automated system. These principles are laid out below. Ultimately vehicle to vehicle communication (V2V) and vehicle to infrastructure (V2I) communication may simplify automated tasks but automated systems are being introduced already so they must be able to function in traffic environments which include vehicles with neither automation nor connectivity.

Some will say 'it's all fine, put automated systems on the road, we can improve them as we go along'. It is NOT acceptable for manufacturers to use public roads as a test environment[2].

A system of regulation which ensures the safety, not just of the occupants of an automated vehicle but of all other road users who may be encountered, will encourage acceptance of automated vehicles by the general public.

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[1] See Appendix.

[2] 'Small-scale trials' on public roads are apparently proposed for driverless taxis in 2026. It is not clear what testing may be done beforehand or whether there will initially be a human safety driver.67890

Recommendations for the Statement of Safety Principles

The recommendations in this document must be applied to all Automated Driving Systems (ADS) and also all Advanced Driver Assistance Systems (ADAS); these terms are used in this document according to the definitions in the British Standards Institute (BSI) document "Connected and automated mobility – VocabularyApril 2023 Version 5BSI"[3]. All levels of ADS must be covered, up to and including driverless vehicles.

Operational Design Domains (ODD) are not always formally specified, particularly for an ADAS, but in practice every ADS and ADAS has an ODD or multiple ODDs.

1. The UK must identify a body, new or already existing, which will be responsible for certifying any ADS or ADAS for use on the road and thus approving its use in appropriate vehicles. This may be part of the Type Approval process. No vehicle should have an ADS or ADAS installed which is not so certified for use in that vehicle.

2. An ADS or ADAS system must be cyber-secure by design at all times, including during installation and upgrades[4].

3. All responsibility for any traffic incident that occurs while an ADS is controlling a vehicle lies with those responsible for the design, implementation and installation of the ADS and those responsible must be insured appropriately.

Strictly speaking the human driver is solely responsible for any incident that occurs while an ADAS is in use but vehicle manufacturers ought to be held partially responsible if the system does not function as it should.

4. Any ADS or ADAS must have fully specified functionality. Besides detailing the part(s) of the driving task it is intended to perform this must include specification of the Operational Design Domain(s) (ODD) in which it will operate. ODD requirements may include connectivity, infrastructure features (real world and/or digital) and geo-location functionality. All these must have minimum required standards/performance specified.

In software engineering it is recognised that well specified functionality enables thorough testing. How the functionality is implemented, i.e. whether the software is implemented by programming or machine learning, or what type of sensors are used for input, is irrelevant; if the functionality is specified it can be tested.

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[3] https://www.bsigroup.com/globalassets/localfiles/aaa/bsi_flex_1890_v5.pdf

[4] It is likely that installation or upgrade of an ADS or ADAS will be performed using connectivity to online sources. However alternative means may be required, especially if a vehicle is in a place without good connectivity and the system change is an essential safety upgrade.

5. An ADS or ADAS will be reliant on a variety of sensors and other inputs to provide awareness of its environment; there must be specification of the minimum requirements in hardware/firmware which enable the system to operate safely and the system must be able to self-test to ensure all functionality is available before it will operate.

6. It is also essential to test what it should not be doing; for example, if an ADS or ADAS is intended to operate in an ODD with certain characteristics it must also be shown that it will not operate outside that ODD. (The exception[5] here will be the Minimal Risk Manouevre (MRM) necessary, where applicable, if the human driver fails to take over when required.) It must also be shown that the ADS or ADAS will not operate if the minimum requirements in hardware/firmware/connectivity are not fulfilled.

7. An ADS or ADAS must show that it will not cause additional risk to any other road user in its intended ODD. Correct identification of all other road users in the ODD is essential, even when they turn up in unexpected places. E.g. pedestrians should not normally be expected on a motorway but following a breakdown people may be on the hard shoulder and drivers have been known to cross a carriageway on foot. It is essential that an ADS or ADAS can notice anything moving on the road, including mobility scooters, e-scooters, less common vehicles such as a horse and carriage or a sidecar and novel vehicles, e.g. hand propelled bicycles and mono-cycles. No assumptions should be made about the speed of any vehicle.

Identification of animals must also be considered. Horse riders are vulnerable road users and must be treated appropriately. Running over dogs is unlikely to be acceptable anywhere. Being aware of moose is certainly desirable in Sweden if not in the UK but identification of deer is valuable in Richmond Park.

Correct identification of behaviour must also be considered; an early system resulted in a standoff between a bicycle and the automated car because the cyclist was stationary, balancing on the pedals, and the car could only recognise stationary if the cyclist had at least one foot on the ground.

8. Any ADS or ADAS must be equipped to identify any (high or low) collision impact anywhere on the vehicle. Currently collision impacts are only identified if hard deceleration is detected. Thus a low impact collision on the side of an ADS or ADAS operated vehicle, possibly caused by contact with a cyclist or motorcyclist, will not be detected although it could have serious consequences for the other road user; this is not acceptable.

[5] According to the BSI terminology the MRM is applied only within the ODD. It is not made clear what manoeuvre applies in the scenario where human intervention is required because the vehicle is moving out of the ODD.

9. It would be appropriate for the MOT to include checking the ADS and/or ADAS installed on a vehicle. Validation of any system should include:

- Is the software version certificated and valid for this vehicle?
- If the software version is valid has it been tampered with?
- Is the supporting hardware/firmware appropriate, in good condition and fully operational?

Given connectivity it might be possible to check the software remotely at any time, not just at the MOT, but offline checking must be possible.

10. Logging of ADS and ADAS performance is essential. It is particularly important that any transfer of responsibility between a system and the human driver are logged. Testing of the monitoring/logging system must be included in the ADS and ADAS testing.

11. Consideration must also be given to ADS and ADAS systems with respect to disabled drivers. For example, are the in-car interfaces appropriate for all types of disability, is the ADS or ADAS system able to park appropriately for a wheelchair user.

Appendix: a history of errors

1. In 2016 Rebekka Andersen was rammed by a Tesla driven by the system originally called AutoPilot while riding her bike on the E18 in Norway. She was seriously injured.

https://www.femamotorcycling.eu/norwegian-motorcyclist-tells-her-story-after-crash-with-tesla/

There are a number of reports of Tesla cars ramming motorcycles in the US, in some cases killing the riders. They seem to have a problem in correctly identifying motorcycles, particularly from the rear and at night.

2. In 2016 RDW (the Netherlands Vehicle Authority) published a report on adaptive cruise control. The research was triggered by requests from the Federation of European Motorcyclists Associations, and Dutch motorcyclists organisations MAG Netherlands and KNMV. The report showed that ACC systems did not always 'see' motorcyclists, particularly when the motorcycle is not riding in the centre of the lane

https://www.femamotorcycling.eu/acc-does-not-always-see-motorcyclists/

https://www.femamotorcycling.eu/wp-content/uploads/Final%20Report_motorcycle_ADAS_RDW.pdf

3. Automated Vehicles: Consultation Paper 3 from the Law Commission

Quote: "event data recorders only detect collisions involving a sharp deceleration. They may not be triggered by glancing blows or where the vehicle collides with something with a much lower mass (as where a car collides with a motorcycle or pedestrian)"

4. The UN/ECE regulation 157 concerning Automated Lane Keeping Systems originally included no requirement to correctly identify motorcycles. The regulation was updated in 2021 to include a requirement to correctly identify a motorcycle in specified areas around the vehicle. However there is no requirement to report collisions such as those described by the Law Commission, cf paragraph 3 in this appendix.