ETSC RESPONSE TO

THE DRAFT DELEGATED ACT ON INTELLIGENT SPEED ASSISTANCE (ISA)

Updated Version – 23 September 2020

European Transport Safety Council

EXECUTIVE SUMMARY

ISA is one of the vehicle safety technologies included in the EU's new General Safety Regulation for motor vehicles (GSR) and will become mandatory for all new vehicles types as of 2022 and all new vehicles as of 2024.[1] The technical requirements for ISA are currently being prepared by the European Commission, who as part of that process have presented a draft delegated act.[2]

ETSC welcomes the draft delegated act, however, calls on the European Commission to incorporate the following changes, in order to ensure an effective system that is acceptable to drivers.

- **The cascading acoustic warning should be removed as a possible feedback mode for the speed limit warning function.** There is no research available that proves its effectiveness – a requirement in the GSR. Moreover, its inclusion would not be in line with the Better Regulation Agenda.
    - Studies have however repeatedly shown that advisory ISA systems, which such cascading acoustic warnings would be, are **not effective**.
    - A 2020 study on suitable human-machine interfaces (HMI) for ISA showed that acoustic warnings were regarded by drivers as **the most annoying HMI variant**.
    - A survey by ACEA, representing vehicle manufacturers, found that drivers would be **90% likely to switch off a system with acoustic warnings**.
- A **vibrating pedal should not be included** as a possible feedback mode for the haptic warning, as the previously mentioned study showed that it was not a suitable HMI for ISA.
- **Only two feedback modes should be allowed in the delegated act**:
    - the visual warning + haptic pedal (increasing the restoring force of the accelerator control) and
    - the visual warning + speed control function.
- **Switching off ISA systems should require a sequence of actions**, in order to make the difference with temporarily overriding the system clearer to drivers and to harmonise such requirements across the different ADAS systems.

[1] Regulation (EU) 2019/2144 of the European Parliament and of the Council of 27 November 2019 on type-approval requirements for motor vehicles and their trailers, and systems, components and separate technical units intended for such vehicles, as regards their general safety and the protection of vehicle occupants and vulnerable road users, https://bit.ly/2019GSR

[2] European Commission (2020), Draft Commission Delegated Regulation - Intelligent speed Assistance (v0.05) https://bit.ly/38YlDK8

- The **event-base performance requirement** for the reliable determination of the road speed limit should differentiate between the two types of signs and furthermore require higher performance:
    - For *explicit* speed limit signs: the correct speed limit should be determine for **≥99%** of sign passing events.
    - For *implicit* speed limit signs and *conditional* speed limits: the correct speed limit should be determine for **≥95%** of sign passing events.
- The **distance-based performance requirement** should also require higher performance, at **≥95%**, in line with the suggested event-based performance requirement for the implicit speed signs.

CONTENTS

1. THE MOST IMPORTANT DELEGATED ACT FOR IMPROVING ROAD SAFETY

22,660 people died on the European Union's roads in 2019.[3] Moreover, progress in reducing European road deaths has virtually halted since 2013, and the EU's target of halving the number of annual road deaths by 2020 is regrettably well out of reach. With only an average annual reduction in road deaths of 1% in the past 6 years, the EU and its Member States urgently need to implement effective measures in order to attain Vision Zero by 2050.

Speed is accountable for 30% of fatal collisions in the EU and is an aggravating factor in most collisions.[4] Speeding is a widespread problem throughout Europe, with observed car speeds above the legal limit in the EU on up to 75% of the urban roads, up to 63% on rural roads, and up to 59% on motorways. Data from countries that monitor levels of speed compliance by heavy goods vehicles (HGVs) on urban roads countrywide, show that between 17% and 64% of observed HGV speeds in free-flowing traffic are higher than the legal speed limit.[5]

Addressing speeding will therefore help to significantly improve road safety, and ISA plays a key role in this regard. This is why ETSC, together with other stakeholders, commended the European Commission for having included ISA in the GSR package.

However, in order to realise the safety potential of ISA, it is important that an effective and accepted system is required by the delegated act. ETSC therefore calls on the European Commission to incorporate the suggested changes in this document in order to ensure that the road safety potential of ISA can be realised.

[3] ETSC (2020), 14th PIN Annual Report, Ranking EU progress on road safety, https://bit.ly/3e5wanN
[4] ETSC (2019), Reducing Speeding In Europe (PIN Flash 36), https://etsc.eu/projects/pin/
[5] Fig.6 in ETSC (2020), How to improve the safety of goods vehicles in the EU? (PIN Flash 39), https://etsc.eu/projects/pin/

2. WHY CASCADING ACOUSTIC WARNINGS SHOULD NOT BE INCLUDED AS FEEDBACK MODE

ETSC is extremely concerned by the inclusion of cascading acoustic warnings as a feedback mode for ISA's speed limit warning function (paragraph 2.5.2.). ETSC regards the inclusion of cascading acoustic warnings not only as a weakening of the GSR, but also as incompatible with its provisions.

The GSR requires in Article 6(2)(a) that the driver should be made aware that the speed limit is exceeded through either the accelerator control, or an alternative that provides "dedicated, appropriate and effective feedback".

However, no scientific evidence is available on cascading acoustic warnings for ISA systems, and its therefore unknown whether it actually provides effective and appropriate feedback. Not only would cascading acoustic warnings therefore be incompatible with the requirements of the GSR, it would furthermore go against the Better Regulation Agenda, as is set out in greater detail in section 2.6.

Moreover, the available scientific evidence on ISA and acoustic warnings strongly suggest that cascading acoustic warnings will neither be appropriate nor effective, as we will first explain in the following sections.

The different modes of feedback as proposed in the draft delegated act.

The **cascading auditory warning** would be provided either by a continuous or intermittent sound signal or by vocal information, and should be noticeable and easily recognizable by the driver.

The **(cascading) haptic warning** would be provided either by increasing the restoring force of the accelerator control or by vibrating the accelerator pedal.

The **speed control function** would limit the vehicle's speed by reducing the vehicle's propulsion power.

2.1 Not Effective in Reducing Road Deaths and Serious Injuries…

ISA systems have been studied and trialled in many member states, but the life-saving potential of the *cascading* acoustic warnings is unknown, contrary to other types of feedback. No research to date has been done into the life-saving potential of cascading auditory warnings nor into the acceptance of such feedback by drivers.

An ISA system with cascading acoustic warnings is an 'advisory' type of ISA. Research has however shown that another 'advisory' type of ISA, the purely visual warning, has the potential to reduce fatal collisions only by around 5%-10%.[6]

[6] Slide 7, https://bit.ly/2ZuysZB. Assisting types of ISA are called 'Voluntary' in Table p.6 of Carsten, O. et al. (2008), Speed Limit Adherence and its effect on Road Safety and Climate Change, https://bit.ly/3j4dx7t; Lai et al (2012), How much benefit does Intelligent Speed Adaptation deliver: An analysis of its potential contribution to safety and environment. https://bit.ly/2DDCTZy

ETSC is therefore concerned that the life-saving potential for cascading auditory warnings is very likely to be significantly lower than 'assisting' types of ISA. On the contrary, ISA systems which "increase the restoring force of the accelerator control" or with speed control functions are 'assisting' types of ISA, which studies have shown to have the potential to reduce fatal collisions with around 20 to 25%.[7]

TRL, the UK transport research laboratory, estimated in the impact assessment study for the European Commission that the General Safety Regulation's package of vehicle safety measures could prevent around 25,000 deaths and 140,000 people seriously injured across all vehicle categories within 15 years.[8] The number of lives saved in the real world will depend on the standard defined in the delegated act. TRL estimated the life-saving potential for an assisting ISA, "alerting the driver if their speed was greater than the posted speed limit via dedicated and appropriate haptic feedback through the accelerator control". Any feedback that is less than the assisting ISA would not deliver on the estimated number of deaths and serious injuries prevented.

TRL furthermore estimated that if every car and van in the EU today was fitted with 'advisory' types of ISA (speed limit information) instead of 'assisting types', approximately 1,300 more people would be killed on our roads every year.[9]

Therefore, the available research on ISA systems suggest that cascading acoustic warnings – being an advisory type of ISA – should not be considered as an effective mode of feedback – one of the requirements set by the GSR.

2.2 …nor Appropriate due to Driver Annoyance

Driver acceptability is a key element in the assessment of the effectiveness of the different modes of feedback, due to the fact that the GSR allows for ISA systems to be turned off by the driver (Article 6(2)(b)).

An ISA system with an annoying mode of feedback would not be acceptable to most drivers, very likely leading most of them to turn off the ISA system – as also shown by ACEA's survey mentioned in section 2.4 – and thereby limiting the effectiveness of the system as well as its potential to improve road safety.

[7] Ibid.
[8] See page 13 of TRL on behalf of the European Commission (2018), Cost-effectiveness analysis of policy options for the mandatory implementation of different sets of vehicle safety measures - Review of the General Safety and Pedestrian Safety Regulations : technical annex to GSR2 report SI2.733025: final report https://bit.ly/3gXYtX6
[9] Richard Cuerden (2018), Letter to ETSC.

A 2020 study led by Professor Oliver Carsten at the Institute for Transport Studies, University of Leeds, commissioned by ETSC, examined five different modes of feedback for ISA systems, specifically with the aim of providing recommendations for the ISA delegated act.[10]

Participants rated all HMI variants positively in terms of usefulness, thereby indicating that drivers see value in ISA support (Fig.1).[11] The results on satisfaction however show that the participants regarded neither the vibrating pedal, nor the auditory warning as satisfactory HMIs.

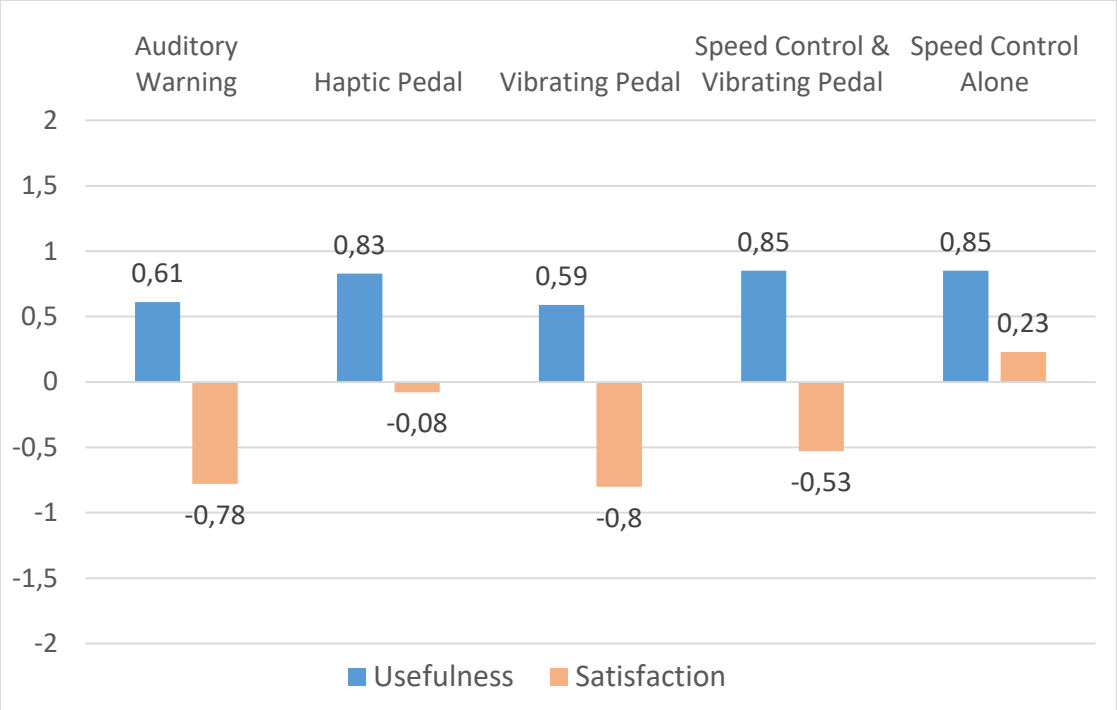


Fig.1: Usefulness and Satisfaction.

Moreover, the study found that drivers rated acoustic warnings as the most annoying type of feedback, especially when driving with a passenger (Fig.2). The authors therefore recommend not to choose acoustic warnings as feedback mode for ISA systems.[12]

[10] Carsten, O. et al. (2020), Intelligent Speed Assistance (ISA) Interface Study, https://etsc.eu/new-study-offers-insights-into-most-effective-isa-systems/

[11] The study was conducted using a simulator featuring a full-size car cabin and a motion system that gives the participants a realistic feeling of driving the vehicle. 30 participants, (15 male, 15 female) in a range of different ages, each conducted a baseline drive with none of the listed HMI-variants enabled. They subsequently drove the same route for each of the HMI variants. The route the participants drove was 14.3km long, during which they encountered every UK speed limit.

[12] ETSC (2020), Intelligent Speed Assistance (ISA), Policy Briefing, https://etsc.eu/wp-content/uploads/ISA-PolicyBriefing-InterfaceStudy.pdf

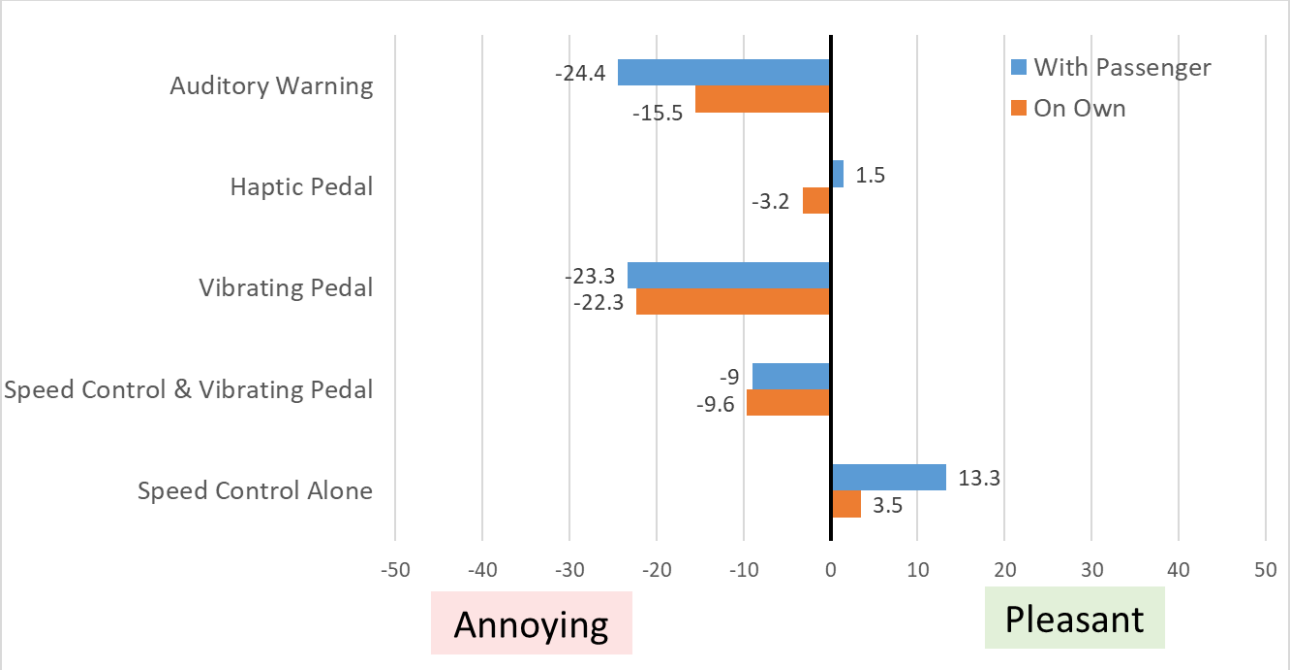


Fig.2. Pleasantness and Annoyance. *Participants completed the pleasantness/annoyance questionnaire twice: once as though they were driving on their own and a second time as though they had a passenger in the front seat.*[13]

Regarded as annoying by drivers, the acoustic warnings therefore do not fulfil the requirement in Article 6(2)(a) that the mode of feedback should be appropriate.

The European Commission aims to address this annoyance by limiting the duration of the cascading acoustic warning. However, there is no existing research that demonstrates that these cascading acoustic warnings will not be perceived by drivers as annoying, nor is there evidence regarding whether or not drivers will turn off these cascading auditory warnings as a consequence. The available evidence from other research however strongly suggests that drivers are likely to turn off these cascading acoustic systems, as we will show in the following two sections.

2.3 Drivers will turn off ISA systems with Auditory Warnings…

Given that no research was available on cascading acoustic warnings, ETSC asked TomTom to investigate what proportion of drivers enable or disable audible speed warnings in their consumer app AmiGO. This internal research which involves more than 100,000 drivers between January and July 2020 is therefore the closest proxy currently available.

[13] Ibid.

In the TomTom AmiGO app, the auditory speeding warning is disabled by default. Data from the first half of 2020 show that while 79% of users had enabled the warning, 30% of those had disabled it again.

The fact that a large majority of users enabled the warning in AmiGO demonstrates that drivers wish to be assisted in keeping to the speed limit. This is also supported by the fact that fewer users of the AmiGO app enabled audio-based warnings for other services such as traffic information (54%).

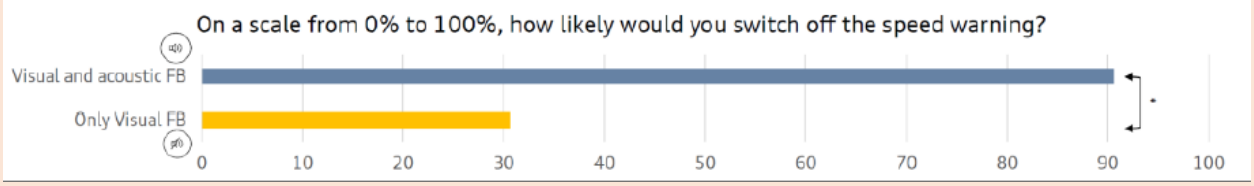
Although there is no data available on the motivations of those users to disable the speed warning feature again, the results of the 2020 ISA interface study suggest that this may very well be due to annoyance from the auditory warning, especially if they would be driving with a passenger.

The audible warning provided in the TomTom AmiGO app is however significantly less intrusive than the cascading auditory warning as proposed in the draft delegated act.[14] It is therefore likely that the turn-off rate for the ISA systems with cascading auditory warnings will be even higher, as its more intrusive warnings are more likely to cause annoyance with drivers, leading them to turn off the ISA system.

Already the conservative estimate, based on the TomTom AmiGO research, that the turn-off rate for ISA systems with a cascading auditory warning could be approximately 30%, represents a significant reduction of the potential for ISA to prevent deaths and serious injuries on European roads.

2.4 … as also shown by a survey from ACEA

Moreover, a survey by ACEA, representing vehicle manufacturers, found that drivers would be 90% likely to switch off an acoustic feedback system.[15]



This provides further support for the notion that cascading acoustic warnings should not be considered as an effective nor appropriate mode of feedback.

[14] The audio warning used in the TomTom AmiGO app can be seen and heard in the following clip: https://youtu.be/TwUpegDyLsc?t=158

[15] See ACEA research cited in TRL Second interim report for the European Commission, page 74 https://bit.ly/3hGIUmw

2.5 Vibrating pedal

The vibrating pedal was also examined in the study by the University of Leeds, and was regarded by drivers as an unsatisfactory mode of feedback (Fig.1) and highly annoying (Fig.2). The study therefore concluded that in addition to the acoustic warning, the vibrating pedal was also unsuitable for appropriate and effective ISA systems.

ETSC therefore calls on the European Commission to also remove the possibility for vibrating the accelerator control to be considered as a type of haptic warning (paragraph 2.5.2.1.3, among others).

2.6 Not in line with the European Commission's Better Regulation Agenda…

One of the key objectives of the European Commission's Better Regulation Agenda is to ensure EU actions are based on evidence and an understanding of the impacts.[16] As cascading auditory warnings have not been researched in trails, simulators or in the field, there is no evidence available that supports their inclusion in the delegated act.

Similarly, the impact that cascading acoustic warnings would have on the reduction of deaths and serious injuries on European roads is therefore currently not understood, as there is no existing research that can provide the insights for the cascading variants of acoustic warnings.

On the contrary, the available evidence for the non-cascading acoustic warnings – systems that are closest in similarity to the cascading variant – have found to be unsuitable as HMI for ISA systems, as set out in more detail in previous sections.

Commenting on the draft delegated act, Professor Oliver Carsten from the University of Leeds - a leading academic on ISA - considers it reasonable to suppose that cascading acoustic warnings will be less effective than straightforward auditory warnings as the feedback is not immediate, and will therefore, even when left enabled, lead to a lower compliance than the more immediate assisting HMIs. He furthermore considers it likely that the cascading acoustic warnings will still be considered annoying and intrusive by drivers, notably when perceived by passengers in the vehicle, and will as a result be switched off.

Moreover, the inclusion in the delegated act of the vibrating variant of the cascading haptic warning through the accelerator control (pedal) is not supported by the existing scientific evidence, which, on the contrary, demonstrates that drivers regard this type of feedback as annoying and which concludes that vibrating pedals are not suitable as HMI for ISA systems.

[16] European Commission (n.d.), Better regulation: why and how. https://bit.ly/30tv2GT

ETSC therefore calls on the European Commission to not include cascading acoustic warnings in the delegated act due to a lack of scientific evidence that would support their inclusion, and to not include the vibrating variant of the cascading haptic warning as the available scientific evidence shows that it is unsuitable.

2.7 … Nor with its Recitals

Recital 8 of the draft delegated act states that in order "to minimise driver annoyance by sub-optimal systems in the real-world, ambitious requirements should be set to, first, ensure that vehicle manufacturers will employ appropriate technologies in the vehicle fleet (…)".

Allowing for cascading auditory warnings in the delegated act thereby contravenes the goals set out in its recitals, as ISA systems with auditory warnings have shown to annoy drivers and are therefore sub-optimal systems. This also applies to the ISA systems with the vibrating type of haptic feedback.

The delegated act allows for the cascading warnings to only be provided to the driver after a certain period during which the driver is driving at an illegal speed.

For example, if a driver is driving at 50km/h on a road where a speed limit of 30 km/h applies, the delegated act allows the driver only to be warned after 3 seconds. Taking into account the flexibility with regards to the speed limit determination, this could mean that drivers have already driven over 50 meters before they are warned.

Taking into account reaction times and deceleration as well, the driver may well have covered the entire distance of a school zone before complying with the speed limit.

2.8 An Inclusive Delegated Act that also Supports Those Who are Deaf or Hard of Hearing

Cascading acoustic warnings would not be suitable for people who are deaf or hard of hearing. In order to allow everyone to benefit from the support ISA provides, the delegated act should only allow for modes of feedback that can be perceived by all drivers. Both the haptic feedback mode in which the restoring force of the accelerator control is increased, as well as the speed control function can easily be perceived by all drivers.

2.9 ETSC calls for HMI options that have proven to be effective

ETSC calls on the European Commission to only include those modes of feedback for which evidence is available that they will be effective, which includes acceptance by drivers. **Only the haptic feedback mode in which the restoring force of the accelerator control is increased as well as the speed control function should therefore be allowed by the delegated act**, as recommended by the study done by the University of Leeds.

ETSC calls for the visual warning, described in 2.5.2.1.1, to not be overridable.

ETSC welcomes the inclusion of an auditory tone to indicate a state change (such a change of speed limit), as described in 2.4.1.4.

There is not a wealth of literature available on the use of an auditory tone to indicate a state change (such a change of speed limit) on a visual display. Most of the studies on auditory versus visual presentation or on multimodality focus on either warnings such as FCW warnings, or information such as messages from a navigation system where auditory (voice) messages have clear advantages in minimising distracting glances to a visual display.

On the use of an auditory tone in a situation similar to the one for the ISA speed limit display, Dingus and Hulse (1993) wrote in their journal paper *Some human factors design issues and recommendations for automobile navigation information systems* that "it is … recommended that the auditory modality be utilized to … provide an auditory prompt to look at a visual display for changing or upcoming information (thus lessening the need for the driver to scan the visual display constantly in preparation for an upcoming event)."[17]

For the design of the in-vehicle HMI for the ISA-UK project[18], a very systematic User Needs Analysis was carried out. On the basis of that analysis, the visual display of the prevailing speed limit was supplemented with an auditory tone that sounded when the speed limit changed. There was no negative feedback from the users about that HMI.

The French LAVIA project used a very similar HMI to the UK one, but they did not have an auditory tone at a speed limit change. Professor Oliver Carsten was told by the researchers on that project that there was an issue with drivers fixating on the visual display to keep checking whether the speed limit was changing. Unfortunately, there is no written report that confirms that effect.

However, the European ecoDriver project did look at participants' preferences for visual-only or visual+auditory display when there was a change in advice to the driver. This was done in a driving simulator experiment, reported by Jamson et al. (2015).[19] The results on driver preference are presented in the graph below. They show that for every version of the visual display, there was a clear preference for the version with the addition of an auditory tone.

[17] Dingus, T.A. and Hulse, M.C. (1993). Some human factors design issues and recommendations for automobile navigation information systems. Transportation Research Part C: Emerging Technologies, 1(2): 119-131.

[18] https://www.its.leeds.ac.uk/projects/isa/the_project.htm

[19] Jamson, A.H., Hibberd, D.L. and Merat, N. (2015). Interface design considerations for an in-vehicle eco-driving assistance system. Transportation Research Part C: Emerging Technologies, 58(D): 642-656, https://www.sciencedirect.com/science/article/pii/S0968090X14003581?via%3Dihub

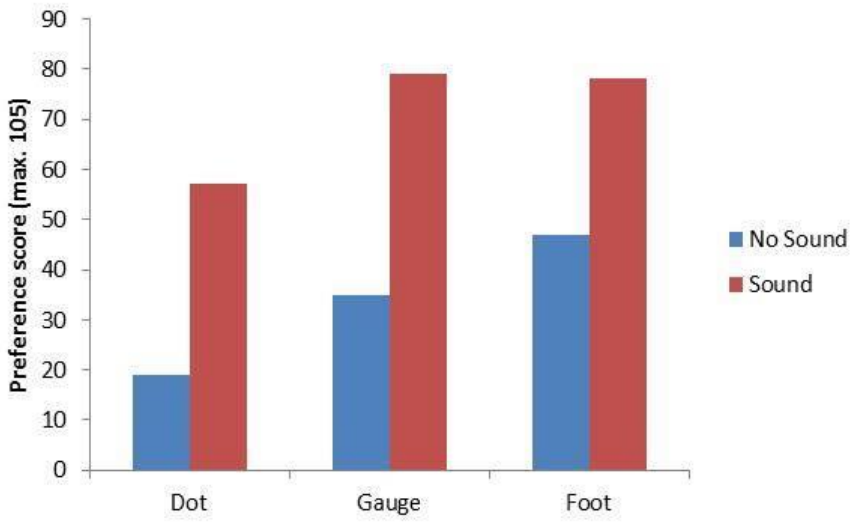


Fig.3 Subjective preference scores - visual and visual-audio systems, Jamson et al. (2015)[20]

Therefore both the design guidance and the empirical evidence indicate the clear merit of indicating state change of the speed limit display with an auditory tone, as this will prevent drivers from fixating on their dashboard rather than the road.

[20] ibid.

3. WHY THE PERFORMANCE REQUIREMENTS FOR THE DETECTION RATE SHOULD BE MORE AMBITIOUS

Regarding the reliable determination of the road speed limit, ETSC calls for the event-based performance requirements to be set at ≥99% for explicit speed limit signs and ≥95% for implicit speed limit signs, for reasons set out in the sections below. The event-based performance requirement for conditional signs should also be set at ≥95%, as should the distance-based performance requirement.

3.1 Higher Performance Requirements to Ensure Effectiveness

The use of correct speed limit information plays a key role in the effectiveness of the ISA system, both in terms of aiding the driver to maintain the speed limit for the road as well as in terms of driver acceptance. An ISA system that frequently provides the driver with incorrect speed limit information will annoy the driver, which in turn will increase the likelihood of drivers turning off the ISA system – thereby limiting the system's benefits for road safety.

3.2 Requiring Higher Performance Requirements due to the Calculation Method

The proposed method for calculating the ISA systems' performance with regards to reliable determination of road speed limits does not require the ISA system to detect all applicable road signs.[21] Only the detection of those applicable road signs that satisfy to the criteria for road signs - which includes conforming to Member States' standards on the design, size and positioning of the signs as well as those that are not damaged or partially nor fully covered – will automatically count towards the performance requirement.

This means that the real-world performance of ISA systems may be significantly lower than the performance as measured during the approval tests, depending on the quality of the infrastructure.

ETSC therefore calls for more ambitious performance requirements, in order to ensure better real-world performance and minimise the risk of driver annoyance.

In order to take into account technical challenges with regards to the detection of different types of applicable road signs, ETSC furthermore proposes to differentiate the performance requirements as set out below.

3.3 Why ≥99% should be required for explicit speed limit signs

Explicit speed limit signs - those showing a numerical value – should be easy to detect and correctly recognise by the cameras of the ISA system. Taking into account the calculation method, ETSC calls for the performance requirement to be set at ≥99%, in order to ensure that the systems are virtually

[21] Point 2.4.2.4.1 of the draft delegated act on ISA. https://bit.ly/38YlDK8

always required to correctly identify the speed limit. This is important as drivers are not likely to accept systems that cannot correctly identify signs that they themselves can very easily interpret.

3.4 Why ≥95% should be required for implicit speed limits

According to mapmakers, 60% of the speed limits in Europe are set by implicit speed limit signs, versus 40% by explicit signs. It is therefore important that ISA systems are required to correctly identify these implicit signs as they have a major impact on the correct use of speed limits by the ISA system.

However, as these signs are relatively more complex than signs with a numerical value, they are more challenging for ISA to correctly identify, which is why ETSC calls for a slightly lower performance requirement of ≥95%, in order to allow for a minor margin of error.

3.5 Why ≥95% should be required for conditional speed limits

The sub-signs that indicate a conditional speed limit are also relatively more complex than signs with numerical values. In line with the performance requirement for implicit speed signs, ETSC calls for the performance requirement for conditional speed limits to also be set at ≥95%.

3.6 Why ≥95% should be required for distance-based performance

In line with the proposed event-based performance requirements for determining the reliable determination of implicit and conditional speed signs, ETSC calls for the distance-based performance requirement to be set at the same level: ≥95%.

4. ISA in conjunction with systems such as Adaptive Cruise Control (ACC) or Cruise Control (CC) - (Paragraph 2.6.2.)

ETSC calls for the delegated act to require the (overridable) speed control function to be used when the driver is not expected to be touching the accelerator control, such as when (adaptive) cruise control is engaged.

The draft delegated act allows for both the cascading acoustic warning as well as the speed control function to be used while the driver is not expected to be touching the accelerator control. However, acoustic warnings are not appropriate as drivers rate them as annoying (see page 4 & 5), and should therefore not be allowed as a mode of feedback, including in situations when the driver is not expected to touch the accelerator control.

5. Deactivation of the ISA system - (Paragraph 2.2.1.3.)

ETSC calls for a different approach between a temporary override of one speed limit (while the ISA system is still ON) and the deactivation of the ISA system until the vehicle is restarted.

Each encountered speed limit can individually easily be overridden in the two feedback modes that ETSC is advising, by pushing somewhat harder on the accelerator pedal.

ETSC therefore calls for the deactivation of the ISA system to require a sequence of actions by the driver. Requiring a sequence of actions by the driver to turn off the system would make the difference between temporarily overriding and deactivating the system clearer to the driver.

Moreover, the GSR also requires a sequence of actions by the driver in order to switch off other advanced driver assistance systems (ADAS) such as the advanced emergency braking system, the emergency lane-keeping system, and the lane departure warning system. Therefore requiring a sequence of actions for ISA systems will ensure harmonisation across the requirements for different ADAS systems and thereby help minimise driver confusion.

In order to prevent driver distraction, ETSC calls for the possibility to switch off the ISA system to only be available to the driver while in the vehicle is in standstill.

ETSC furthermore calls for visual warnings to always be provided to the driver. There is every reason to believe that drivers will find this to be helpful and such a configuration has been widely used in real-world trials of ISA.

6. The Use of Service Brakes by SCF – (Paragraph 2.6.1.1.)

The draft delegated act allows the brakes to be applied by the ISA system's speed control function (SCF), with the service brakes allowed to be used only in M1 and N1 vehicles, and the endurance brakes only after having limited engine power to the minimum. The draft delegated act however does not specify a maximum deceleration value for the speed control function when using brakes.

ETSC calls for a maximum deceleration values to be included in the delegated act for the SCF's deceleration when using the service brakes or endurance brakes. It would be undesirable for an ISA system to apply the brakes so strongly that it may create hazardous situations for following vehicles.

ETSC furthermore calls for a test to be introduced that would verify compliance with the maximum deceleration value for the speed control functions that use service brakes or endurance brakes.

7. Residential Zones in the Real World Test Drive – (Paragraph 3.3.1.)

In point (c) of paragraph 3.3.1, the draft delegated act sets out minimum distances for respectively urban roads, non-urban roads, and motorways/expressways/dual carriageways, based on percentages of the route's distance.

ETSC would in addition like to see a minimum requirement for residential areas included in the delegated act, as this is a key area where vulnerable road users interact closely with motorised vehicles, and where an appropriate speed can therefore mean the difference between being killed in or surviving a collision. These residential zones may also contain roads where vehicles and cyclist share roads with an integrated bike lane. Moreover, lower speed limits apply in the area surrounding schools in many European countries, and it would therefore be appropriate for the ISA system to be tested in such areas as well.

ETSC therefore calls for a new point to be added following point (c) of paragraph 3.3.1.:

> *Driving in residential areas shall represent at least 30% of the route's distance on urban roads. The route shall pass at least one school building.*

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