



Mobileye's Response to the Third Consultation Paper

1. Consultation Question 1

We provisionally propose that: (1) a vehicle should not be classified as self-driving if, with the ADS engaged, the user-in-charge needs to monitor the driving environment, the vehicle or the way it drives; (2) it is nevertheless compatible with self-driving to require the user-in-charge to respond to a clear and timely transition demand which: (a) cuts out any non-driving related screen use; (b) provides clear visual, audio and haptic signals; and (c) gives sufficient time to gain situational awareness; (3) to be classified as self-driving, the vehicle must be safe enough even if the human user does not intervene in response to any event except a clear and timely transition demand. Do you agree?

Mobileye's Answer

Mobileye's position is that autonomous vehicles by definition cannot rely on a human driver engaging in routine driving or intervening to avoid an accident.

Mobileye holds that a user-in-charge should not be engaged in the routine driving of the vehicle, and that the driver should not be expected to intervene in order to avoid accidents. Mobileye's position is that a user-in-charge could operate from outside the vehicle, for example within a control room once the vehicle has achieved a minimal risk condition. Further, even if located in the vehicle, the user-in-charge should engage only after the vehicle has reached a minimal risk condition. The user-in-charge should not be expected to monitor regular driving activity nor to be receptive to a transition demand. In both scenarios the AV is dependent on the intervention of the user-in-charge and this dependency entails risks of personal injury and damage to property.

Lastly, Mobileye would like to note that the development of an AV that is capable of reaching a minimal risk condition by itself is in reach. Thus, insisting on an AV that is capable of such will promote the integration of AV while not compromising on safety.



2. Consultation Question 2

We welcome views on whether self-driving features should be designed to ensure that they can be used by people with hearing loss.

Mobileye's Answer

Mobileye holds that the integration of autonomous vehicles has the potential of bringing about many significant benefits to people with disabilities, mainly by enhancing mobility. Mobileye supports all efforts intended to make self-driving systems accessible to all.

3. Consultation question 4

We provisionally propose that the decision whether a vehicle is sufficiently safe to “safely drive itself” should be made by the Secretary of State, as informed by advice from a specialist regulator. Do you agree?

Mobileye's Answer

Mobileye holds it essential that universal acceptable set of safety principles will be defined pre-deployment by the regulator. Mobileye believes that the regulator should specify in advance the values for the reasonable worst-case assumptions used by the ADSEs and then inspect and assess whether vehicles meet the designated level of safety.

4. Consultation question 5

We welcome observations on which of the following standards is most appropriate when assessing the safety of automated vehicles: (a) as safe as a competent and careful human driver; (b) as safe as a human driver who does not cause a fault accident; (c) overall, safer than the average human driver.

Mobileye's Answer

Mobileye's position is that the standard mentioned in C is the most appropriate standard. Evidence shows that the average for a human driver to be involved in an accident is once



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every 50,000 hours of driving. Mobileye believes that a good and realistic goal for an AV, is to be achieve a better average than a human driver.

Mobileye would like to take advantage of this opportunity to present its unique safety methodology and demonstrate how it can support and ensure such high standard of safety.

Mobileye's safety methodology addresses the two critical components in the engineering process of every AV: the perception system and the driving policy.

The perception system is in charge of how the ADS detects and categorizes the environment and other road users. The driving policy entails clear and explicit rules for the AV to follow once it has a good understanding of its surrounding.

When it comes to the safety of an AV, a failure in either the perception system or the driving policy might lead to an accident. Since perception failures and driving policy failures are different, each needs to be treated differently.

There are two main differences in the characteristics of the perception system and the driving policy:

A clear notion of "error": with regard to the perception system there is a clear ground truth and therefore a rather clear definition of "error". For example, if there is a car in front of the AV and the perception system fails to recognize it, it is a clear fact that the perception system failed. Therefore, it is easy to measure the performance of the perception system by calculating how often it makes an error. On the other hand, the driving policy is not factual, and thus there is no clear definition of "error" as it is open for interpretation or judgment of the situation. For example two humans can have different answers on whether it is safe to take the right of way in a certain situation.

The relation between being safer to being better: With regards to the perception system, there is a clear monotonic relation between "safer AV" and "better AV". That is, the fewer perception mistakes the system will make, the "safer" and "better" the AV will be. On the other hand, for driving policy, being "safer" does not always means being "better". The reason for this is that as a society, we balance safety and efficiency, by determining what is to be considered a "reasonable risk" we are willing to take.

Consequently, regulating the safety of AV requires to address these unique characteristics of both the perception system and the driving policy.



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First, there is a need to define what is considered to be a failure: as noted above for the perception system this is clear since there is a notion of "ground truth". For the driving policy, regulation must formally define the notion of "reasonable risk" and therefore set a balance between safety and efficiency.

Second, there is a need to define the acceptable Mean-Time-Between-Failure (MTBF). Once a clear notion of failure has been defined there is a need to decide what an acceptable frequency of failure is. A convenient way to define this is by using MTBF, which is the average time a system can operate without any failure. As mentioned above the MTBF as of human driver is about 50,000 hours and Mobileye believes that a good and realistic goal for an AV is to require a better than a human driver.

How does Mobileye address the safety of its AVs?

Mobileye separates the MTBF of the Perception system from the MTBF of the Driving Policy system. With regard to the perception system Mobileye's goal is to reach as high MTBF as possible. To do so Mobileye employs two principles for achieving high MTBF: (i) open-loop (offline) validation of perceptual components (like vehicle and pedestrian detection) allows to harness data collection of ADAS customer functions over billions of miles, and (ii) applying the principle of "redundancy" of having critical functions developed and activated through different and separate channels. In practical terms, Mobileye's perception system is broken down along sensor modalities: a camera-only subsystem and a Lidar/Radar subsystem. Creating subsystems along sensor modalities increases the "independence" in the sense that a probability of missing a critical object is the product of missing the object in each subsystem separately. In addition, within each subsystem Mobileye developed algorithmic redundancy where critical functions are developed using different algorithmic principles. For example, vehicle detection through pattern recognition (monocular) and through triangulation (multiple cameras). The redundancy approach serves two goals: (i) higher robustness of the design of the Perception system, and (ii) offline validation of critical functions are done separately for each sub-system at a much lower MTBF goal.

The MTBF goal of the Driving Policy system is to have zero events (MTBF at infinity). This is done, first and foremost, by removing the need for a "what would happen next" reasoning which inevitably requires to predict human behavior - a task Mobileye believes is unwieldy. Second, by creating a formal setting through which the spectrum of "safety" versus "usefulness" is defined and decided upon by regulatory bodies in each



AV deployment territory. Those two goals are achieved by Mobileye's RSS model. To avoid reasoning "what would happen next", RSS adopts the "worst case" scenario. Then, in order to have a "useful" driving policy (because "worst case" could lead to overly defensive driving) a framework of setting assumptions, in a parametric form, that define boundaries for keeping safe distances to other road users is established. RSS goes beyond a formal set of assumptions by providing "completeness" guarantees that following the definition of safe distances and "proper response" the RSS will be able to address all scenarios and accidents will never be caused by the AV agent (hence "zero events" of the Driving Policy system).

To conclude, according to Mobileye safety methodology the MTBF of the perception system will be the MTBF of the AV (since the MTBF of its driving policy will be zero). Mobileye holds that due to the unique principles that characterizes its perception system a very high MTBF is realistic, so AV can be much safer than the average human driver.

5. Consultation question 5

We welcome observations on how automated vehicles can be made as safe as reasonably practicable.

Mobileye's Answer

See our replay to question 4.

6. Consultation question 6

We welcome practical suggestions for how AV regulators can fulfil their public sector equality duty.

Mobileye's Answer

7. Consultation question 7

We provisionally propose that: (1) safety assessment should use a variety of techniques; (2) manufacturers/developers should submit a safety case to regulators showing why



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they believe that the automated driving system is safe; (3) regulators should: (a) provide guidelines for what is in the safety case; (b) audit the safety case; (c) prepare guidance for manufacturers and developers on preferred standards; and (d) carry out at least some independent tests. Do you agree?

Mobileye's Answer

As was mentioned in our previous response, Mobileye believes that decisions regarding the safety of AVs should be made by design and not left up to proprietary chance. Driving safely is always a balance of safety and usefulness, and what it means to drive safely is ultimately a cultural decision. Mobileye thus holds that industry, government and consumers must collaborate and decide pre-deployment what safe driving means for a machine. This should be done mainly in the context of the driving policy (RSS), but also in the context of the acceptable mistakes probability of the perception systems (MTBF) (see our response to question number 4). Proactive regulation is needed in order to clarify what is expected of the people involved and what legal risks they may be exposed to. Leaving these decisions to be made ex-post will create deep uncertainty and may prevent autonomous vehicles from entering the market.

Mobileye holds that the regulator should not only provide guidelines for what should be in a safety case and assess them, but rather set a clear standard of safety and make sure that each vehicle presented stands up to this standard. Further, Mobileye is a great supporter of transparency and believes it to be crucial for promoting safety. Thus Mobileye holds that even if standards are not set pre-deployment by the regulator, undisclosed AV decision-making processes should not be permitted.

As to the appropriate pre-deployment verification testing of automated vehicle, Mobileye holds that it should be performed in a five pronged approach: (i) a data-driven test of the probability of failure of the perception system of the vehicle; (ii) testing of the driving policy on a simulator, going over selected scenarios; (iii) a "driver test" as conducted today with a human driver, performed by the regulator or a third party along selected route in real traffic; (iv) testing specific scenarios on a test track (for example, scenarios that require evasive maneuvers, and emergency braking); (v) formal verification of a Safety by Design that has been approved by the regulator (RSS as a candidate).



8. Consultation Question 8

We seek views on whether an approval authority that intends to use a scenario database as part of the testing procedure should consult road user groups on the range of scenarios to be included.

Mobileye's Answer

Mobileye would like to point out that it is of great importance that the scenarios utilized should be selected and designed to test the boundaries of the safety model as represented by the values set for the parameters. It should not be that there are approved scenarios that themselves violate what is reasonable foreseeable.

9. Consultation Question 9

We provisionally propose that: (1) unauthorised automated driving systems should be prohibited; and (2) this should be subject to an exemption procedure by which the Secretary of State may authorise unauthorised systems to be used in tests and trials. Do you agree?

Mobileye's Answer

Yes (see our response to question 8(2) in the first Consultation Paper).

10. Consultation Question 10

We provisionally propose that: (1) the Government should establish a domestic scheme to approve automated driving systems (ADSs) for use on roads in Great Britain (a "national ADS approval scheme"); (2) manufacturers should have a free choice to apply for approval under either the UNECE system of international type approvals or through the national scheme; (3) developers should be able to submit an ADS for national approval, even if they are not responsible for manufacturing the whole vehicle. Do you agree?

Mobileye's Answer

Mobileye strongly supports international standards and believe they are important for the integration of AVs. However until standards are decided on the international level



Mobileye supports the establishing of a national ADS approval scheme. Further, Mobileye agrees that manufacturers should have a free choice to apply for approval under either the international level or the national level.

11. Consultation Question 11

We provisionally propose that: (1) an ADS approval scheme should be established through regulation under the Road Traffic Act 1988, without further legislative reform; (2) an ADS should be defined as a combination of software, hardware and sensors, which can be installed in a “type” of vehicle; (3) when an ADS is approved, the approval should be accompanied by specifications for: 307 (a) the type of vehicle in which it can be installed; and (b) how the ADS is installed within the vehicle; (4) where an ADS is installed in a pre-registered vehicle, an example vehicle should be submitted to the regulator for approval of the installation. Do you agree?

Mobileye's Answer

As to (1): Mobileye holds that when regulating an innovative field such as AVs, flexible regulation is appropriate. Thus, at least in the preliminary stage, Mobileye supports the use of secondary legislation or administrative directives, rather than primary legislation.

As to (2) + (3)+(4): Yes.

12. Consultation Question 12

We invite observations on the appeal process in regulation 19 of the Road Vehicles (Approval) Regulations 2020, including: (1) how it works in practice; and (2) how well it is suited to the proposed national ADS approval scheme.

Mobileye's Answer

Mobileye supports an appeal procedure for the type approval decision.



13. Consultation Question 13

We provisionally propose that: (1) once an ADS has received type approval at either international or domestic level, an Automated Driving System Entity (ADSE) would need to submit the vehicle to the UK safety regulator for categorisation as able to safely drive itself; (2) the safety regulator should make a recommendation to the Secretary of State for how the vehicle should be classified; (3) it should be open to the safety regulator to recommend that an ADS-enabled vehicle is classified in one of three ways: as not self-driving but driver assistance; as self-driving only with a user-in-charge; or as self-driving without a user-in-charge; (4) the safety regulator should only recommend classification as self-driving (either with or without a user-in-charge) if it is satisfied that: (a) an ADSE is registered as taking responsibility for the system; (b) the ADSE was closely involved in assessing safety and creating the safety case; and (c) the ADSE has sufficient funds accessible to the regulator to respond to improvement notices, to pay fines and to organise a recall. **Do you agree?**

Mobileye's Answer

As to (1)-(3): Yes. Mobileye agrees that internationally approved systems that are clearly "self-driving" should not face a "double" approval process. The categorization process must not replicate checks that have already been carried out in the international level.

As to (4): Mobileye agrees that the ADSE should be registered as taking responsibility for the system, that it should be closely involved in assessing the safety of the AVs and creating the safety case, and that it should have sufficient and accessible funds.

14. Consultation Question 14

We provisionally propose that a new legislative framework should provide regulationmaking powers to specify: (a) who should assess whether a vehicle is capable of self-driving; (b) the procedure for doing so; and (c) criteria for doing so. Do you agree?

Mobileye's Answer

Yes.



15. Consultation Question 15

We seek views on whether the new legislation should include provisions for appeals against a categorisation decision. If so, should these be similar to those in regulation 19 of the Road Vehicles (Approval) Regulations 2020.

Mobileye's Answer

Yes.

16. Consultation Question 16

We seek views on whether the regulator that classifies vehicles as self-driving should have power to allow their deployment in limited numbers, so as to gather further data on their safety in real world conditions.

Mobileye's Answer

Mobileye holds that if its position regarding the pre-deployment adoption of minimum safety performance requirements will be accepted, then limited deployment is unnecessary.

However, Mobileye supports granting the power to limit the numbers of vehicles being deployed. Mobileye holds that this power should be granted for a limited period of time, so not to unjustifiably delay the valuable benefits resulting from commercial deployment of AVs.

17. Consultation Question 17

We provisionally propose that legislation should establish a scheme to assure the safety of automated driving systems following deployment, giving scheme regulators enhanced responsibilities and powers. Do you agree?

Mobileye's Answer

Yes.



18. Consultation Question 18

We provisionally propose that the enhanced scheme should give regulators the following responsibilities and powers: (1) scheme regulators should be responsible for comparing the safety of automated and conventional vehicles using a range of measures; (2) to do this the regulator should have power to collect information on: (a) leading measures (instances of bad driving which could have led to harm) and (b) lagging measures (outcomes which led to actual harm); (3) regulators should have power to require an ADSE: (a) to update software where an update is needed to ensure safety and continued compliance with the law; (b) to keep maps up-to-date, where an AV relies on maps to ensure safety and compliance with the law; (c) to communicate information about an ADS to users in a clear and effective way, including where necessary through training. Do you agree?

Mobileye's Answer

Yes.

19. Consultation Question 19

We welcome views on the following issues: (1) should scheme regulators be empowered to approve software updates that apply only within the UK, without requiring the manufacturer to return to the original type approval authority? (2) Should the scheme should also deal with cybersecurity? (3) Are other powers needed? (Note that data is discussed in Chapter 17).

Mobileye's Answer

20. Consultation Question 20

Should the authority administering the scheme to assure safety while automated vehicles are in use be kept separate from type approval authorities (as is already the case)? Alternatively, should both functions be combined in a single body?

Mobileye's Answer



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21. Consultation Question 21

What formal mechanisms could be used to ensure that the regulator administering the scheme is open to external views (such as duties to consult or an advisory committee)?

Mobileye's Answer

22. Consultation Question 22

We provisionally propose that a statutory scheme to assure AVs in-use should: 309 (1) investigate safety-related traffic infractions (such as exceeding the speed limit; running red lights; or careless or dangerous driving); (2) investigate other traffic infractions, including those subject to penalty charge notices; (3) if fault lies with the ADSE, apply a flexible range of regulatory sanctions. **Do you agree?**

Mobileye's Answer

Mobileye supports the Law Commission's position regarding the need to conduct investigation of traffic infraction. Further Mobileye supports the Law Commission's position regarding the shift needed from criminal to regulatory sanctions, and agrees that if fault lies with the ADSE, a flexible range of regulatory (non-criminal) sanctions should be considered. At the same time, in Mobileye's opinion, a statutory amendment should clarify that no prosecutions for criminal offences would be brought against ADS manufacturers in the event of an accident, where the ADS acted within the limits of the reasonable risk delineated by the state regulator both in the context of the driving policy, and in the context of the acceptable mistakes probability of the perception systems (MTBF) (see in further details our preface to the criminal liability section).

In addition the ADSEs should be under a continuing duty to ensure that the ADS acts safely and in compliance with the law. But, in some cases, considering the novel nature of AVs, even if fault lies with the ADSE, Mobileye holds that the ADSE should not be exposed to regulatory sanctions or at least not the severe ones. For example, applying sanctions may not be appropriate in the event that the AV breaches traffic rules in a way



that one couldn't predict in advance. The novelty of the technology demands a flexible approach, shaped in accordance with experience gained over time.

23. Consultation Question 23

We provisionally propose that the regulator which assures the safety of AVs in-use should have powers to impose the following sanctions on ADSEs: (1) informal and formal warnings; (2) fines; (3) redress orders; (4) compliance orders; (5) suspension of authorisation; (6) withdrawal of authorisation; and (7) recommendation of attendance at a restorative conference. Do you agree?

Mobileye's Answer

Mobileye agrees that a flexible range of regulatory (non-criminal) sanctions should be considered and holds that a system of gradually increasing regulatory sanctions (sanctions scale), starting from informal warnings, through to withdrawal of authorization, is desirable. However, Mobileye has certain reservations regarding consumer redress orders, since these could cause double indemnity in situations where consumers have a legal claim which they bring to court.

24. Consultation Question 24

We provisionally propose that the legislation should provide the regulator with discretion over: (1) the amount of any monetary penalty; and (2) the steps which should be taken to prevent re-occurrence of a breach. Do you agree?

Mobileye's Answer

Innovative regulation requires flexibility and considerable discretion from the regulator. However, given the many uncertainties in deploying automated vehicles, alongside the meaningful benefits AVs will generate, Mobileye believes that legislation must provide a maximum caps (level of fines) for monetary penalties and state that suspension or withdrawal of authorization should be imposed only in grave circumstances and severe cases.



25. Consultation Question 25

We provisionally propose that a specialist incident investigation unit should be established: (1) to analyse data on collisions involving automated vehicles; (2) to investigate the most serious, complex or high-profile collisions; and (3) to make recommendations to improve safety without allocating blame. Do you agree?

Mobileye's Answer

Yes.

26. Consultation Question 26

We provisionally propose that the UK Government should establish a forum for collaboration on the application of road rules to self-driving vehicles. Do you agree?

Mobileye's Answer

A dialogue between developers and regulators regarding the application of road rules to self-driving vehicles is desirable. However, eventually, it is the concern of the state, in accordance with its priorities, to determine principles and precise rules for ADSEs to follow. In Mobileye's opinion, creating a digital code for this purpose is possible and desirable, and Mobileye's RSS could serve as a basis for such code. As mentioned above in our reply to question 4, Mobileye's RSS was developed in a way that guarantees that no accidents will be caused by the AV agent.

The RSS does so by adopting the "worst case" scenarios, and then, in order to have a "useful" driving policy (because "worst case" could lead to overly defensive driving) by establishing a framework of setting assumptions, in a parametric form, that define boundaries for keeping safe distances to other road users.

What is unique about the RSS, is that it goes beyond a formal set of assumptions and it provides "completeness", guarantying that following the definition of safe distances and "proper response" the RSS will be able to address all scenarios.

Mobileye is aware that the Law Commission's current stand is that a digital highway code that sets precise rules for every instance is not possible (paragraph 11.77 to the Third Consultation Paper). However, after years of research and testing Mobileye stand behind its position that the RSS can do just that. Mobileye invites the Law Commission to



continue this dialogue with Mobileye and to grant Mobileye the opportunity to demonstrate the RSS's feasibility.

Lastly, Mobileye would like to stress the importance of programming AVs so they will be allowed to depart from road rules when it is safe and in order avoid collisions. In the case of human drivers, when discretion is examined ex-post, it is clear than many times departing from road rules is found to be necessary. With AV there is no option other than defining these scenarios ex-ante. The task of doing so might be complicated, but it is not something that can be neglected or postpone. Blind obedience to rules is not safe, and thus this issue must addressed pre-deployment.

27. Consultation Question 27

We welcome views on: (1) the issues the forum should consider; (2) the composition of the forum; and (3) its processes for public engagement.

Mobileye's Answer

28. Consultation Question 28

We provisionally propose that that the user-in-charge: (1) should be defined as an individual in position to operate the controls of a vehicle while an ADS is engaged and who is either in the vehicle or in direct sight of the vehicle; and (2) is not a driver while the ADS is engaged, and would not be liable for any criminal offence or civil penalty (such as a parking ticket) which arises out of dynamic driving. Do you agree?

Mobileye's Answer

Yes. However, it should be made clear that the user-in-charge should be required to intervene only after the vehicle has reached a minimal risk condition.



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29. Consultation Question 29

We provisionally propose that following the end of the transition demand period: (1) the user-in-charge should re-acquire the legal obligations of a driver, whether or not they have taken control of the vehicle; and (2) if, following a failure to respond to a transition demand, the vehicle stops in a manner which constitutes a criminal offence, the user-in-charge should be considered a driver and should therefore be liable for that offence. Do you agree?

Mobileye's Answer

No. As mentioned in our reply to question 1 and 28, Mobileye does not support the proposition of requiring the driver to respond to a transition demand before the vehicle has reached a minimal risk condition.

30. Consultation Question 30

We seek views on whether a person with a provisional license should be allowed to act as a user-in-charge, if accompanied by an approved driving instructor in a vehicle with dual controls.

Mobileye's Answer

31. Consultation Question 31

We provisionally propose that legislation should create new offences of: (1) using an automated vehicle as an unfit or unqualified user-in-charge; and (2) causing or permitting the use of an automated vehicle by an unfit or unqualified user-in-charge. Do you agree?

Mobileye's Answer



32. Consultation Question 32

We provisionally propose that persons carried without a user-in-charge should be guilty of a criminal offence. Do you agree?

Mobileye's Answer

33. Consultation Question 33

We seek views on whether the new proposed offence of being carried without a user-in-charge should only apply if the person: (1) knew that the vehicle did not have a user-in-charge; and (2) knew or ought to have known that a user-in-charge was required.

Mobileye's Answer

34. Consultation Question 34

We provisionally propose that a user-in-charge who takes over control of the vehicle: (1) should be considered a driver; but (2) should have a specific defence to a criminal offence if, given the actions of the ADS, a competent and careful driver could not have avoided the offence. Do you agree? If not, we welcome views on alternative legal tests.

Mobileye's Answer

Yes. However Mobileye would like to refer to its reply to question 1, and stress again the importance of not requiring a user-in-charge to respond to a transition demand before the vehicle reaches a minimal risk condition.

35. Consultation Question 35

We provisionally propose that the user-in-charge should be liable for criminal offences which do not arise from the dynamic driving task, including those related to: (1) insurance; (2) maintaining the vehicle in a roadworthy condition (including installing safety critical software updates); (3) parking; (4) duties following accidents to provide



information and report accidents to the police; and (5) ensuring child passengers wear seatbelts. Do you agree?

Mobileye's Answer

Yes.

36. Consultation Question 36

We provisionally propose that the legislation should include a regulation-making power to clarify those roadworthiness failings which are (and those which are not) the responsibility of the user-in-charge. Do you agree?

Mobileye's Answer

Mobileye holds that when regulating an innovative field such as AVs flexible regulation is appropriate. Thus, Mobileye supports including regulation-making power in this context.

37. Consultation Question 37

We provisionally propose that: (1) where an individual is exercising latitudinal and longitudinal control (steering and braking) over a vehicle remotely, that should not be regarded as a form of "self-driving"; and (2) where lateral and longitudinal control are exercised by an ADS, all other forms of remote operation should be regulated as "self-driving". Do you agree?

We welcome views on whether the current definition of when a vehicle "drives itself" under the Automated and Electric Vehicles Act 2018 should be amended to deal with some forms of remote operation which may involve a degree of "monitoring".

Mobileye's Answer

Mobileye's position is that autonomous vehicles by definition cannot rely on a human driver engaging in routine driving or intervening to avoid an accident. Thus Mobileye agrees with the proposition that where an individual is exercising latitudinal and longitudinal control over a vehicle that vehicle should not be regarded as "self-driving". This is true whether the individual exercising control is seated in the vehicle or in a



control room. Mobileye's position is that when it comes to autonomous vehicles the control room will not drive the vehicle and will not monitor regular driving activity. Requiring a control room with supervisory responsibilities on the driving act itself would de facto create a human-remote-controlled vehicle, not an autonomous vehicle. Further, from a financial point of view, requiring a control room with supervisory responsibilities will put the entire AV enterprise at risk, as it goes against its financial model.

Mobileye supports any amendment that will clarify the above division of responsibilities.

38. Consultation Question 38

We provisionally propose that: (4) the regulation of self-driving vehicles should distinguish between an Automated Driving System Entity (which vouches for the design of the system) and an operator (responsible for the operation of individual vehicles); (5) all vehicles authorised for use on roads or other public places with no user-in-charge should either: (a) be operated by a licensed operator; or (b) be covered by a contract with a licensed operator for supervision and maintenance services; (6) it should be a criminal offence to use a NUIC vehicle on a road or other public place unless it is operated by a licensed operator or is covered by a contract with a licensed operator for supervision and maintenance services. Do you agree?

Mobileye's Answer

Yes.

39. Consultation Question 39

We welcome views on whether NUIC operators should be required to demonstrate professional competence through a safety management system, as set out in a safety case.

Mobileye's Answer

Yes.



40. Consultation Question 40

We provisionally propose that, irrespective of the nature of the vehicle, a licensed operator should be under a duty to: (1) supervise the vehicle; (2) maintain the vehicle; (3) insure the vehicle; (4) install safety-critical updates and maintain cybersecurity; and (5) report accidents and untoward events (as defined by the regulator). Do you agree?

Mobileye's Answer

When the vehicles are not used for passenger service or for goods delivery service, but rather for private purposes, the duties to maintain and insure should not be imposed on the operator, but rather on the private individual owning the vehicle.

When a NUIC is owned by a private individual that individual should be responsible for insuring the vehicle and for the conventional maintenance duties such as a tyre tread and working lights. When it comes to maintenance, the operator should only be responsible for issues that require special understanding and technical skills, such as installing software updates and maintaining cyber security. There is no justification to require NUIC operator to perform conventional duties that can easily be performed by the owner. Further for the integration of AV's it is very important to make the experience of privately owning an AV similar to the experience of privately owning any other vehicle.

41. Consultation Question 41

We provisionally propose that legislation should include a regulation-making power by which some or all of these duties could be transferred to the registered keeper or owner, if it was shown that it was appropriate to do so. Do you agree?

Mobileye's Answer

See our reply to question number 40. Mobileye holds that many of the duties mentioned should initially be the responsibility of the owner or registered keeper.

42. Consultation Question 42

We welcome views on how accessibility standards for Highly Automated Road Passenger Services (HARPS) might be developed.



We provisionally propose that: (1) an accessibility advisory panel should be formed to include: (a) the Equalities and Human Rights Commission; and (b) representative groups for disabled and older persons; (2) the Secretary of State should be obliged to consult with the accessibility advisory panel prior to setting any national minimum standards on HARPS; (3) there should be a duty to periodically re-consult the accessibility advisory panel at set intervals to ensure requirements keep pace with developing evidence of technical feasibility and changing needs. Do you agree?

We welcome views on what the set interval for periodically re-consulting the accessibility advisory panel should be.

Mobileye's Answer

As mentioned above in our reply to question 2, Mobileye holds that the integration of fully autonomous vehicles has the potential of bringing about many significant benefits to people with disabilities, mainly by enhancing mobility. Therefore Mobileye supports all efforts intended to make self-driving systems accessible to all.

43. Consultation Question 43

We welcome views on who should administer the operator licensing scheme.

Mobileye's Answer

The importance of pre-defined safety rules and the liability regime

The existing traffic regulation is built around the assumption of a human driver. As a result, regulation (including liability regime) is focused on human incentives and on ex-post examination of human discretion.

The fundamental assumption of a human driver dissipates when it comes to the design of regulation for ADS. The goal of influencing human incentives is no longer relevant, and there is no discretion in real time and no ad-hock intuition. The fundamental features of the ADS require a transition in the character of traffic regulation since what was once defined ex-post is now required to be defined ex-ante.



As noted in our answer to question 4, when it comes to the safety of an AV two main features are of interest:

1. The perception system: In order to operate safely, AVs must understand the surrounding environment and thus they are embedded with a perception system. The perception system is in charge of how the ADS detects and categorizes the environment and other road users.
2. The driving policy: AVs are also embedded with a driving policy so once the AV has a good understanding of its surrounding it can have clear and explicit rules to follow.

Mobileye holds that the regulator should address both safety features pre-deployment: both should be part of the safety case presented to the regulator by the manufacturers, and both should be inspected and assessed by the regulator pre-deployment.

As noted above in our answer to question number 4, With regard to the perception system, since there is a clear notion of error, the regulator should define the minimum required MTBF. This should be performed based on how better than a human driver the regulator requires AVs to be. With regard to the driving policy there is no clear notion of error and how to drive is always a balance between safety and utility. Thus, the regulator should define what is considered to be a reasonable or an acceptable risk for an AV.

Mobileye believes that it is of great importance that the regulator should be involved in determining both minimum MTBF of the perception system the reasonable risk for the driving policy and the.

First, with regard both to perception system and the driving policy and the, defining what is acceptable in advance is necessary in order to define the liability of the ADSE, which operate in an area where risk is inherent.

In the case of AVs, a small group of ADS developers and manufacturers effectively replace the human driver in multiple autonomous vehicles operating on the road. Employing criminal sanctions and imposing unlimited civil liability on this small group of entities for all car crashes, exposes them to intolerably high legal risks. Developers and manufacturers having to face such risk will have to either cease their activity – which



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will delay the many benefits AVs entail – or minimize risks at the expense of efficiency (i.e. prefer inefficiency to taking risks), making AVs unattractive to the public. It should be noted, that irresponsible manufacturers and operators will tend to take the risk, and if this happens, the number of crashes involving unsafe autonomous vehicles will increase, even while the number of crashes involving responsible ADS developers is much lower than humans, and may trigger a crackdown manifested in sweeping bans for the entire industry, loss of public trust, and a dire blow to the public interest in this field.

In other words, not defining in advance what constitutes safety, is tantamount to accepting the worst level of safety from the most unsafe AV on the road, as that lowest common denominator is what will define AV safety in the public sphere.

When the safety rules are determined pre-deployment the regulator is able to safely create a liability regime that gives clarity to the market players regarding the legal risks they are faced with. Mobileye holds that such liability regime will not find ADSE liable for risk that was deemed reasonable by the regulator pre-deployment, just as human drivers who were "driving safely" do not bear criminal risk for the "unsafe" actions of others that led to a crash.

In the context of criminal liability, this means clarifying that no criminal sanctions would be employed against ADS manufacturers in case of a crash, if the ADS acted within the limits of the reasonable risk set by the state. In the context of civil liability this means creating a liability consisting of (1) full compulsory insurance for bodily injury (and preferably property damage as well) caused by the crash; (2) no-fault civil liability (a.k.a. strict liability); (3) a maximum cap for this liability; and (4) exclusivity clause that prevents additional claims of any cause of action or subrogation of claims against the ADS manufacturer.

Lastly, and with regard to the driving policy alone, defining a reasonable risk and determining how to respond to scenarios involving balancing traffic flow and utility, is foremost the concern of the state in accordance with its priorities. The state also sets speed limits on the roads, which itself is a value that represents the reasonable risk balanced with utility. Driving safely is always a balance of safety and usefulness, and finding the correct balance is a matter of values and society. Delegating this decision to individual ADS developers does not seem appropriate, nor would it produce a consistent result for the state with wildly differing levels of safety between different AVs.



Pre-establishing and pre-approving the autonomous vehicle driving policy, setting the minimum MTBF of the perception system, and tailoring liability accordingly, will create great certainty in this novel field of autonomous vehicles.

44. Consultation Question 44

We provisionally propose that: (1) it should be a criminal offence for an ADSE to omit safety-relevant information or include misleading information when putting a vehicle forward for classification as self-driving or responding to information requests from the regulator; 313 (2) the offence should apply to senior managers (where it was attributable to the manager's consent, connivance or neglect); (3) the offence should not apply to more junior employees; (4) the offence should carry a higher sentence if it is associated with a death or serious injury; (5) the offence should be prosecuted in England and Wales by either the regulator or the Crown Prosecution Service and in Scotland by the Procurator Fiscal. Do you agree?

Mobileye's Answer

Mobileye believes it is crucial for the safe implementation of AVs that ADSE will supply all relevant information accurately. Thus, Mobileye strongly supports making the submission of false information and the omission of safety-relevant information to the regulator a criminal offence. Mobileye would like to suggest a few clarifications regarding the following propositions:

(1) Mobileye holds that the "safety-relevant information" should be specified in detail: what exactly is the information that ADSE's failure to submit will result in criminal offence.

(2) Mobileye holds that when it comes to neglect, it is important to clearly define in advanced what reasonable precautions and due diligence are expected from senior management in this context. The reason for this is to minimize the uncertainty for the companies involved and prevent over deterrence.

(3) With regard to the exception of junior employees, Mobileye holds that it should exclude cases of intent, in which case all level employees should be prosecuted evenly.



(4) Mobileye holds that the gravity of the offense should mainly depend upon the perpetrators “mens rea” (intent or mental state) and the nature of the information that was omitted, rather than the actual result of the offence.

45. Consultation Question 45

We seek views on the following proposed offences.

Offence A: non-disclosure and misleading information in the safety case.

When putting forward a vehicle for classification as self-driving, it would be a criminal offence for the ADSE to (1) fail to provide information to the regulator; or (2) provide information to the regulator that is false or misleading in a material particular where that information is relevant to the evaluation of the safety of the ADS or the vehicle. The ADSE would have a defence if it could show that it took reasonable precautions and exercised all due diligence to prevent the wrongdoing. The penalty would be an unlimited fine.

Offence B: non-disclosure and misleading information in responding to requests When a regulator requests.

specific information from an ADSE (whether before or after deployment), it would be a criminal offence for the ADSE to (1) fail to provide information to the regulator; or (2) provide information to the regulator that is false or misleading in a material particular where that information is relevant to the evaluation of the safety of the ADS or the vehicle. The ADSE would have a defence if it could show that it took reasonable precautions and exercised all due diligence to prevent the wrongdoing. The penalty would be an unlimited fine.

Offence C: offences by senior management.

Where offence A and/or offence B committed by a body corporate is proved— (3) to have been committed with the consent or connivance of an officer of the body corporate; or (4) to be attributable to neglect on the part of an officer of the body corporate, then that officer is guilty of the offence. 314 An officer includes any director, manager, secretary or other similar officer or any person who was purporting to act in any such capacity. We see this as equivalent to offences under the Human Medicines Regulations



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2012 and General Product Safety Regulations 2005, which carry a penalty of a fine and/or a maximum two years' imprisonment.

Offence D: aggravated offences in the event of death or serious injury following non-disclosure or provision of misleading information to the AV safety regulator.

Where a corporation or person commits Offences A to C, that offence is aggravated where the misrepresentation or non-disclosure: (5) related to an increased risk of a type of adverse incident; and (6) an adverse incident of that type occurred; and (7) the adverse incident caused a death or serious injury. We see this as equivalent to the offence of causing death by dangerous driving, which carries a penalty of an unlimited fine and/or a maximum of 14 years' imprisonment.

Mobileye's Answer

Mobileye has two reservations regarding the proposed offences.

First, the basic elements of the suggested offences should be dishonesty or serious wrongdoing made by any employee of the ADSE (not necessarily by senior managers) in order to establish a criminal offence.

Establishing offences A and B solely by strict liability creates extreme legal exposure for the ADSE, which is inconsistent with the guiding principles of dishonesty and wrongdoing that were suggested by the Law Commission, and also represents a significant deviation from criminal jurisprudence. Thus it is important that even in strict liability offences that apply to an ADSE, it will be necessary to show that an employee conducted some kind of wrong doing.

Second, Mobileye holds that it is important to clarify that the obligation included in the proposed offences applies only to existing data, or data that is within reasonable reach. The ADS technology is expected to evolve, and the tests ADSE may exert will improve accordingly.

Therefore, Mobileye holds that although ADSE should be obliged to present any new information, it should not influence the examination of previously provided information. For example, information submitted to the regulator will not be held insufficient or misleading retrospectively, even if later information contradicts the former, or changes the conclusion made with respect to it.



46. Consultation Question 46

We welcome views on whether an ADSE should be under a duty to present information in a clear and accessible form, in which safety-critical information is indexed and signposted.

Mobileye's Answer

Mobileye strongly believes that the regulator's ability to assess the information presented to it accurately is crucial, and that the way the information is presented can have a significant impact on its ability to do so.

Thus, Mobileye supports the creation of a form in which safety-critical information is indexed and signposted.

However, Mobileye does not necessarily support making the failure to structure, index or signpost information a criminal offence, and holds that regulatory actions are much more appropriate tools in this context.

In any case the specifics of the form should be discussed with the industry of ADSE and laid out in advance in a clear and detailed manner.

Generally, it should be noted that the RSS model that Mobileye has developed is consistent with the goals of avoiding "data-dumps" and accurately assessing the safety of the ADSs. The reason for this is that the RSS includes a transparent and easily explicable array of principles on the basis of which the ADS will operate (in contrast to "black-boxes" in decision-making processes).

47. Consultation Question 47

We provisionally propose that legislative amendment should clarify that the tampering offence in section 25 of the Road Traffic Act 1988 applies to anything that is physically part of a vehicle and any software installed within it. **Do you agree?**

Mobileye's Answer

Yes.



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48. Consultation Question 48

We welcome views on whether the tampering offence should apply to external infrastructure required for the operation of the AV.

Mobileye's Answer

49. Consultation Question 49

We provisionally propose that there should be an aggravated offence of wrongfully interfering with an AV, the road, or traffic equipment contrary to section 22A of the Road Traffic Act 1988, where the interference results in an AV causing death or serious injury, in: (1) England and Wales; and (2) Scotland. Do you agree?

Mobileye's Answer

50. Consultation Question 50

We provisionally propose that the appropriate mental element for the aggravated offence is intent to interfere with a vehicle, the road or traffic equipment. Do you agree?

Mobileye's Answer

51. Consultation Question 51

We seek views on whether an approved work defence for repair or maintenance operations authorised by a vehicle manufacturer or Automated Driving System Entity is desirable.

Mobileye's Answer



52. Consultation Question 52

We provisionally propose that the way the Automated and Electric Vehicles Act 2018 deals with contributory negligence and causation is: (1) adequate at this stage; and (2) should be reviewed by the UK Government in the light of practical experience. Do you agree?

Mobileye's Answer

Mobileye holds that the insurer should not be entitled to bring subrogation claims against ADSE within the Automated and Electric Vehicles Act 2018. As stipulated in Mobileye's introduction, Mobileye holds that ADSE exposure to civil liability should be restricted. Thus, any claim for compensation, made by those injured by self-driving vehicles, should be solely handled by the insurer.

53. Consultation Question 53

We provisionally propose that measures should be put in place to compensate the victims of accidents caused by uninsured AVs. Do you agree?

Mobileye's Answer

Yes.

54. Consultation Question 54

We provisionally propose that: (1) product liability law should be reviewed to take account of the challenges of emerging technologies; (2) any review should cover product liability as a whole, rather than be confined to automated vehicles; it should not, therefore, form part of this project on automated vehicles. Do you agree?

Mobileye's Answer

Mobileye holds that once the insurer is unable to bring subrogation claims against the ADSE, as explained in Mobileye's answer to question 52, the general issue of product liability becomes irrelevant in this regard.



55. Consultation Question 55

We provisionally propose that: (1) for a vehicle to be classified as self-driving, it needs to record the location as well as the time at which the ADS is activated and deactivated; (2) the Government should work within the UNECE to ensure data storage systems for automated driving record these data; and (3) any national system to approve an ADS should require these data to be collected, subject to safeguards. Do you agree?

Mobileye's Answer

The state and the industry both have a strong interest in investigating traffic violations and mishaps not only in order to find a human culprit but also, and mainly, to understand the origin of the mishap, to correct it, and to prevent its recurrence.

To facilitate the investigations and enhance their efficiency in view of the innovative nature of the technology, Mobileye supports a compulsory recording of location as well as the time of activation.

56. Consultation Question 56

We provisionally propose that legislation should impose a duty on those controlling AV data to disclose data to insurers, where the data is necessary to decide claims fairly and accurately. Do you agree?

Mobileye's Answer

Yes. Mobileye supports sharing of data in the described scenario. In Mobileye's position, in order to provide the ADSE a clear legal basis for sharing data, such legislation will have to clarify the exact type and scope of data the ADSEs would have to disclose.

57. Consultation Question 57

We provisionally propose that: (1) initially, DSSAD data from self-driving vehicles should be stored for three years; and (2) the issue should be reviewed in the light of experience. Do you agree?

Mobileye's Answer



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In view of the relatively long proposed period of time (three years), the scope of information gathered and the cost of retaining it over time, storing the data might place an exaggerated burden on those controlling it. Thus, Mobileye holds that regulator should specify the information that must be retained and the method to be used in retaining it. Mobileye's proposition is to focus on several minutes preceding a safety event.

58. Consultation Question 58

We provisionally propose that: (1) when an ADSE applies for categorisation of its vehicle types as self-driving, it should present the regulator with details on how data will be recorded, stored, accessed and protected; (2) the regulator should only categorise a system as self-driving if it is satisfied that that the ADSE has systems to abide by its obligations under the GDPR. Do you agree?

Mobileye's Answer

Yes.

Sincerely,

Mr. Elad Serfaty

Executive Vice President, Government Affairs & Data Products at Mobileye