

Statement

Leading the Way in Autonomous Driving

Autonomous Vehicles Approval and Operation
Ordinance (AFGBV) of the Federal Ministry for
Digital and Transport (BMDV) and Relationship to
Emerging EU Regulations



Berlin, February 23, 2022

General

The automobile was invented in Germany. The car, the truck, the bus – and also the electric motor and the computer. The companies in the automotive industry combine all this knowledge and continue to develop mobility offerings, for climate neutrality by 2050 at the latest and for more individual mobility for everyone. The task of the German Association of the Automotive Industry (VDA) is to ensure the right conditions so that companies – from start-ups to global corporations – can realize their visions and successfully launch their offerings on the market.

The German automotive industry is powering autonomous driving on the path to intermodal and multimodal mobility. The companies in the German automotive and supplier industry have paved the way that is necessary to achieve this. They are shaping technological developments with the goal of securing the industry's leading role in automated driving.

Only opportunity-oriented regulation will enable the introduction, testing and rapid rollout of innovative mobility offerings. We now need the conditions that will enable growth by way of the introduction of new technologies and novel business models.

Automobile manufacturers, suppliers and operators needed a reliable and practicable legal framework to commence regular operation of autonomous vehicles in all German states.

The Act Amending the Road Traffic Act and the Compulsory Insurance Act – Autonomous Driving Act of July 28, 2021, already created important regulations to enable autonomous driving on public roads in Germany. The ordinance regulating the operation of motor vehicles

with automated and autonomous driving functions and amending road traffic regulations, Article 1 Ordinance on the Approval and Operation of Motor Vehicles with Autonomous Driving Functions in Defined Operating Areas (Autonomous Vehicle Approval and Operation Ordinance – AFGBV) further specifies the requirements from the Act on Autonomous Driving.

The law on autonomous driving and the ordinance regulating the operation of motor vehicles with automated and autonomous driving functions serve to establish a legal framework for the use of vehicles with autonomous driving functions in regular operation.

The contents of the Ordinance are:

- the issuance of operating permits for motor vehicles with autonomous driving functions as well as permits for automated and autonomous driving functions that are activated at a later date,
- the approval of defined operating areas,
- the registration of motor vehicles with autonomous driving functions for use on the roads,
- the market surveillance of motor vehicles with autonomous driving functions, with permits to operate issued or to be issued on the basis of this ordinance, and of subsequently activated automated and autonomous driving functions and vehicle parts, and
- the requirements for, and obligations on, the manufacturer, the owner and the technical supervision of motor vehicles with autonomous driving functions in specified operating ranges and of motor vehicles with automated or autonomous driving functions in accordance with Section 1f of the Road Traffic Act.

The technology for automated functions will continue to develop rapidly in the forthcoming years. We therefore welcome the path chosen here by the federal government of a legal ordinance for faster and simpler further development of the regulations and the already stipulated evaluation after the end of 2023.

It is an important signal for Germany as a business location that the federal government is paving the way for the introduction of autonomous driving. In the view of the VDA, the draft ordinance contains some good approaches and new regulations, but at the same time significant changes, additions and clarifications are still necessary, such that this complex and comprehensive regulatory project consisting of law and ordinance meets all requirements.

The existence and practicability of the Regulation on the Approval and Operation of Motor Vehicles with Autonomous Driving Functions amending road traffic regulations in defined operating areas (Autonomous Vehicle Approval and Operation Ordinance – AFGBV) is the necessary prerequisite for the successful introduction of the new approval procedure for autonomous vehicles. Overregulation at this point would inhibit the entire innovative power of automotive manufacturers, suppliers and operators.

In the VDA's view, particular importance should be attached to the following aspects, which in their current form jeopardize the aim of creating a pioneering role:

- The demands placed on the technical supervisors are clearly excessive, in some cases not expedient and hardly feasible in practice. Particularly in the case of larger vehicle fleets, a sensible division of labor must be made possible, and the technical supervisor must be allowed to gain support from people specially qualified for the task in question. A technical degree is not appropriate for these people who support the fleet supervision (compare cabs or cab center) and is equally unnecessary as the presentation of a certificate of good conduct. The requirements for the qualifications of the technical supervisors for autonomous shuttles prevent the introduction of autonomous vehicles in public transport and passenger transportation.
- An indispensable prerequisite for the market launch of automated and autonomous vehicles is the possibility of efficient approval and vehicle testing. Section 16 contains various irrelevant requirements in this respect, thereby jeopardizing both current and future trials and vehicle approaches and therefore threatening to thwart the objective of the entire amendment. In particular, it must be clarified that obtaining permits for the conventional testing of automated/autonomous systems with monitoring and intervention-ready test personnel (in the sense of Level 2) in accordance with Section 19 (6) of the Road Traffic Act (StVZO) (also in conjunction with Section 70) remains possible.
- The intervals specified for a general inspection of the motor vehicle every 90 days from the date of registration and for the main inspection six months from the registration date for vehicles with autonomous driving functions in accordance with Section 29 of the Road Traffic Licensing Regulations are not practicable for vehicles owned by private customers. An adjustment is necessary with regard to the time intervals of the overall inspection covering the common components and the main inspection.
- Testing in commercial operation (e.g., as a shuttle service) and commercial operation itself should be enabled, as this is necessary to allow the extensive testing needed to ensure safety in an economical way and in real-world operation. Therefore, the national regulations should enable developers and operators to operate with customers at various stages of development to reduce the immense cost of developing automated/autonomous systems. In addition, experimenting with commercial operation is necessary to be able to test real-world operation.
- The VDA welcomes the parallel emergence of an EU regulation on automated and autonomous driving. In the latest draft, however, the EU regulation only relates to a small series. Nevertheless, in the VDA's current view, it would, at the very least, severely restrict the scope of application for the German regulations due to the primacy of European law, such that the successes achieved nationally with the L4 amendment threaten to become obsolete. The VDA therefore considers it essential to include an opening clause in the relevant EU regulations to the effect that this does not conflict with the national type approvals (without quantity limits) regarding automated/autonomous driving, but instead runs parallel to them.

Comments on the draft ordinance

Article 1 – Ordinance on the approval and operation of motor vehicles with autonomous driving functions in defined operating areas (Autonomous Vehicle Approval and Operation Ordinance – AFGBV)

§ 1 Scope; subject matter and terms used

Original text:

(1) This Ordinance shall apply

1. to the operation of motor vehicles with autonomous driving functions within the meaning of § 1d to § 1h and with automated driving functions within the meaning of § 1h of the Road Traffic Act, [...]

Comment:

Elsewhere reference is expressly made to the area of application being limited to public road space (e.g., no. 2). To clarify this, it should be amended in no. 1.

Proposed wording:

It is thus proposed to supplement Para. 1 no. 1 with [...] functions within the meaning of § 1h of the Road Traffic Act **in public road space**.

Original text:

(1) This Ordinance shall apply

3. to the testing of automated or autonomous driving functions in accordance with § 1i of the Road Traffic Act

Comment:

It should be clarified that not all requirements of the AFGBV are to be applied to testing vehicles, but only those in § 16. Otherwise, a technical supervision would be needed for testing subsequently activated automated/autonomous functions, for instance, which does not make sense.

Proposed wording:

It is thus proposed to clarify (1) no.3 by amending it as follows:

3. to the testing of automated or autonomous driving functions in accordance with § 1i of the Road Traffic Act, **the requirements for such are to be drawn only from § 16 [...]**

Original text:

(3) Insofar as this Ordinance does not expressly determine the responsibility of the Kraftfahrt-Bundesamt (Federal Motor Transport Authority), the competent authority for the purposes of this Ordinance shall be any authority competent under federal state law, any authority competent under federal law responsible for the exercise of road construction on the respective public roads or on federal trunk roads [...]

Comment:

Here responsibility and expertise need to be bundled, e.g., within the higher federal authorities. The higher federal authorities will then be in a position to combine administrative know-how and further expand and share this with the cooperation of the responsible authorities.

Proposed wording:

It is thus proposed to clarify (3) with the following wording: the competent authority for the purposes of this Ordinance shall be **the highest road traffic authority in each case while involving any responsible authority competent under federal state law [...]**

§ 2 Type approval; approval of subsequent activation of automated or autonomous driving functions

Original text:

(1) For the operation of a motor vehicle with autonomous driving functions in defined operating areas in public road space [...]

Comment:

The Ordinance contains numerous further requirements that are not feasible for privately owned vehicles. Examples here include the extended departure check (§13 I no. 2) and the 90-day overall check (13 para. 1 no. 3), which cannot be applied to private individuals and thus represent an absolute moratorium for dual-mode vehicles, especially for automated valet parking (AVP).

The VDA thus requests that it be clarified that the other requirements of this Ordinance only apply insofar as expressly stated by the Federal Motor Transport Authority. To this end, the following amendment is proposed.

Proposed wording:

(3) Type approvals for the subsequent activation of autonomous driving functions shall be granted in accordance with the conditions laid down in § 4(5) and (6). **Other provisions of this Ordinance and its annexes shall not apply to the subsequent activation of automated or autonomous driving functions unless they are expressly declared to be applicable in this Ordinance or in the technical requirements specified by the Federal Motor Transport Authority.**

§ 3 Application by the manufacturer for type approval

Original text:

(8) Without prejudice to the conditions laid down in Annex I, a motor vehicle with autonomous driving function must, in order to avoid collisions and in accordance with the state of the art, 2. carry out a risk assessment based on the detection referred to in subparagraph 1 with regard to all relevant legal interests, [...]

Comment:

The obligation included in the latest draft to carry out the risk assessment “with regard to all relevant legal interests” further exacerbates the legal uncertainty that already existed in the previous version due to the unclear wording. The additional regulatory content of the term “all relevant legal interests” compared to the following clause was already not clear for humans; it remains all the more unclear whether and which specific additional requirements would

have to be met by an autonomous vehicle in the specific hazardous situation. In this respect, reference should be made to Recommendation no. 7 of the Ethics Committee, in which it explicitly recognizes that the state of the art must be taken into account (“within the bounds of what is technically feasible”). A requirement that is already unclear for humans is not within the bounds of what is technically feasible. The VDA therefore proposes revising the passage in question, at least to delete the term “with regard to all relevant legal interests” as follows:

Proposed wording:

2. carry out a risk assessment based on the detection referred to in subparagraph 1, ~~and with regard to all relevant legal interests and~~ and assess the behavior based on the conditions in § 1 e para. 2 no. 2 of the Road Traffic Act [...]

§ 4 Granting of type approval; granting of approval for subsequent activation of automated or autonomous driving functions

Original text:

(1) Type approvals for motor vehicles with autonomous driving functions shall be granted by the Federal Motor Transport Authority when [...]

4. the operation of the motor vehicle with autonomous driving function does not compromise the safety and efficiency of road traffic or endanger life and limb of persons. [...]

Comment:

This requirement may call into question the very approval authority.

At this stage of approval, requirements can only be checked in abstract terms, since the area of operation is yet to be concretized. This needs to be clarified.

Proposed wording:

4. New: [...] ~~the relevant requirements of the Road Traffic Licensing Regulations are met accordingly, or the basic vehicle is already approved in accordance with the applicable technical regulations; requirements of the Road Traffic Licensing Regulations whose necessity no longer applies due to the autonomous driving function are not relevant.~~

Original text:

(5) Modifications to a motor vehicle with autonomous driving function, which are made after the type approval has been granted, require the approval of the Federal Motor Transport Authority prior to their operation.

Comment:

The modification requiring approval needs to be clarified.

Proposed wording:

Modifications to a motor vehicle with autonomous driving function ~~that require approval~~, which are made after the type approval has been granted, require the approval of the Federal Motor Transport Authority prior to their operation.

§ 5 Market surveillance

Original text:

(5) Manufacturers and holders of motor vehicles with autonomous driving functions must [...]

Comment:

Para. 5 no. 2 lays down powers for gathering information that are too far reaching, including access to the core area of operational business secrets (software and algorithms), without specifying why there is a particular need for this here.

Proposed wording:

Supplement para. 5 as follows:

(1) Manufacturers and holders of motor vehicles with autonomous driving functions must

1. assist the Federal Motor Transport Authority in carrying out market surveillance activities, and
2. upon request, provide the Federal Motor Transport Authority free of charge with the documentation, information and other technical specifications necessary for the market surveillance, while manufacturers must also allow access to software and algorithms upon demand. **Access to software in source code, algorithms and related materials shall only be provided if there is a strong suspicion that they do not meet relevant requirements of this regulation and no milder, equally suitable alternatives exist.**

§ 6 Revocation and suspension of the type approval; Revocation and suspension of the approval for subsequent activation of automated or autonomous driving functions

Original text:

(1) The Federal Motor Transport Authority shall revoke the type approval granted pursuant to § 4 para. 1 if

1. the motor vehicle with autonomous driving function has been modified without approval and thus no longer meets the requirements of the type approval,
2. the manufacturer no longer satisfies the requirements necessary for the granting of type approval, or
3. the operation of the motor vehicle with autonomous driving functions could compromise the safety and efficiency of road traffic or endangerment to life or limb of persons is expected.

Comment:

It should be clarified that infringements do not necessarily have to lead to revocation of the entire operating approval.

If, for example, in the case of no. 1, infringements can be remedied by reversing the modifications, or in the case of nos. 2 and 3, by a quick update, it would be disproportionate to revoke the operating approval. Revocation should rather be the last resort, as is generally the case in administrative law.

Moreover, with regard to dual-mode vehicles, it is sufficient to prohibit autonomous operation if the violations result from this and activation of the automatic driving mode can be reliably prevented.

The adaptation of the wording used to date to the effect that a risk to the life or limb of persons cannot be ruled out represents a significant tightening of the requirements. In our opinion, this tightening cannot be justified, since a threat to life or limb can never be completely ruled out. Such a requirement is also not regulated or expected in other areas with a high degree of safety (such as aviation). The previous regulatory proposal that a hazard “is not to be expected” should be restored.

Proposed wording:

Supplement §6 para. 1 as follows: The Federal Motor Transport Authority shall revoke the type approval granted pursuant to §4 para. 1 if **the infringement can not be rectified in any other way**, if

3, the operation of the motor vehicle with autonomous driving functions could compromise the safety and efficiency of road traffic or an **endangerment to life or limb of persons is not to be expected**.

Proposed wording:

for an additional para. no.6: **If an infringement of this regulation exists in connection with the autonomous driving function, and its use is safely prevented such that the vehicle is operated manually in accordance with the regulations, the approval shall be restricted to manual operation as a matter of priority.**

Comment:

With regard to the fulfillment of obligations, it would be desirable for government agencies to inform the owner and manufacturer of changes to the road infrastructure of which they are aware.

Proposed wording:

for a new paragraph no.5: **Information on changes to the road infrastructure in defined operating areas shall be made available by the authorizing body via appropriate communication channels (e.g., Mobilithek (national access point), Mobility Data Space).**

§ 7 Definition of an operating area by approval

Original text:

(3) Approval of the defined operating area may be granted for several identical vehicles, provided that there is an appropriate type approval for motor vehicles with autonomous driving functions in accordance with the above provisions

Comment:

The word “identical” in §7 para. 3: For clarification, identical should be replaced by “vehicles of the same type.” This would create linguistic consistency with the terminology customary in registration / type approval law and, in particular, clarify that minor and non-type-defining differences are irrelevant (e. g., color, etc.).

Comment:

(3) Approval of the defined operating area may be granted for several [...] Provided that the requirements of paragraph 3 are met, there is no apparent reason why a joint approval of several identical vehicles should not be granted. It should therefore be clarified that the relevant authority shall, in principle, grant approval of the defined operating area for several identical vehicles and may only deviate from this in special circumstances. In this respect, it is proposed to replace the word “may” by “shall.”

§ 8 Application for approval by the holder

Comment:

In the case of dual-mode vehicles, the owner (a private person) may not be able to make declarations on the basis of his or her own knowledge, but must rely on information provided by others. The obligation to make a declaration is then not appropriate. The requirements of the AFGBV for functions that can be activated at a later date should therefore only be applied (as an exception) if they are explicitly referred to.

§ 9 Granting of approval; checks

Original text:

(4) The competent authority shall make a decision in agreement with the local authority concerned, provided that this is not already the competent authority pursuant to § 7(2) sentence 2. If an operating area extends beyond a federal state border, the authority competent under state law shall make a decision in agreement with the authority competent under the law of the other federal state. On federal motorways and federal roads under federal administration, agreement with the company under private law within the meaning of the Infrastructure Company Establishment Act shall replace agreement with the local authority concerned.

Comment:

If an operating area extends beyond a federal state border, the authority competent under state law shall make a decision in agreement. It remains unclear as to which authority the application is to be submitted (e. g., Ulm/Neu-Ulm shuttle service).

Proposed wording:

An additional sentence should clarify that the applicant thus has a choice: **The applicant may submit the application to the relevant authority of his or her choice.**

Original text:

(5) [...] In particular, the approval may be associated with an initial, temporary ban on the carriage of persons and goods.

Comment:

The temporary ban should only apply to the carriage of persons, as freight transportation in particular is very energy-intensive, and the system needs to be tested under load. Therefore, in terms of sustainability and energy efficiency, it is more than desirable to use the test phase for transportation services.

Original text:

(6) The competent authority may at any time verify or have verified by those listed in (3) that the holder is fulfilling the requirements of the approval and the obligations associated with the approval are being met.

Comment:

As long as the holder is a private individual, these requirements do not appear to be proportionate. The requirements of the AFGBV for functions that can be activated at a later date should therefore only be applied (by way of exception) if they are explicitly referred to. In addition, business models based on the division of labor should be made possible.

Proposed wording:

If the owner has delegated the corresponding duties to service providers or appointed responsible persons, the inspections are to be carried out as far as possible at these service providers and the duties are primarily incumbent on them.

Comment:

The authority to perform sovereign tasks can only be exercised by means of the legal figure of entrustment.

§ 10 Revocation and suspension of approval of a defined operating area

Original text:

(1) The competent authority shall revoke the approval granted pursuant to § 9 when [...]

Comment:

Insofar as only one specific holder uses the technology not in accordance with its intended use, it should be clarified here that revocation only takes place vis-à-vis the respective holder and not for all vehicles of this type.

Proposed wording:

The competent authority can revoke the approval granted pursuant to § 9 for the respective holder when the approval is granted upon a condition, which the holder does not fulfill or not within the time period specified.

§ 11 Conditions concerning the application of the Vehicle Registration Ordinance

Original text:

(1) For the registration of motor vehicles with autonomous driving functions for operation in defined operating areas, the Vehicle Registration Ordinance shall apply with the following conditions.

Comment:

For dual-mode vehicles in private ownership (e.g., AVP), these requirements are partly inappropriate, e.g., the requirement in accordance with para. 3 to enter the defined operating area in Part 1 of the registration certificate. Accordingly, the requirements of the AFGBV should only be applied to subsequently activated functions (as an exception) if they are explicitly referred to.

Original text:

(3) The use of the autonomous driving function in traffic is restricted to the approved defined operating area. This restriction must be entered in the Certificate of Registration Part I in accordance with § 11 of the Vehicle Registration Ordinance by indicating the approval together with the issuing authority and the date of issue. [...]

Comment:

It should be checked and ensured that, with regard to para. 3, § 13 I p. 2 of the Vehicle Registration Ordinance applies and that an entry in the registration certificate is not immediately required for every addition to the operating area.

Original text:

(7) [...] If no approval for a defined operating area pursuant to § 9 is in place for a registered vehicle with autonomous driving function, the holder shall immediately have the vehicle taken out of operation in accordance with § 14(1) of the Vehicle Registration Ordinance, also in conjunction with § 15g of the Vehicle Registration Ordinance.

Comment:

If the vehicles also have a regular operating permit independent of the autonomous driving functions, then a registration without autonomous driving function should remain in force.

§ 13 Requirements to be met by the holder

Original text:

(1) In order to fulfill the obligations laid down in § 1f(1) of the Road Traffic Act during the operation of the motor vehicle with autonomous driving function, the holder shall ensure that [...]
2. an extended departure check in accordance with para. 7 is carried out before departure

Comment:

The extended departure check cannot be applied to private individuals at all and are major hurdles for commercial operators. These requirements thus represent an absolute moratorium for dual-mode vehicles, especially for automated valet parking (AVP).

Proposed wording:

Each day before the start of operations

Original text:

3. on the basis of the repair and maintenance information provided by the manufacturer, an overall check is carried out in accordance with the specifications of the operating manual for the motor vehicle with autonomous driving function every 90 days starting from the date of registration [...]

Comment:

There are no apparent technical reasons that would require an inspection every 90 days. With regard to mechanical components, there is no increased probability of failure compared with conventional vehicles. Electronic components should always be checked automatically (self-test).

Furthermore, with a view to business models based on the division of labor and dual-mode vehicles (AVP), it should be possible for the owner to appoint other persons to fulfill the duties.

Proposed wording:

3. on the basis of the repair and maintenance information provided by the manufacturer, an overall check of vehicles with autonomous driving functions is carried out at the pre-defined intervals,

Original text:

(2) The holder must ensure that all the persons carrying out the measures in para. 1 have an appropriate technical qualification. The persons responsible for carrying out the technical and organizational requirements are considered suitable if they

1. have a master craftsman's certificate as an automotive mechanic. This qualification is deemed equivalent to a Dipl.-Ing., Dipl.-Ing. (UAS), Engineer (graduate), Bachelor, Master or state-certified technician in the field of mechanical engineering, automotive engineering, electrical engineering, aerospace technology or aircraft technology, provided that the person concerned is verifiably active in the motor vehicle sector and can demonstrate experience of at least three years [...]

Comment:

The requirements for the qualification of the persons responsible for the implementation of the technical and organizational measures exceed the necessary and appropriate level, as in the case of technical supervision. The qualification requirements for the persons responsible for the implementation of technical and organizational measures should be urgently adapted to the needs of the tasks to be performed. The requirements for the qualifications of the technical supervisors and the persons responsible for the implementation of the technical and organizational measures for autonomous vehicles will prevent the widespread introduction of autonomous vehicles, especially in public transportation and the carriage of passengers. Also due to the current and worsening shortage of skilled workers, the current requirements do not allow transportation companies as operators to deploy qualified personnel already available in the companies as technical supervisors and/or as persons responsible for implementing the technical and organizational measures. There is a lack of qualified personnel for rapid introduction in accordance with the regulation. This would make operation uneconomical.

Original text:

(8) The holder shall arrange a general inspection in accordance with Annex VIII in conjunction with Annex VIIIa of the Road Traffic Licensing Regulations for the motor vehicle with autonomous driving function. The deadline for the general inspection pursuant to § 29 of the Road Traffic Licensing Regulations is six months.

Comment:

For the reasons listed above for adapting the maintenance interval, the deadline for the general inspection should also be based on the existing regulations. Furthermore, the general inspection according to § 29 can only be carried out accordingly, since a driver does not necessarily have to be present.

Proposed wording:

(8) The holder shall arrange a general inspection in accordance with Annex VIII as is deemed pertinent in conjunction with Annex VIIIa of the Road Traffic Licensing Regulations for the motor vehicle with autonomous driving function.

§ 14 Requirements to be met by the technical supervisor

Original text:

(1) The person responsible for carrying out the duties of technical supervision as per § 1f para. 2 of the Road Traffic Act must be qualified. This person is considered suitable if they are a qualified

1. a) Dipl.-Ing., Dipl.-Ing, (UAS), Engineer (graduate), or
- b) Bachelor, Master or
- c) state-certified technician

in the field of mechanical engineering, automotive engineering, electrical engineering, aerospace technology or aircraft technology.

2. have successfully completed appropriate training in respect of the vehicle with autonomous driving function from the manufacturer of that vehicle.

3. must have a valid driver's license. The class of driver's license must correspond to that of the motor vehicle with autonomous driving function, and

4. is with regard to the performance of the tasks entrusted to them pursuant to § 1f(2) of the Road Traffic Act.

In order to assess their reliability, a certificate of good conduct for submission to an authority must be submitted for each person as part of the procedure referred to in § 7 and § 8(2) as well as information on entries from the driving fitness register § 8(3) shall apply, mutatis mutandis, with regard to sentence 3.

The person engaged as technical supervisor may, at the instigation of the holder, make use of other natural persons suitable in accordance with § 13(3) to perform their duties.

(2) If the vehicle with autonomous driving functions is in the minimal risk state in accordance with § 1d(4) of the Road Traffic Act, the technical supervisor must investigate what triggered the minimal risk state and the need therefore, before they can instigate the end thereof. The result of the investigation must be documented. If the minimal risk state was triggered by a defect in the motor vehicle, the driving task must be taken over manually by the technical supervisor once the minimal risk state has been reached in accordance with the provisions of point 4 until the triggering defect has been permanently eliminated.

Comment:

The requirements for the qualification of the technical supervisor go beyond the normal and necessary level. In particular, due to the shortage of skilled workers and the combination of high requirements for professional and academic qualifications, including the respective class of driver's license, a review is necessary with a view to the availability of highly qualified specialists. Since one of the main tasks of the technical supervisor will be to communicate with passengers in the carriage of people, and since German simply is the official language in the area of operation, the technical supervisor should have at least German language skills at C1 certificate level.

Comment:

(2) Especially in the case of larger fleets of vehicles, a division of labor must be possible, and the technical supervisor must be allowed to be assisted by persons specially qualified for the task in question. A completed technical training is not required for these persons supporting the fleet supervision (comparable to cab or cab center), nor is the presentation of a certificate of good conduct.

Proposed wording:

(2) The person appointed as the technical supervisor may, at the request of the holder, use other natural persons to perform part of their duties, provided that they have successfully completed appropriate training in respect of the vehicle with autonomous driving functions from the manufacturer of that vehicle, and possess a valid driving license corresponding to the class of a comparable motor vehicle. This does not affect the responsibility of the holder and the technical supervisor.

§ 16 Testing permits

Original text:

(1) Development stages for the development of automated or autonomous driving functions may only be tested in motor vehicles in public road space if a testing permit has been issued for the corresponding vehicle by the Federal Motor Transport Authority in accordance with § 1i of the Road Traffic Act. The testing permit shall also include permission to test all parts, systems or units of the motor vehicle to be tested. § 19(6) of the Road Traffic Licensing Regulations shall not apply to such motor vehicles. [...]

Comment:

If Germany is to become a leader in autonomous driving, a modern and flexible basis is essential for conducting tests. In this respect, however, the current draft would lead to a step backward compared to the status quo and could force testing to be increasingly carried out in other countries. In the view of the VDA, various aspects of § 16 are not appropriate, jeopardize ongoing and future trials as well as vehicle start-ups, and thus threaten to thwart the goal of the entire amendment. Conversely, the creation of an efficient basis for the testing of autonomous vehicles would provide an opportunity to bring Germany even more into the international spotlight as a development location.

In detail, the following problems should be emphasized from the VDA's point of view:

- The VDA understands § 16 to mean that its scope of application is based on the level of automation actually achieved in the respective development stage, i.e., in a development project aiming at L4, development stages conventionally tested with an intervention-ready driver as L2 could continue to be approved according to the existing process under state sovereignty. However, as soon as the vehicle is actually operated as L3 or L4 without an intervention-ready test driver, approval by the Federal Motor Transport Authority would be required. The VDA requests that it be examined as to whether this can be made even clearer in the wording and, secondly, whether constellations are conceivable in which the L3/L4 approval can also be granted as an extension of a previously existing L2 approval.

- Para. 1 p. 3 should be deleted. It is not appropriate to exclude § 19 (6) of the German Road Traffic Licensing Regulations (StVZO): for example, it must be possible to install software updates, exchange sensors or even make modifications that do not affect the autonomous functions at all (e.g., a different trailer coupling). Otherwise, no proper testing is possible. What is relevant is that the safety concept implemented by the manufacturer ensures that the test driver can override the system at any time, even if modifications are made to the system. The possibility of testing in accordance with § 19 (6) of the StVZO should be retained, at least until the evaluation of the regulation is completed after the end of 2023.

Original text:

(3) For a testing permit to be granted

1. an individual approval or type approval must be in place for the motor vehicle;

Comment:

For completely newly developed vehicles, the requirement of an individual or type approval of the basic vehicle does not make sense, since by its very nature there is no basic vehicle that could have a type or individual approval. However, even (and especially) such completely new developments need to be tested. This requirement must be dropped to prevent doubling the development time by way of a forced sequential approach.

Original text:

(3) For a testing permit to be granted

3. the holder organizing the development and testing, as well as the parties involved in the development and testing, must be sufficiently qualified and reliable in terms of the technical developments for the motor vehicle traffic;

Comment:

The qualification should not necessarily relate to technical development; depending on the system design, the qualification as a test driver, for example, may be decisive.

Original text:

(3) For a testing permit to be granted

4. the holder must submit a development concept in which

Comments:

a)–c): The requirements established for the development concept are inappropriate. The systems to be tested cannot be properly oriented to the requirements of §§ 1a, 1e and the applicable state of the art, since the systems to be tested generally do not yet demonstrably meet these requirements until the final release phase. Rather, the safety concept must be based on the state of the art, which (in early test phases) means regular tests corresponding to L2 with the driver ready to intervene at any time and override the system immediately if necessary. In contrast, it may be possible in later test phases (shortly before being ready for series production) with a suitable safety concept to test vehicles “driving empty” without compromising safety. It therefore does not make sense to rigidly require the presence of a driver/ technical supervisor or permanent monitoring by them.

d): The permanent logging of data required by ee), ff) is not sensible and is, in fact, unreasonable. It would result in large amounts of data, which could only be evaluated using special tools.

Financial and procedural facilitation should be provided for testing with several identical vehicles (pilot project / safeguarding). A new paragraph 9 is therefore proposed.

At the time of applicability, there may already be permits issued by federal authorities for the testing of autonomous vehicles. In this respect, a transitional arrangement should be provided.

We thus propose the following amendments:

(1) Development stages for the development of automated or autonomous driving functions may only be tested in motor vehicles in public road space if a testing permit has been issued for the corresponding vehicle by the Federal Motor Transport Authority in accordance with § 1i of the Road Traffic Act. The testing permit shall also include permission to test all parts, systems or units of the motor vehicle to be tested. ~~§ 19(6) of the Road Traffic Licensing Regulations shall not apply to such motor vehicles.~~ [...]

(2) The testing permit shall be time-limited and should normally not exceed four years. It shall be extended for a further two years if the original permit conditions continue to be met and if the previous course of testing does not preclude an extension. Should third parties seek legal action to oppose the permit stop or its extension, the validity period is to be extended by the number of days delayed by the legal action.

(3) For a testing permit to be granted

- ~~1. an individual approval or type approval must be in place for the motor vehicle;~~
2. modifications must have been made to the motor vehicle ~~after individual approval or type approval that are not in accordance with Road Traffic Licensing Regulations (StVZO) to equip it with automated or autonomous driving functions;~~
3. the holder organizing the development and testing, as well as the parties involved in the development and testing (~~test personnel~~), must be sufficiently ~~qualified so as to be able to reliably control the vehicle in the event of incorrect system interventions in terms of the technical developments for the motor vehicle traffic;~~
4. the holder must submit a development concept in which
 - a) the modifications already made and still planned and the driving functions to be tested are adequately described,
 - ~~b) possible dangers and risks are systematically drawn and resulting safety aims and measures are defined corresponding to the current state of the art~~
 - d) the permanent possibility for the test personnel to override and/or deactivate the autonomous driving function is set out,
 - ~~aa) in the case of automated driving functions taking into account § 1a(2) of the Road Traffic Act and~~
 - ~~bb) in the case of autonomous driving functions taking into account § 1e(2) of the Road Traffic Act;~~
 - e) permanent monitoring of the operation is set out
 - ~~aa) in the case of automated driving functions, by a driver who is reliable in terms of technical developments for the motor vehicle traffic, and~~
 - ~~bb) in the case of autonomous driving functions, by means of a technical supervisor present on-site who is reliable in terms of technical developments for the motor vehicle traffic, and~~

f) technical supervision takes place for testing those autonomous driving functions without permanent monitoring by testing personnel, taking into account §1e para. 2 of the Road Traffic Act,

g) the provision of data and events relating to the technological progress of the development stage being tested is included in a non-personal form; these include in particular

aa) the number and times of use, activation and deactivation of the automated or autonomous driving function,

bb) the number and times of approval of alternative driving maneuvers, error memory entries (start and end) including software status,

cc) environmental and weather conditions,

dd) the name of the activated and deactivated passive and active safety systems, their state and the instance that triggered the safety system,

~~ee) vehicle acceleration in the longitudinal and transverse directions, and~~

~~ff) the speed;~~

~~5. it must be possible to permanently deactivate and override on-site the automated or autonomous vehicle system.~~

(4) The Federal Motor Transport Authority is entitled to collect, store and use the data in non-personal form necessary for the assessment of road safety and technical progress as well as for the evidence-based development of regulation of development stages of automated or autonomous driving functions. The data must be deleted no later than after completion of the next evaluation pursuant to § 11 of the Road Traffic Act.

(5) Within the scope of the testing permit, the Federal Motor Transport Authority may authorize exemptions from

1. the provisions of § 1a and § 1e of the Road Traffic Act,
2. this Ordinance and the Road Traffic Licensing Regulations.

(6) The testing permit shall be carried on journeys and handed over to competent persons for examination upon request.

(7) Reference to the testing permit shall be entered in the Certificate of Registration Part I, indicating the issuing authority and date.

(8) The procedures referred to in Section 2a Subsection 3 of the Vehicle Registration Ordinance and § 11 shall not apply.

New (9): § 20 (1), (3) and (3a) of the Road Traffic Licensing Regulations shall apply *mutatis mutandis* to the granting of operating permits for a number of identical motor vehicles with autonomous driving functions to be specified in the approval procedure.

New (10): Test permits and exemptions existing at the time of entry into force remain unaffected.

§ 17 Administrative offences

Original text:

within the meaning of § 24(1) of the Road Traffic Act, any party is committing an administrative offence who, willfully or negligently [...]

4. contrary to § 12 subparagraph 2, does not provide an operating manual as referred to in said provision, does not do so properly, completely or in time [...]

Comment:

It is excessive to punish the failure to provide the operating manual in no. 4 as an administrative offense. The provision of the operating manual is already checked in the approval procedure and can also be enforced under civil law.

Annex 1 – Requirements for motor vehicles with autonomous driving functions

Part 1 – Functional requirements for motor vehicles with autonomous driving functions

1 Dynamic driving task

Original text:

1.2 Interaction with other road users [...]

b) The changing of lanes by vehicles travelling in front or behind, from an adjacent lane into the motor vehicle's own lane or from the motor vehicle's own lane into an adjacent lane must be detected and taken into account in the driving task accordingly.

Comment:

Need for precision.

Proposed wording:

Addition: It must be ensured that a collision with a vehicle moving into the vehicle's own lane is avoided, in so far as this is physically possible with the state of the art (object recognition, braking system).

Original text:

1.3 Planning of driving paths and speeds [...]

d) Situations in which the motor vehicle must give way to others (e.g., before a pedestrian crossing, at intersections or junctions) must be detected and managed without endangering or obstructing those who have right of way. A calculated time to impact of more than three seconds in relation to the party who has right of way must be maintained. If the manufacturer deviates from these values, they must justify this sufficiently and document it on the basis of systematic safety assessments according to the state of the art. The state-of-the-art requirement is considered to be met if the specifications of ISO 26262:2018-12 Road vehicles – Functional safety are met.

Comment:

Need for precision.

Proposed wording:

[...] If the manufacturer deviates from these values, they must justify this sufficiently and document it on the basis of safety assessments comparable with ISO 21448 and ISO 26262:2018.

3 Emergency driving function

Original text:

The motor vehicle with autonomous driving functions must be equipped with an emergency driving function. In the event that the vehicle has to be placed into the minimal risk state due to a defect in the motor vehicle, this must be done using the emergency driving function.

Journeys using the emergency driving function may only be carried out at walking pace and with hazard warning lights activated. Transitioning the autonomous driving function from normal travel to travel using the emergency driving function is exempted from this speed limit if braking is necessary.

Comment:

Determining walking pace is hazardous, for example, on federal highways or multi-lane federal trunk roads when a vehicle must be driven from the outside lane onto the hard shoulder.

Proposed wording:

The “**transition to emergency driving function**” needs to be defined.

4 Manual driving mode

Original text:

In manual driving mode, a person driving the vehicle performs the driving task. The motor vehicle with autonomous driving function must be equipped with devices that enable a person driving the vehicle to perform the driving task.

If control in manual driving mode is limited to speeds no higher than walking pace, it is not necessary for the person driving the vehicle to be physically present inside the motor vehicle with autonomous driving function. In this case, control can be carried out via a remote-control unit located in the near field of the motor vehicle. The maximum distance over which remote control is possible is six meters, measured in a straight line. Compliance with the maximum distance must be ensured by the manufacturer by appropriate technical means.

Comment:

The six-meter requirement should be reconsidered, especially for commercial vehicle operations. The six-meter requirement is impractical here, especially for commercial vehicles, because the vehicle’s surroundings cannot be surveyed from such a short distance. The distance should depend on the size of the vehicle.

In road traffic but also in hub-to-hub traffic, it can be helpful to perform maneuvering maneuvers even from an area further than six meters away from the vehicle. This can reduce complexity and increase safety by, for example, keeping people out of the maneuvering area. The maximum distance of six meters for remote control does not seem practical for these applications and should be made possible from a greater distance in favor of manual control, e.g., from a control station or a pilot vehicle, provided that safe monitoring of the traffic situation is ensured with sufficient line of sight.

Proposed wording:

If control in manual driving mode is limited to speeds no higher than walking pace, it is not necessary for the person driving the vehicle to be physically present inside the motor vehicle with autonomous driving function. **Remote control is also possible provided that the vehicle and its immediate vicinity can be sufficiently surveyed from outside of the vehicle.**

7. Functional safety and safety of the function

7.3 Regular technical vehicle monitoring

Original text:

The manufacturer shall ensure that regular technical vehicle monitoring can be carried out by means of appropriate functional and design measures (e.g., manual driving mode, accessibility of brakes). In particular, it must be possible for the vehicle to access test stands for brakes, light adjustment stations, lifting platforms or pits, and it must be possible to perform all prescribed checks.

Comment:

The specifications for carrying out the general inspection must be adapted correspondingly with regard to compatibility with autonomous vehicles or a corresponding interpretation must be developed with regard to application to autonomous vehicles. Even with all the constructive efforts of the manufacturer, the general inspection can hardly be carried out the same way for a shuttle as for a conventional vehicle.

Part 2 – Testing and validation methods for vehicles with autonomous vehicle functions

10.2 Test scenarios, deviations and criteria for passing the test

Original text:

In accordance with the intended operating area, the Federal Motor Transport Authority is to select test scenarios as part of the testing process. The selection is to be based on a set of scenarios drawn up by the manufacturer as per § 3 (2). In order to verify compliance with the requirements for the motor vehicle, driving tests in real road traffic must be carried out as part of granting the type approval. The testing is supplemented by simulations and performance of driving maneuvers at a test site.

Depending on the test scenarios established by the competent authority as part of granting the type approval, the criteria for passing the test are set using the following values. If the manufacturer deviates from these values, they shall justify and document this sufficiently. Justification and documentation must be carried out in line with the state of the art. The state-of-the-art requirement is considered to be met if the specifications of ISO 26262:2018-12 Road vehicles – Functional safety are met.

Comment:

The intended function of ISO 21448 SOTIF (Safety of the Intended Functionality) is to be considered here.

Proposed wording:

If the manufacturer deviates from these values, they shall justify and document this sufficiently **on the basis of safety assessments comparable with ISO 21448 SOTIF (Safety of the Intended Functionality) or with ISO 26262:2018 Road vehicles – Functional safety.**

10.2.1 Criteria for passing from UN Regulation No. 152

Original text:

Compliance with the requirements laid down in point 1.1 for the motor vehicle with autonomous driving function with regard to the avoidance of collisions is to be ensured by deriving passing criteria from the requirements of UN Regulation No 152 – Uniform provisions concerning the approval of motor vehicles with regard to the Advanced Emergency Braking System (AEBS) for M1 and N1 vehicles (OJ L 360, 30.10.2020, p. 66). The following amendments to the text of UN Regulation No 152 shall apply:

Comment:

The area of operation also includes commercial vehicles. UNECE-R152 only applies to passenger cars. UNECE-R131 for commercial vehicles needs to be added here.

10.2.5 Avoiding collisions with vehicles travelling in the same direction

Original text:

Collisions with road users travelling in the same direction and entering the vehicle's own lane must be avoided within the conditions determined by the following inequality. The inequality is valid only for road users entering the lane in front of the motor vehicle with autonomous driving function and only if the road users moving in were visible at least 0.72 seconds before entering:

[...]

Comment:

The system's control strategy may only change between collision avoidance and collision mitigation to the extent that braking is prioritized over an evasive maneuver that has failed. For commercial vehicles, in particular, this should be formulated more clearly.

Proposed wording:

The system's control strategy may only change between collision avoidance and collision mitigation to the extent that braking is prioritized over an evasive maneuver that has failed.

10.2.6 Lane change maneuvers

Original text:

The test-passing criteria for lane change maneuvers can be found in point 5.6.4.6. of UN Regulation No 79 of the Economic Commission for Europe of the United Nations (UNECE) – Uniform provisions concerning the approval of vehicles with regard to steering equipment (OJ L 318, 14.12.2018, p. 1). Requirements from this Regulation regarding functions relating to the person driving shall not apply. The driving maneuvers must be planned in such a way that there is no risk to other road users.

The test-passing criteria with regard to safe lane changes and how to avoid any risk to other traffic users during lane changes are based on the requirements in points 5.6.4.7. and 5.6.4.8. of UN Regulation No 79, whereby the speed limit prevailing in the ODD may be set for the speed of the approaching vehicle (vapp).

Proposed wording:

Addition of “whereby the speed limit **or recommended speed if there is no speed limit** prevailing in the ODD may be set.”

11 Performance of tests

Original text:

[...] The performance of the sensors in terms of detection and classification of objects depending on different distances and environmental conditions must be determined in real tests for the simulation. If deemed necessary by the technical service, each simulation series is to be supplemented by real tests.

Proposed wording:

Suggested addition: “[...] the sensors **in connection with perception** in terms of detection [...]”

Part 3 – Digital data storage system

13. General requirements for data storage

Original text:

A data storage system must be integrated in the motor vehicle with autonomous driving function [...],

Comment:

The requirement must be formulated in a way that is open to all technologies. The wording [...] a data storage system must be integrated in the motor vehicle [...] is not open to technology. This prevents innovative storage solutions. The data storage or storage location does not necessarily have to be physically located in the vehicle; it could, for example, also be located in a backend (Extended Vehicle (ExVe)) outside the vehicle. It must be regulated as to which data elements must be stored with which associated triggers over which period of time and who is authorized to read them. There can be no design-specific regulation for the implementation of this requirement. The requirements for the storage location must be deleted.

13.1 Events to be stored

Original text:

Case 1: Autonomous journey in the defined operating area

Comment:

A dual-layer concept is planned as per UNECE.

1) It makes sense to have an event-based recording with predefined triggers. The aim should be for a storage period of (-5s to +250ms) in accordance with the UNECE discussion.

2) DSSAD as a continuous recording of events with temporal and geographical reference points.

tS and tE are relevant to DSSAD. Suggestion: second track for entries relevant to DSSAD.

Original text:

Case 2: Autonomous journey in the defined operating area with event (e.g., accident)

Comment:

The symbol used (red block) is misleading, as the recording section before t0 should be considerably greater than that following t0 – With conventional EDR of -5 s to +250 ms. This needs to be harmonized in the UNECE discussion.

Suggestion: tS, t0, tE are storage entries in DSSAD

Original text:

Case 3: Autonomous journey in the defined operating area with event and subsequent transfer of the motor vehicle into the minimal risk state

Comment:

The symbol used is misleading.

Suggestion: tS, tR, tOP, tE are storage entries in DSSAD

- The read box is misleading, as DSSAD data is stored at a specific point in time.
- The storage concept shown here requires a variable storage period, since events such as tR and tOP may last for different lengths of time.
- With conventional EDR, on the other hand, event-specific, fixed storage periods (-5 s to +250 ms) are used.

13.2 Technical specifications for storing, reading and transferring data

Original text:

a) [...] In addition, in certain situations or after certain events, the data must be sent directly to the competent public body via a wide-area network connection (WAN connection); [...]

Comment:

Transferring data to a responsible public body, e.g., to a government backend, requires the definition of a corresponding interface. This must be provided in the development of the system right from the start. This is a long-term goal and should be discussed separately with sufficient lead time. Such a transmission of data is not a mandatory requirement for secure operation and can be omitted.

Original text:

b) Stored data may only be accessed and downloaded via the standardized 16-pin OBD interface or via the proprietary interface by the Federal Motor Transport Authority and the competent authority, provided that this is necessary for the performance of their respective tasks under this Ordinance.

Comment:

Manufacturers are key drivers of innovation. So as not to jeopardize Germany as a technology location, restricting access rights to the Federal Motor Transport Authority and the authority responsible under state law is too restrictive. For purposes such as repair support, product improvement, development and monitoring, as well as warranty and product liability, explicit access rights for manufacturers should also be regulated (again in compliance with data protection requirements). Since, according to the third and fifth bullet points, access can be made via the manufacturer's proprietary interface, it is obvious that the manufacturer has access rights. The last bullet point also requires that the stored data elements must be protected against (subsequent) manipulation, regardless of who reads the data. This means that restricting access to the state agency is not necessary and should be omitted.

Original text:

d) The storage of data and the transmission of data to the Federal Motor Transport Authority and the competent authority must comply with the requirements concerning IT security (Part 5). [...]

Comment:

This requirement ensures that the recorded data is protected against manipulation, regardless of who reads it.

The manufacturer must prove the protection concept and its effectiveness to the technical service/authority as part of the certification. This means that the restriction of access to the state agency can be omitted, such that, for example, a manufacturer may also read the data for the purpose of traffic safety analyses and improvements.

Annex 3 – Documentation obligations of the manufacturer

1 Functional description

Original text:

1.3 description of the required functions of the motor vehicle and of the system states (e.g., driving with activated autonomous function, other driving modes, minimal risk state) [...]

Comment:

Following suggested wording for clarification.

Proposed wording:

description of the required functions of the motor vehicle and of the **system and operating** states (e.g., driving with activated autonomous function, other driving modes, minimal risk state) [...]

Relationship to EU regulations under development

In line with the efforts to issue the ordinance governing the operation of motor vehicles with automated and autonomous driving functions and amending road traffic regulations, the EU Commission has presented a regulation on automated and autonomous driving. We could not overlook the fact that the latest draft is intended only to refer to a regulation of small series, which limits the type approval of automated and autonomous vehicles to 250 vehicles per vehicle type, year and member state, and throughout the EU to 1,500 vehicles per vehicle type and per year.

We expressly welcome the fact that the EU regulatory plans will bring about an extensive standardization of the regulatory and technical requirements for automated and autonomous vehicles. However, with regard to type approval in Germany, we would like to point out that the currently envisaged limitation at EU level represents a significant step backward compared to the regulations and objectives of the law on autonomous driving and the associated and further completed Autonomous Vehicle Approval and Operation Ordinance (AFGBV). This limitation would severely restrict, in particular, the planning security of our member companies. The technically highly demanding and subsequently cost-intensive development of automated and autonomous vehicles requires a correspondingly secure planning horizon, and the aforementioned limitation could well represent a significant hurdle to market entry and development. In addition, the EU regulation would – in our current view – at the very least severely limit the scope of application for the German regulations, such that the success achieved nationally with the L4 amendment threatens to become obsolete.

The VDA therefore suggests the following approach:

- 1) Inclusion of an opening clause in the relevant EU regulations to the effect that the national type approvals (without a limit on the number of units) in the area of automated and autonomous driving do not oppose them, but rather stand alongside them; and
- 2) Establishment of a robust and short-term time frame for transforming the EU small-series regulation into one for unrestricted regulation for series approval.

From the VDA's point of view, this would pave the way toward a uniform regulation of technical and regulatory requirements throughout the EU without imposing restrictions at national level. At the same time, it would increase planning security for our member companies while retaining corresponding development incentives.

Contact Persons

Dr. Joachim Damasky

Managing Director Products & Value Creation

joachim.damasky@vda.de

Matthias Krähling

Head of Department Automotive Technologies and Eco-systems

matthias.kraehling@vda.de

Henry Kuhle

Head of Department Coordination Unit for Networked and Automated Driving

henry.kuhle@vda.de

Angela Pasch

Senior Consultant Coordination Unit for Networked and Automated Driving

angela.pasch@vda.de

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