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Véhicules automatisés/autonomes et connectés : Coordination des travaux sur l'automatisation menés par différents groupes de travail : Applicabilité des RTM ONU et des Règlements ONU aux systèmes de conduite automatisés

Rapport sur l'applicabilité des Règlements du WP.29 et des Règlements techniques mondiaux aux véhicules automatisés**, ***

Communication des représentants de l'Allemagne, de la Chine, de la France, du Japon, du Royaume des Pays-Bas, du Royaume-Uni de Grande-Bretagne et d'Irlande du Nord, de l'European Association of Automotive Suppliers et de l'Organisation internationale des constructeurs d'automobiles

Le texte ci-après a été établi par les experts des équipes spéciales chargées d'examiner les Règlements ONU et les Règlements techniques mondiaux ONU (RTM ONU) du Forum mondial de l'harmonisation des Règlements concernant les véhicules (WP.29) et de déterminer s'ils sont applicables à la conduite automatisée. À sa 186e session (mars 2022), le WP.29 a demandé à chacun de ses groupes de travail subsidiaires de procéder à un examen des instruments juridiques relevant de sa compétence. On trouvera, dans le présent document, un résumé des résultats de cet examen et du processus suivi, ainsi qu' un aperçu général de l'applicabilité des Règlements ONU et des RTM ONU aux systèmes de conduite automatisés.

Le présent document représente les avis des experts au moment de la soumission, et les recommandations qui y figurent peuvent évoluer de manière significative au cours des prochaines étapes du processus de révision et de modification des Règlements.

* Deuxième nouveau tirage pour raisons techniques (3 août 2023).

** Conformément au programme de travail du Comité des transports intérieurs pour 2023 tel qu'il figure dans le projet de budget-programme pour 2023 (A/77/6 (Sect. 20), par. 20.6), le Forum mondial a pour mission d'élaborer, d'harmoniser et de mettre à jour les Règlements ONU en vue d'améliorer les caractéristiques fonctionnelles des véhicules. Le présent document est soumis en vertu de ce mandat.

*** Les annexes au présent document sont distribuées uniquement dans la langue de l'original.

Merci de recycler

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I. Avant-propos

1. L'automatisation est souvent considérée comme l'une des évolutions les plus marquantes de l'automobile depuis la création de celle-ci à la fin du XIX^{e} siècle. Alors que la technologie des véhicules sans conducteur est en phase de gestation, le secteur automobile et le public se tournent vers les autorités à la recherche d'orientations pour une mise en circulation en toute sécurité de ce type de véhicules sur la voie publique.

2. Après plus d'un siècle d'efforts intenses en faveur de la sécurité routière, les véhicules à moteur bénéficient d'un cadre réglementaire international étendu, étayé par le WP.29. Dès 2018, le Forum mondial a reconnu la nécessité d'établir un cadre réglementaire permettant de définir, de tester et d'approuver (dans le cadre d'homologations de type) les performances (principalement la sécurité) des véhicules automatisés, en créant son groupe de travail subsidiaire, le Groupe de travail des véhicules automatisés/autonomes et connectés (GRVA). Depuis lors, des experts se sont attelés à la tâche considérable d'élaborer des prescriptions fonctionnelles et des méthodes de validation pour les systèmes de conduite automatisés.

3. Cependant, même en supposant que l'intelligence des véhicules équipés de cette technologie puisse assurer sans faille les opérations de conduite, il est incontestable que le reste du véhicule doit également être conforme aux dispositions nécessaires pour garantir sa sécurité, aussi bien pour ses occupants que pour tous les usagers de la route, son intégrité, son confort, sa facilité d'utilisation partout dans le monde, et son impact limité sur l'environnement. Au titre de l'Accord de 1958[1] et de l'Accord de 1998[2], le WP.29 est chargé (depuis juin 2023) de 166[3] additifs à l'Accord de 1958 (Règlements ONU), en vigueur, et de 23 additifs au Registre mondial (Règlements techniques mondiaux). Chacun de ces Règlements définit des dispositions techniques et des prescriptions d'essais pour les systèmes ou les caractéristiques des véhicules à moteur. Toutefois, les Règlements ont également été élaborés sur la base de certaines hypothèses concernant la conception du véhicule selon lesquelles : un conducteur serait présent à l'intérieur du véhicule et disponible à tout moment, le conducteur serait assis à l'avant du véhicule et aurait accès aux commandes et aux indicateurs de l'état du véhicule, les portières permettraient au conducteur d'accéder au véhicule, etc. Il est donc difficile de comprendre de prime abord quels Règlements sont pertinents pour les véhicules entièrement automatisés, et des modifications importantes pourraient être nécessaires pour que ces Règlements pertinents puissent s'appliquer à ces véhicules.

4. Conscient de la nécessité impérieuse de comprendre quels Règlements pourraient être applicables aux véhicules sans conducteur et si des modifications pourraient s'imposer à cette fin, le WP.29 a demandé[4] aux groupes de travail subsidiaires de procéder à une analyse de tous les Règlements ONU et RTM ONU, de manière que tous les Règlements pertinents puissent ensuite être modifiés afin de tenir compte de la conduite automatisée.

II. Portée et méthode de l'analyse

5. L'analyse a été réalisée entre octobre 2022 et juin 2023. Elle portait sur les Règlements ONU et les RTM ONU entrés en vigueur avant la fin de la période d'examen, généralement dans leur plus récente série d'amendements et de compléments. Elle ne concernait pas d'autres documents tels que les résolutions du WP.29, les documents d'interprétation de Règlements existants ou d'autres documents qui ne sont pas des

[1] Accord concernant l'adoption de Règlements techniques harmonisés de l'ONU applicables aux véhicules à roues et aux équipements et pièces susceptibles d'être montés ou utilisés sur les véhicules à roues et les conditions de reconnaissance réciproque des homologations délivrées conformément à ces Règlements.

[2] Accord concernant l'établissement de règlements techniques mondiaux applicables aux véhicules à roues, ainsi qu'aux équipements et pièces qui peuvent être montés et/ou utilisés sur les véhicules à roues.

[3] Les Règlements sont numérotés de 1 à 167. On y ajoute le Règlement ONU n^{o} 13-H et en retranche les deux Règlements ONU n^{os} 2 et 15 qui ont été supprimés.

[4] ECE/TRANS/WP.29/1164, par. 30.

Règlements. Dans le présent document, le terme « Règlement » peut être employé indifféremment pour les Règlements ONU et les RTM ONU.

6. Chaque groupe de travail subsidiaire du WP.29 a procédé à l'analyse des Règlements relevant de sa compétence. Ainsi, six équipes spéciales d'examen ont été créées, comme suit :

a) Groupe de travail du bruit et des pneumatiques (GRBP), présidence : Royaume des Pays-Bas, secrétariat : Organisation internationale des constructeurs d'automobiles (OICA) ;

b) Groupe de travail de l'éclairage et de la signalisation lumineuse (GRE)[5], coprésidence : Allemagne et Royaume-Uni de Grande-Bretagne et d'Irlande du Nord, secrétariat : Groupe de travail « Bruxelles 1952 » (GTB) ;

c) Groupe de travail de la pollution et de l'énergie (GRPE), présidence : Royaume des Pays-Bas ;

d) Groupe de travail des dispositions générales de sécurité (GRSG), présidence : Royaume des Pays-Bas, secrétariat : OICA ;

e) Groupe de travail de la sécurité passive (GRSP), présidence : Allemagne, secrétariat : OICA ;

f) Groupe de travail des véhicules automatisés/autonomes et connectés (GRVA) : coprésidence : Chine et France.

7. Outre l'analyse de ses propres Règlements, l'équipe spéciale du GRVA a assuré la coordination et l'assistance nécessaire pour harmoniser le processus d'analyse dans l'ensemble des équipes spéciales, recenser les questions de haut niveau et faire rapport au WP.29.

Tableau 1
Répartition des Règlements entre les groupes de travail subsidiaires du WP.29

Groupe de travail subsidiaire	*Nombre de Règlements ONU*	*Nombre de RTM ONU*
GRBP	21	1
GRE	44	0
GRPE	17	12
GRSG	41	2
GRSP	29	6
GRVA	14	2

8. L'analyse visait les trois objectifs suivants :

a) **Objectif 1** : Évaluer chaque Règlement pour déterminer s'il est pertinent pour les véhicules équipés d'un système de conduite automatisé n'émettant pas de demande de transition, indépendamment de toute possibilité de conduite manuelle.

b) **Objectif 2** : Examiner chaque Règlement pertinent pour déterminer s'il s'applique aux véhicules automatisés. « Applicable » signifie, dans le cas d'un Règlement ONU, que le texte actuel du Règlement peut être appliqué de manière cohérente[6] par les autorités d'homologation de type et les services techniques à un véhicule automatisé.

c) **Objectif 3** : Évaluer chaque Règlement pertinent mais non applicable en l'état à l'automatisation afin de déterminer s'il est nécessaire d'y apporter des changements importants pour le rendre effectivement applicable.

[5] L'équipe spéciale d'examen du GRE (équipe spéciale des prescriptions de signalisation pour les véhicules automatisés/autonomes (équipe TF AVSR)) a été créée avant le début de l'analyse, son objectif initial ayant été de modifier le Règlement ONU nº 48 (Installation des dispositifs d'éclairage et de signalisation lumineuse) afin de le rendre applicable aux véhicules automatisés.

[6] Ne comprend pas les modifications mineures d'ordre rédactionnel qui pourraient s'avérer nécessaires à l'avenir.

9. Les groupes de travail n'ont pris en compte que les véhicules équipés d'un système de conduite automatisée n'émettant pas de demande de transition (ci-après dénommés « véhicules entièrement automatisés »), notamment :

a) Les véhicules équipés de fonctions de conduite manuelle (« véhicules bimodes ») ;

b) Les véhicules non équipés de fonctions de conduite manuelle ;

c) Les véhicules qui ne peuvent pas transporter d'occupant.

10. En outre, il a été déterminé que plusieurs cas d'utilisation étaient directement ou indirectement liés à la conduite automatisée. Toutefois, il a été décidé de ne considérer ces cas d'utilisation que de manière générale, en réservant les analyses spécifiques aux priorités futures en matière de modifications. Parmi ces cas d'utilisation figurent les suivants :

a) Les véhicules pouvant être conduits dans les deux sens (« véhicules bidirectionnels ») ;

b) Les véhicules dépourvus de fonctionnalités de conduite manuelle et dont les domaines de conception fonctionnelle sont très limités, tels que les navettes urbaines automatisées ou les robots de livraison ;

c) Les véhicules dans lesquels la disposition et l'emplacement des sièges, notamment ceux faisant face vers l'arrière ou vers le côté, ou encore ceux dont la capacité d'inclinaison dépasse les limites actuelles, ne sont pas conventionnels ;

d) Les véhicules dans lesquels se trouve un opérateur qui n'est pas un conducteur ;

e) Les véhicules permettant des interactions directes avec des opérateurs à distance ou des centres de supervision.

III. Résultats généraux

11. Au cours de l'analyse, il a été constaté que les Règlements pouvaient être répartis en quatre groupes, selon leur pertinence pour les véhicules entièrement automatisés et leur applicabilité à ces véhicules.

A. Règlements pertinents pour la conduite automatisée et applicables (mais auxquels il pourrait s'avérer utile d'apporter des améliorations)

12. Certains Règlements ne sont pas concernés par l'automatisation des véhicules auxquels ils s'appliquent :

a) Certains Règlements concernant des composants (en particulier ceux qui ne comportent pas de disposition relative à l'installation de ces composants sur un véhicule) ;

b) Les Règlements concernant les aspects liés aux caractéristiques physiques du véhicule, c'est notamment le cas de plusieurs Règlements concernant la sécurité générale et passive, tels que ceux relatifs aux saillies extérieures, à la résistance au feu, aux systèmes de chauffage, etc.

13. Ce groupe comprend également des Règlements qui pourraient être améliorés aux fins d'une meilleure prise en compte des véhicules automatisés. C'est le cas, par exemple, du Règlement ONU n° 26 sur les saillies extérieures, dans lequel des dispositions supplémentaires pourraient être ajoutées concernant les capteurs des véhicules automatisés.

Tableau 2
Liste des Règlements pertinents pour les véhicules entièrement automatisés et applicables à ce type de véhicules

GRBP	*GRE*	*GRPE*	*GRSG*	*GRSP*	*GRVA*
R30, R54, R75, R106, R108, R109, R117, R124, R142, R164 et RTM16	R37, R45, R99, R128, R148, R149, R150	R24, R103, R133	R26, R34, R58, R73, R118, R122, R162, R163	R22, R25, R42, R80, R114, R126, R129	R155, R156

B. Règlements pertinents mais non applicables en l'état, qui nécessitent des modifications mineures

14. Certains Règlements, bien que pertinents pour la conduite automatisée, ne peuvent pas être considérés comme immédiatement applicables aux véhicules entièrement automatisés en raison de la présence de dispositions faisant référence à des éléments directement liés à la conduite manuelle (tels que le conducteur lui-même, son siège, les pédales ou autres commandes manuelles, les témoins, etc.). Toutefois, les Règlements de ce groupe ne contiennent que quelques dispositions de cette nature, qui ne devraient pas d'ailleurs nécessiter de modification complexe.

Tableau 3
Liste des Règlements pertinents mais non applicables en l'état, qui nécessitent des modifications mineures

GRBP	*GRE*	*GRPE*	*GRSG*	*GRSP*	*GRVA*
R9, R28, R41, R51, R59, R63, R64, R92, R138, R141 et R165		R68 et RTM19	R18, R39, R61, R67, R93, R97, R110, R116 et R161	R32, R33, R111, R134, R146 et RTM13	

15. Par ailleurs, les Règlements ci-après ne sont pertinents que pour les véhicules avec occupants.

Tableau 4
Liste des Règlements pertinents pour les véhicules entièrement automatisés avec occupants seulement, mais qui ne sont pas applicables en l'état et qui nécessitent des modifications mineures

GRBP	*GRE*	*GRPE*	*GRSG*	*GRSP*	*GRVA*
			R66	R14, R25, R145, RTM1 et RTM7	

C. Règlements pertinents mais non applicables en l'état, qui nécessitent d'importantes modifications

16. Certains Règlements, bien que pertinents pour la conduite automatisée, sont très difficilement applicables à un véhicule entièrement automatisé en raison de leurs nombreuses références à des caractéristiques de véhicules incompatibles avec la conduite automatisée, ou de la nécessité d'y ajouter de nouvelles prescriptions importantes pour garantir un niveau de sécurité satisfaisant pour les véhicules entièrement automatisés. C'est le cas de plusieurs Règlements relatifs aux fonctions de base des véhicules telles que le freinage, la direction et l'éclairage, ainsi que des Règlements concernant la sécurité (sécurité électrique, résistance aux chocs, etc.). Compte tenu du nombre important de modifications à apporter aux

Règlements de ce groupe, les deux tableaux ci-dessous indiquent le niveau de priorité proposé pour certains Règlements ONU et RTM ONU.

Tableau 5
Liste des Règlements pertinents mais non applicables en l'état, qui nécessitent d'importantes modifications

GRBP	*GRE*	*GRPE*	*GRSG*	*GRSP*	*GRVA*
	R10, R48, *R53*, *R74*, R86	RTM2	**R43**, R55, R102, R105, R144, R147, **R160**, RTM6	**R94, R95, R100**, R127, R135, R136, R137, R153, RTM9, RTM14, RTM20	**R13, R13-H**, R78, **R79**, R90, RTM3

Note : Dans ce tableau, le texte en caractères gras indique les Règlements à modifier en priorité (tels que définis à la section A du chapitre V du présent rapport) ; le texte en italique représente les Règlements qui ne s'appliquent qu'aux véhicules à deux roues et dont les amendements ne devraient pas être prioritaires.

17. Par ailleurs, les Règlements ci-après ne s'appliquent qu'aux véhicules avec occupants.

Tableau 6
Liste des Règlements pertinents pour les véhicules entièrement automatisés avec occupants seulement, mais qui ne sont pas applicables en l'état et qui nécessitent d'importantes modifications

GRBP	*GRE*	*GRPE*	*GRSG*	*GRSP*	*GRVA*
			R107	**R11, R16, R17, R21 et R29**	

Note : Dans ce tableau, le texte en caractères gras représente les Règlements à modifier en priorité (tels que définis à la section A du chapitre V du présent rapport).

D. Règlements non pertinents pour les véhicules entièrement automatisés

18. Certains Règlements ne sont pas pertinents pour les véhicules entièrement automatisés, soit parce qu'ils ne s'appliquent qu'aux véhicules équipés de fonctionnalités de conduite manuelle et n'ont pas trait aux opérations de conduite, soit parce qu'ils concernent des systèmes ou des caractéristiques qui dépendent entièrement du système de conduite automatisé.

Tableau 7
Liste des Règlements non pertinents pour les véhicules entièrement automatisés

GRBP	*GRE*	*GRPE*	*GRSG*	*GRSP*	*GRVA*
	R1, R3, R4, R5, R6, R7, R8, R19, R20, R23, R27, R31, R38, R50, R56, R57, R65, R69, R70, R72, R76, R77, R82, R87, R88, R91, R98, R104, R112, R113, R119 et R123		R35, R36, R46*, R52, R60, R62, R71*, R81*, R121, R125*, R151*, R158*, R159*, R166*, R167* et RTM12	R12 et R44	R89*, R130*, R131*, R139, R140*, R152*, R157 et RTM8*

* Le système ou l'équipement visé par le Règlement devrait être pris en charge par le système de conduite automatisé, ce qui permet de garantir au moins le même niveau de performance.

19. Ces Règlements ne s'appliquent pas nécessairement aux véhicules entièrement automatisés autres que les véhicules bimodes, mais ils peuvent nécessiter des modifications concernant l'interaction entre les modes manuel et automatisé, l'état du système lorsque le véhicule est en mode automatisé, ou le comportement du système lors du passage d'un mode à l'autre.

E. Autres éléments à prendre en compte

20. Certains Règlements ont été examinés du point de vue de leur compatibilité technique avec les véhicules entièrement automatisés, mais pas en ce qui concerne leur pertinence pour les politiques de haut niveau en matière de règles de circulation. C'est le cas des Règlements ONU n^{os} 105 et 111, relatifs à la sécurité des véhicules transportant des marchandises dangereuses et à celle des véhicules-citernes, respectivement. Au moment de la rédaction du présent rapport, on ignorait si l'utilisation de ces véhicules sur la voie publique pourrait faire l'objet de restrictions ou d'interdictions. Cependant, les Règlements eux-mêmes sont pertinents pour les véhicules automatisés et pourraient être rendus applicables par des amendements, raison pour laquelle ils sont indiqués comme « pertinents » dans ce rapport. En fonction des politiques de haut niveau, il pourrait être possible de modifier ces Règlements soit pour interdire expressément les véhicules automatisés par souci de conformité (si le choix est fait d'interdire l'homologation de type de ces véhicules), soit pour prendre en compte lesdits véhicules, ce qui permet de conserver la possibilité d'autoriser ou non ces véhicules à circuler sur la voie publique.

IV. Recommandations relatives à l'élaboration de futurs Règlements

A. Principes généraux

21. Lors de l'élaboration de Règlements relatifs aux systèmes de conduite automatisés, plusieurs fonctions de base doivent être considérées comme devant être assurées par ces systèmes :

a) Réagir à tous les types d'informations provenant de Règlements autres que ceux relatifs aux systèmes de conduite automatisés, y compris tous les types de signaux destinés initialement au conducteur, et prendre les mesures qui s'imposent ;

b) Assurer le même niveau de performance que toute action effectuée par le conducteur ou toute fonction destinée à aider le conducteur ;

c) Permettre la réalisation de tous les essais relevant d'autres Règlements, par exemple en fournissant un mode d'essai ou d'autres méthodes permettant de contrôler spécifiquement le véhicule pour qu'il suive le protocole d'essai spécifié, même si le véhicule n'est pas doté de fonctionnalités de conduite manuelle.

B. Liste de mots-clefs pertinents à prendre en compte

22. On trouvera au tableau 8 une liste de mots-clefs pertinents qui, s'ils sont employés dans un Règlement ne concernant pas les systèmes de conduite automatisés, pourraient avoir des répercussions sur l'application de celui-ci aux véhicules automatisés. Toute occurrence de l'un de ces mots (ou de mots similaires) dans une disposition applicable aux véhicules équipés d'un système de conduite automatisé devrait donc être accompagnée de dispositions équivalentes claires relatives à ces véhicules.

23. Il a également été remarqué que le mot-clef « système », bien qu'il ne soit pas pertinent lorsqu'il est pris individuellement, était souvent utilisé dans les Règlements en relation étroite avec des dispositions ayant trait à la conduite automatisée.

C. Questions en suspens

24. Il a également été déterminé que les concepts suivants étaient pertinents pour l'élaboration de tout futur Règlement, mais nécessitaient un examen plus approfondi avant que des orientations définitives puissent être formulées.

1. Catégories ou sous-catégories pour les véhicules automatisés

25. L'un des principaux problèmes constatés au cours de l'analyse est celui des catégories de véhicules automatisés. En effet, les catégories actuelles de véhicules ont toutes été conçues sur la base de modèles et de cas d'utilisation de véhicules existants. Les véhicules automatisés représentent une variété de nouveaux cas d'utilisation possibles, tels que les petits véhicules urbains transportant des passagers assis et debout, ou les robots de livraison sans occupant, qui ne correspondent à aucune catégorie de véhicule existante. Par ailleurs, la catégorisation des véhicules se fonde non seulement sur leur usage, mais répond également à d'autres considérations, d'ordre administratif, telles que l'immatriculation, les taxes ou les permis de conduire. Il convient donc d'adopter une approche mesurée pour étudier les avantages et la charge administrative supplémentaire liés à l'ajout de nouvelles catégories ou sous-catégories réservées aux véhicules automatisés. Certes, les discussions sur cette question ont commencé, mais pour modifier les Règlements, il faudra que la Résolution d'ensemble sur la construction des véhicules (R.E.3) et la Résolution spéciale n° 1 (R.S.1) tiennent compte des véhicules automatisés. Il est donc recommandé que le GRSG et le GRVA travaillent immédiatement et conjointement sur ces deux Résolutions.

26. En outre, les catégories existantes constituent un obstacle à l'applicabilité de certains Règlements aux véhicules automatisés, notamment aux quadricycles légers. Bien qu'il existe de nombreux scénarios pour les quadricycles légers automatisés, comme l'usage pour les livraisons urbaines, la catégorie existante la plus appropriée serait la L6 ou la L7 (conformément à la R.E.3). Il est à noter que la R.S.1 ne prévoit pas de catégorie correspondante. Cependant, plusieurs Règlements pertinents (R78 et R136 notamment) s'appliquent à tous les véhicules de la catégorie L, y compris aux véhicules à deux roues pour lesquels aucun cas d'utilisation de l'automatisation n'a été considéré comme urgent par le secteur au cours de l'examen. Il serait donc difficile de modifier l'ensemble du Règlement pour prendre en compte les quadricycles automatisés. En revanche, ces catégories de véhicules pourraient être transférées dans d'autres Règlements concernant les véhicules des catégories M et N (du R78 au R13-H et du R136 au R100 respectivement). Toutefois, cela représenterait une augmentation significative des prescriptions de performance pour ces véhicules.

2. Effets du domaine de conception fonctionnelle sur les prescriptions en matière de performances et d'essais

27. Chaque véhicule automatisé peut fonctionner dans le cadre d'un domaine de conception fonctionnelle, avec des limites exactes et prédéterminées quant à l'endroit où le véhicule peut circuler. De nombreux véhicules automatisés ne peuvent donc fonctionner que dans des environnements bien précis (terrain plat, zone urbaine, autoroute, etc.), à faible vitesse ou en respectant d'autres restrictions importantes. La plupart des Règlements tiennent compte du fait que les véhicules sont conduits dans des environnements très divers, et les prescriptions en matière de performance sont adaptées à ces environnements. On pourrait déterminer si les limitations opérationnelles des véhicules automatisés devraient ou non être prises en compte dans les Règlements existants, tels que ceux relatifs au freinage, à la direction, à l'éclairage et à la résistance aux chocs.

3. Chevauchement avec les capacités des systèmes de conduite automatisés

28. Plusieurs Règlements relatifs aux fonctions de base des véhicules (R13, R13-H, R78, R79 et RTM3) ou aux dispositifs de sécurité active (R131, R140, R152 et RTM8) décrivent des prescriptions qui devraient être prises en charge par le système de conduite automatisé. Par exemple, un véhicule automatisé doit être capable de freiner en cas d'urgence, et ce avec un niveau de performance au moins égal à celui requis pour un système actif de freinage d'urgence (AEBS). De même, les très nombreux scénarios d'essai concernant le freinage pourraient faire double emploi avec les prescriptions d'essais d'un Règlement sur le freinage. Il convient donc d'examiner attentivement si des Règlements tels que ceux relatifs au système de contrôle électronique de la stabilité (ESC) ou à l'AEBS peuvent être considérés comme non pertinents pour les véhicules automatisés, ou s'ils ont une valeur en tant que preuves indépendantes de la conformité du véhicule dans son ensemble avec le niveau de performance de caractéristiques particulières déjà applicables aux véhicules non automatisés. Pour la même raison, il peut être utile de maintenir des épreuves fonctionnelles de base pour les Règlements relatifs au freinage ou à la direction afin de garantir la conformité du véhicule automatisé avec ces prescriptions de performance.

4. Interactions bimodes

29. Les véhicules bimodes peuvent être équipés de plusieurs fonctions qui ne sont utiles qu'en mode manuel, en particulier des dispositifs d'aide à la conduite ou de sécurité active. Si ces fonctions sont suspendues lors du passage du mode manuel au mode automatisé, leur comportement lors du retour au mode manuel doit faire l'objet de dispositions claires, afin d'aider le conducteur à reprendre le contrôle du véhicule en toute sécurité, y compris au cas où les transitions ne se produisent que lorsque le véhicule est à l'arrêt.

5. Mode d'essai

30. De nombreux Règlements contiennent des dispositions relatives aux essais devant être réalisés sur un banc d'essai ou une piste d'essai. Dans les deux cas, les véhicules automatisés dépourvus de fonctions de conduite manuelle doivent pouvoir réaliser les scénarios d'essai tels qu'ils sont décrits dans le Règlement. À ce stade, il n'existe aucune prescription sur la manière d'y parvenir, mais une solution possible consiste pour le constructeur à doter ses véhicules d'un mode d'essai, qui permettrait à une autorité d'homologation ou à un service technique de générer n'importe quel scénario de conduite spécifique. Il convient d'accorder une attention particulière à cette question afin d'assurer la clarté et la précision des règles et d'éviter des problèmes tels que les éventuels dispositifs ou stratégies d'invalidation.

6. Contrôle des passagers

31. Il est généralement admis que les véhicules automatisés doivent prendre en charge tous les aspects de la conduite qui relèveraient de la responsabilité du conducteur dans les véhicules non automatisés. L'un de ces aspects concerne la responsabilité du conducteur de surveiller et de garantir la sécurité des autres occupants : cela est illustré, par exemple, par des rappels de port de la ceinture de sécurité et la possibilité pour le conducteur de désactiver le fonctionnement électrique des vitres arrière. Comment le système de conduite automatisé doit-il réagir lorsque les occupants détachent leur ceinture de sécurité alors que le véhicule est en mouvement ? Doit-il pouvoir empêcher les occupants d'ouvrir leur vitre ? L'étendue des capacités du système de conduite automatisé à exercer ce type de responsabilité n'est pas claire à ce stade.

7. Transport d'enfants dans des véhicules automatisés

32. En ce qui concerne la question n° 6, le transport d'enfants doit être envisagé avec prudence. Étant donné que le conducteur doit assumer des responsabilités supplémentaires lorsqu'il transporte des enfants, on ne sait pas encore si les enfants pourraient être autorisés à voyager dans des véhicules automatisés sans la présence physique d'un adulte, auquel cas plusieurs Règlements seraient concernés.

33. Une résolution du Forum mondial de la sécurité routière (WP.1) sur le déploiement de véhicules hautement et entièrement automatisés dans la circulation routière fournit des orientations aux utilisateurs de véhicules automatisés qui, selon elle, devraient « satisfaire aux conditions requises pour utiliser le véhicule en toute sécurité » et « être informés et conscients [...] de la manière appropriée d'utiliser le véhicule »[7].

8. Rôles des utilisateurs

34. En général, on peut supposer que le système de conduite automatisé sera chargé de recevoir les données de tous les systèmes du véhicule et de transférer les informations appropriées aux parties prenantes concernées (centre de supervision à distance, occupants du véhicule, opérateur embarqué...). Ces rôles d'utilisateur seraient définis par le système de conduite automatisé compte tenu des rôles d'utilisateur définis dans les conventions relatives à la circulation routière et les instruments juridiques analogues. Toutefois, il peut être utile, dans certains Règlements, de définir des rôles d'utilisateur à des fins précises : par exemple, dans certaines situations d'urgence, il pourrait être jugé nécessaire d'émettre un avertissement acoustique audible par tous les occupants.

9. Transport de marchandises dangereuses dans des véhicules automatisés

35. Le transport de marchandises dangereuses s'accompagne également de risques et de responsabilités supplémentaires pour le conducteur et peut faire l'objet de règles spécifiques concernant la conduite dynamique du véhicule, en fonction du type de marchandises transportées. Par conséquent, l'applicabilité du Règlement ONU n° 105 aux véhicules automatisés devrait être étudiée en concertation avec le Groupe de travail des transports de marchandises dangereuses (WP.15). Cette question s'applique également, dans une certaine

[7] ECE/TRANS/WP.1/2018/4/Rev.3.

mesure, aux véhicules ayant des comportements dynamiques complexes, tels que les véhicules-citernes transportant des liquides, les bétonnières, les véhicules tout-terrain, etc.

10. Versions en vigueur des Règlements

36. Nombre de Règlements ONU se présentent sous plusieurs versions (séries d'amendements), qui sont en vigueur en même temps. À ce stade, on ne sait pas clairement comment le processus de modification des versions précédentes des Règlements ONU devrait se dérouler, si les véhicules automatisés devraient systématiquement faire l'objet d'une nouvelle série d'amendements, etc.

Tableau 8
Liste des thèmes et mots-clefs pertinents pour la conduite automatisée

Thème	*Mots-clefs associés*				
Personne humaine	Conducteur/ Pilote	Passager	Personne	Occupant	(Membre d') équipage
Zones à l'intérieur du véhicule	Cockpit Habitacle du conducteur Cabine de conduite	Habitacle			
Parties du corps	Main Pied Bras Etc.				
Action manuelle	Levier Bouton Poignée Interrupteur	Pousser Tirer Appuyer Tourner	Force musculaire (énergie)	Atteindre Accessible	Manuel(le)
Vision	Visible (Champ de) vision Voir	Oculaire Optique	Éclairer Afficher Reconnaître Identifier	Surveiller	
Audition	Audible Acoustique Ouïe				
Information du conducteur	Signal d'avertissement Alerte	Informer Rappeler Indiquer	Voyant/témoin Symbole Marque Signe Couleur Contraste Pictogramme Texte	Tableau de bord	
Contrôles physiques	Volant de direction	Accélérateur	Pédale	Arbre de transmission	
Décision du conducteur	Neutraliser	Contrôler Actionner Opérer Utiliser (à mauvais escient) (Dés)activer	Intentionnel Choisir Délibéré	Urgence	
Entrer dans le véhicule ou en sortir	Évacuer Quitter Sortir Entrer Monter à bord	Entrée Sortie			

Thème	*Mots-clefs associés*				
Composants physiques non pertinents pour la conduite automatisée	Pare-brise Pare-soleil Rétroviseur Vitres				
Les mots-clefs ci-dessous sont pertinents lorsqu'il s'agit de véhicules sans occupants :					
Personne à bord	Place assise	Point R Point H	Attacher (détacher), (Dé)boucler	Assis Debout	Accoudoir Appui-tête Ceinture de sécurité Portière

V. Étapes suivantes

A. Amendements prioritaires

37. Les Règlements à modifier en priorité doivent être déterminés sur la base de plusieurs facteurs, dont les suivants :

a) Les besoins nationaux et régionaux en matière de certification (autocertification et homologation de type) des véhicules automatisés ;

b) La pertinence actuelle des cas d'utilisation (par exemple, les véhicules automatisés à deux roues ont actuellement moins de cas d'utilisation active que les véhicules automatisés dont la conception est basée sur les voitures particulières) ;

c) La complexité des modifications nécessaires.

38. Il est généralement admis que les Règlements à modifier en priorité doivent être ceux qui concernent les caractéristiques fondamentales des véhicules et qui présentent la plus grande valeur pour la sécurité routière et la performance environnementale (en matière d'émissions de polluants et de gaz à effet de serre). Par conséquent, les experts ont proposé les Règlements ci-après dont ils considèrent que la modification est particulièrement urgente dans leurs groupes de travail respectifs :

Tableau 9
Liste des Règlements à modifier en priorité

Groupe de travail subsidiaire	*Règlements à modifier en priorité*
GRBP	R9, R28, R51, R138 et R165
GRE	R10 et R48
GRPE	À décider après l'analyse de tous les Règlements
GRSG	R43, R107, R160, R.E.3 et R.S. 1
GRSP	R11, R14, R16, R 17, R 21, R29, R94, R95 et R100
GRVA	R13, R13-H et R79

39. Bien que les questions en suspens recensées ci-dessus doivent être traitées avant que les Règlements puissent être modifiés, il est possible de commencer la rédaction en les laissant provisoirement de côté. Par exemple, des dispositions peuvent être rédigées sur la base des cas d'utilisation recensés pour les véhicules automatisés, même si de nouvelles catégories de véhicules n'ont pas encore été définies. Les caractéristiques indirectes des véhicules automatisés (véhicules bidirectionnels, places assises non conventionnelles) qui ne

sont pas liées à la conduite pourraient être examinées à un stade ultérieur, étant donné qu'elles ne sont pas des conséquences directes de l'automatisation.

B. Coordination entre les organes subsidiaires (groupes de travail) du WP.29

40. Depuis le début du processus d'analyse, les experts ont jugé nécessaire de travailler selon une méthode commune et en définissant des résultats attendus communs, ce qui a permis d'harmoniser le format et l'analyse de tous les Règlements dans le présent document. En outre, les équipes spéciales prévoient qu'une collaboration sera de nouveau nécessaire si les Règlements doivent être modifiés.

41. En effet, toutes les modifications futures des instruments juridiques concernant leur applicabilité à la conduite automatisée, bien qu'elles relèvent de la responsabilité du groupe de travail subsidiaire concerné du WP.29, devraient se fonder sur les mêmes principes et la même terminologie. Pour ce faire, une coordination continue entre les groupes de travail s'avère nécessaire.

42. En outre, comme plusieurs des questions en suspens recensées intéressent plusieurs groupes de travail, il pourrait être difficile pour le WP.29 lui-même ou un seul groupe de travail subsidiaire d'y trouver des réponses. À l'inverse, certaines questions relatives à un Règlement spécifique ne peuvent être résolues qu'avec les orientations du GRVA ou de son groupe de travail informel des prescriptions fonctionnelles applicables aux véhicules automatisés et autonomes (groupe FRAV).

43. Il est donc recommandé que chaque groupe de travail subsidiaire du WP.29 rédige les amendements aux Règlements ONU et aux RTM ONU relevant de sa compétence (que ce soit par l'intermédiaire de son équipe spéciale d'examen existante ou par d'autres moyens), mais que parallèlement, une équipe centrale d'experts soit créée en vue de poursuivre les efforts d'harmonisation entrepris au cours de l'analyse. Le WP.29 pourrait charger cette équipe de coordonner les amendements proposés par chaque groupe de travail et d'accélérer le processus consistant à trouver des réponses aux questions en suspens précédemment recensées en s'adressant directement aux experts et aux groupes de travail concernés. Cette équipe devrait être composée d'experts issus de chaque groupe de travail subsidiaire du WP.29, ainsi que d'experts de la conduite automatisée. D'un point de vue administratif, elle pourrait ainsi relever directement du WP.29. Par ailleurs, le mandat de l'équipe spéciale d'examen du GRVA pourrait être élargi afin que celle-ci soit chargée d'harmoniser les travaux futurs et d'accélérer le processus consistant à trouver des réponses aux questions en suspens.

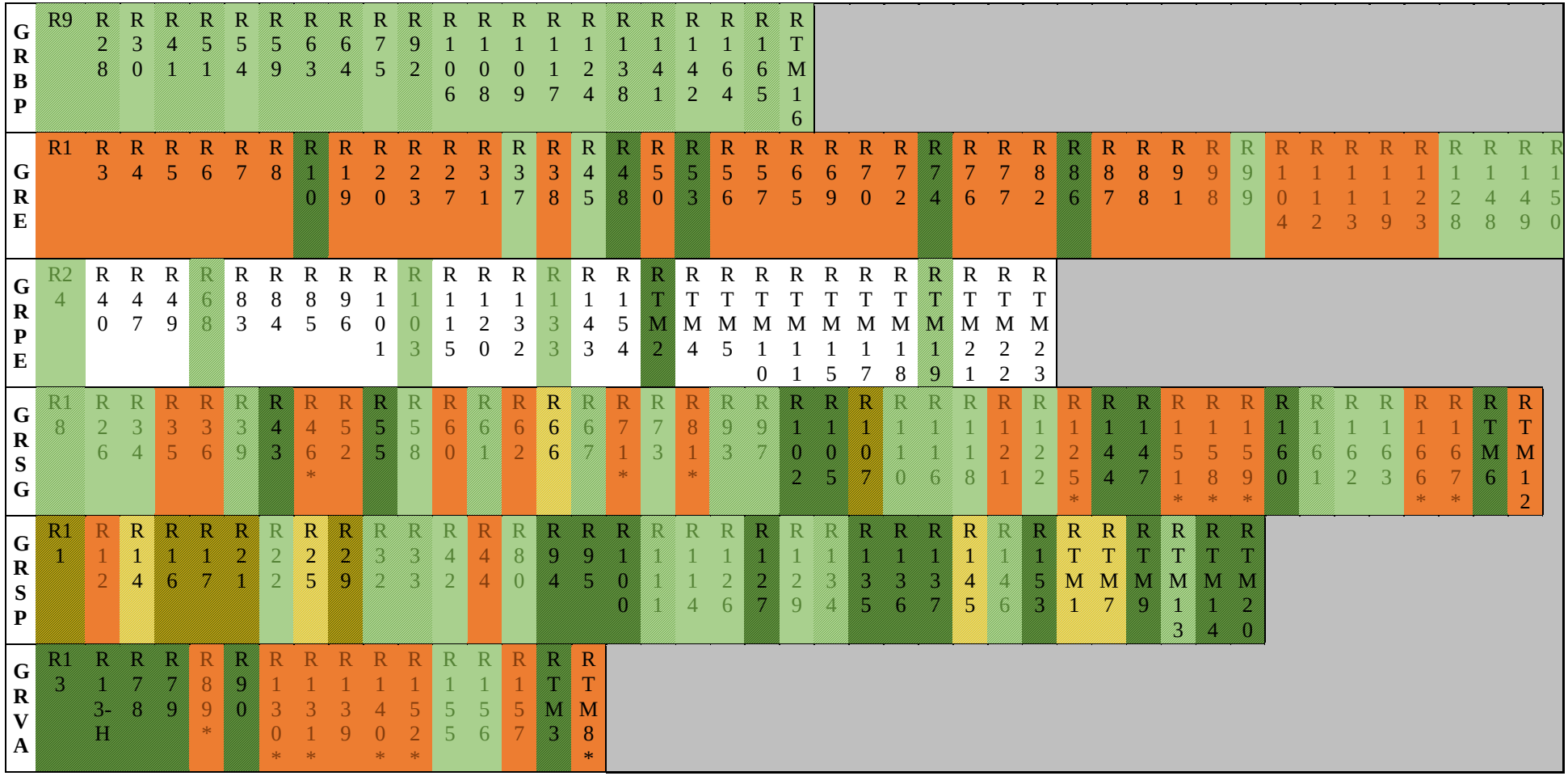
C. Orientations demandées au WP.29, à sa session de juin 2023

44. Le WP.29 souhaitera peut-être décider d'entamer immédiatement les activités relatives aux amendements ou de prendre plus de temps pour les discussions sur les catégories de véhicules, les questions en suspens, etc.

45. Le WP.29 voudra sans doute confirmer la liste des Règlements à modifier en priorité. Il est recommandé d'accorder la priorité aux Règlements recensés à la section V.A du présent rapport.

46. Le WP.29 souhaitera peut-être fournir des orientations sur la poursuite de la coordination entre les groupes de travail. Les auteurs recommandent qu'une équipe d'experts soit chargée d'accélérer le processus consistant à trouver des réponses aux questions recensées et d'appuyer et d'harmoniser le processus de modification des Règlements et des RTM ONU.

Figure 1



: Règlement pertinent pour les véhicules entièrement automatisés et applicable à ce type de véhicules (mais auquel il pourrait s'avérer utile d'apporter des améliorations)

: Règlement pertinent mais non applicable en l'état, qui nécessite des modifications mineures

: Règlement pertinent mais non applicable en l'état, qui nécessite d'importantes modifications

: Règlement pertinent (pour les véhicules avec occupants seulement) mais non applicable en l'état, qui nécessite des modifications mineures

: Règlement pertinent (pour les véhicules avec occupants seulement) mais non applicable en l'état, qui nécessite d'importantes modifications

: Règlement non pertinent pour les véhicules entièrement automatisés (* : doit être pris en charge par le système de conduite automatisé)

: Règlement à examiner

Annex 1

Results of the review – summary sheets of the analysis of each screened regulation

Figure 2
Template of summary sheets

Regulation No.	*The number and title of the Regulation, including the exact Series of amendments and supplement used during the screening process.*	**Date of review**	*Date of the creation of this one-page summary*
Scope	*Categories of vehicles (as defined in R.E.3 or S.R.1) which the Regulation is applicable to.*		
Content of existing Regulation	*Short explanation of the purpose of the Regulations or the provisions contained therein.*	**Specifics for dual-mode vehicles**	*Any provisions that have a particular effect on dual-mode vehicles, e.g. because of interactions between manual driving capabilities and a driving task carried out by the ADS, or because of issues that may occur during transitions between manual and automated modes.*
Content relevant for vehicles equipped with an ADS	*Examples of provisions particularly relevant when the driving task is carried out by an ADS, whether the vehicle be "dual mode", without manual driving capabilities or not designed to carry occupants.*	**Specifics for vehicles without manual driving capabilities**	*Any provisions that have a particular effect on vehicles not equipped with manual driving capabilities. Example: a "driver's seat" still exists in a dual-mode vehicle, but not in a vehicle without manual driving capabilities.*
Content to be covered by (potential) ADS Regulation	*Concepts related to the Regulation, and which should be handled by the ADS.*	**Specifics for vehicles without occupants**	*Any provisions that have a particular effect on vehicles not equipped that are not designed to carry occupants. Example: a "passenger compartment" does not exist in a vehicle that is not designed to carry occupants.*
Summary of recommended changes	*Possible (non-exhaustive) changes that could contribute to making the Regulation applicable to automated vehicles.*		
Notes	*Additional comments from the screening task force.*		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		*See OBJECTIVE 1*	
Readiness:	**Regulation ready**	*See OBJECTIVE 2*	
	Major amendments needed	*See OBJECTIVE 3*	

Annex 2

Results of the review – GRBP Regulations

Figure 3
Results of the review of GRBP Regulations

Regulation No.	09R08/02 (Sound emissions - L2, L4 and L5) 28R00/06 (Audible warning devices) 41R05/01 (Sound emissions - L3) 51R03/06 (Sound emissions - M, N) 59R03/00 (Replacement silencing systems) 63R02/05 (Sound emissions - L1) 92R02/00 (Non-Original Replacement Exhaust Silencing Systems) 138R01/03 (Quiet road transport vehicles) 165R00/00 (Reverse warning sound)	**Date of review**	7 February 2023
Scope	L, M, N; components; etc.		
Content of existing Regulation	Provisions on the levels and the measurement of sound emissions for various vehicles categories, warning signals and replacement silencing systems	**Specifics for dual-mode vehicles**	None, as long as the sound emissions in manual mode are representative of those in automated mode.
Content relevant for vehicles equipped with an ADS	Testing procedures	**Specifics for vehicles without manual driving capabilities**	Testing provisions might require a test mode.
Content to be covered by (potential) ADS Regulation	If the vehicle is not equipped with manual driving capabilities, a test mode or other means to perform the test scenarios should be available.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	- Testing provisions may need to be amended to account for automated vehicles (e.g. requiring that a test mode be provided by the manufacturer, or developing a specific procedure). - The test track might need specific requirements to support navigation and path planning of the automated vehicle.		
Notes	Vehicles whose ODD does not reach the speed required for testing may need adapted requirements		

Outcome of the review			
		Yes	**No**
Regulation applicable to fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed		X

Regulation No.	64R03/01 (Temporary-use spare tyres, etc.)	**Date of review**	7 February 2023
Scope	Components		
Content of existing Regulation	Provisions for various types of vehicle equipment used to replace or extend the mobility of flat tyres.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	- Warning signals, Run-Flat Warning Systems - Braking test carried out on a representative vehicle	**Specifics for vehicles without manual driving capabilities**	Testing provisions might require a test mode
Content to be covered by (potential) ADS Regulation	- The potential use of a spare tyre should be considered by the ADS. - The ADS should handle warning signals and take appropriate action.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	- Testing provisions may need to be amended to account for automated vehicles (e.g. requiring that a test mode be provided by the manufacturer, or developing a specific procedure). - The test track might need specific requirements to support navigation and path planning of the automated vehicle.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation applicable to fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed		X

Regulation No.	141R01/02 (Tyre Pressure Monitoring System - TPMS)	**Date of review**	7 February 2023
Scope	M, N, O_3, O_4		
Content of existing Regulation	Provisions on the effectiveness of the detection of low tyre pressure, and requirements for tests (puncture, diffusion and malfunction). Connection between towing and towed vehicles.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Despite being a warning system, the Regulation is relevant for automated vehicles because it gives information not directly related to the driving task.	**Specifics for vehicles without manual driving capabilities**	Testing provisions might require a test mode.
Content to be covered by (potential) ADS Regulation	The ADS should be able to handle TPMS warnings and take appropriate action.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	- Different requirements for automated vehicles could be considered if the tyre pressure, due to vehicle dynamic changes or asymmetric behaviours that might lead to false adaptive behaviour of the automated system. - Testing provisions may need to be amended to account for automated vehicles (e.g. requiring that a test mode be provided by the manufacturer, or developing a specific procedure). - The test track might need specific requirements to support navigation and path planning of the automated vehicle.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation applicable to fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed		X

Regulation No.	142R01/01 (Tyre Installation)	**Date of review**	7 February 2023
Scope	M, N, O		
Content of existing Regulation	Provisions on the installation of tyres such as fitment, load and speed capacities.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Potential interactions between the maximum design speed of the vehicle, the maximum speed of the ODD foreseen for a specific vehicle and tyre speed capacity could be considered in a similar way to the interaction with Speed Limiting Devices and Functions.	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation		**Specifics for vehicles without occupants**	None
Summary of recommended changes	None		
Notes	If bidirectional vehicles are to be considered, the use of bidirectional tyres should be considered in this Regulation.		

Outcome of the review			
		Yes	**No**
Regulation applicable to fully automated vehicles		X	
Readiness:	**Regulation ready**	X	
	Major amendments needed		

Annex 3

Results of the review – GRE Regulations

Figure 4
Results of the review of GRE Regulations

Regulation No.	48R08/02 (Instal. of lighting devices – M, N, O) 53R03/03 (Instal. of lighting devices – L_3) 74R02/02 (Instal. of lighting devices – L_1) 86R02/01 (Instal. of lighting devices – R, S, T)	**Date of review**	22 May 2023
Scope	L_1, L_3, M, N, O, R, S, T		
Content of existing Regulation		**Specifics for dual-mode vehicles**	
Content relevant for vehicles equipped with an ADS		**Specifics for vehicles without manual driving capabilities**	
Content to be covered by (potential) ADS Regulation		**Specifics for vehicles without occupants**	
Summary of recommended changes	See existing work of the GRE TF on AVSR, such as document ECE/TRANS/WP.29/GRE/2023/9 proposing amendments and definitions to make R48 applicable to automated vehicles.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation applicable to fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Annex 4

Results of the review – GRPE Regulations

Figure 5
Results of the review of GRPE Regulations

Regulation No.	68R00/01 (Measurement of maximum speed)	**Date of review**	5 May 2023
Scope	M_1, N_1		
Content of existing Regulation	Provisions on the conditions and procedure to measure the maximum speed of a vehicle.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Provisions related to the measurement procedure on a straight or loop track, the absence of action on the steering wheel, etc.	**Specifics for vehicles without manual driving capabilities**	Provisions on reaching the maximum speed of an automated vehicle might require a test mode.
Content to be covered by (potential) ADS Regulation	If the vehicle is not equipped with manual driving capabilities, a test mode or other means to manually reach the maximum speed of the vehicle should be available.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	Minor amendments are needed to detail the testing procedure on automated vehicles (e.g. requiring that a test mode be provided by the manufacturer).		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed		X

Regulation No.	103R00/04 (Replacement pollution control devices)	**Date of review**	4 May 2023
Scope	Components		
Content of existing Regulation	Provisions on the conditions and procedure to ensure that replacement pollution control devices have the same performance (emissions, noise, durability, OBD compatibility) as original devices.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Provisions on the testing procedure	**Specifics for vehicles without manual driving capabilities**	Running urban cycles might require a test mode.
Content to be covered by (potential) ADS Regulation	- If the vehicle is not equipped with manual driving capabilities, a test mode or other means to manually reach the maximum speed of the vehicle should be available. - The ADS should be able to handle OBD malfunctions.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	- Testing provisions regarding urban cycles may need to be amended to account for automated vehicles (e.g. requiring that a test mode be provided by the manufacturer, or developing a specific procedure). - The test track might need specific requirements to support navigation and path planning of the automated vehicle.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**	X	
	Major amendments needed		X

Regulation No.	133R00/01 (Reusability, recyclability and recoverability)	**Date of review**	11 April 2023
Scope	M_1, N_1		
Content of existing Regulation	Provisions on the preliminary assessment by the manufacturer and checks to be performed by the Competent Authority.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	None
Summary of recommended changes	None		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**	X	
	Major amendments needed		

Regulation No.	GTR2 am 5 (Emissions measurement procedure – Two- and three-wheeled vehicles)	**Date of review**	9 May 2023
Scope	Two- and three-wheeled vehicles		
Content of existing Regulation	Method for the determination of the levels of gaseous and particulate pollutant emissions at the tailpipe, the emissions of carbon dioxide and the energy efficiency in terms of fuel consumption.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Testing procedures	**Specifics for vehicles without manual driving capabilities**	Rider requirements are inapplicable to vehicles without manual driving capabilities.
Content to be covered by (potential) ADS Regulation	If the vehicle is not equipped with manual driving capabilities, a test mode or other means to perform the test scenarios should be available.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	- Testing provisions may need to be amended to account for automated vehicles (e.g. requiring that a test mode be provided by the manufacturer, or developing a specific procedure). - The test track might need specific requirements to support navigation and path planning of the automated vehicle.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	GTR19 am 3 (WLTP EVAP)	**Date of review**	9 May 2023
Scope	1-2, 2 as defined in S.R.1		
Content of existing Regulation	Method to determine the levels of evaporative emission from light-duty vehicles in a repeatable and reproducible manner designed to be representative of real-world vehicle operation.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Testing procedures	**Specifics for vehicles without manual driving capabilities**	Testing provisions might require a test mode.
Content to be covered by (potential) ADS Regulation	If the vehicle is not equipped with manual driving capabilities, a test mode or other means to perform the test scenarios should be available.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	- Testing provisions may need to be amended to account for automated vehicles (e.g. requiring that a test mode be provided by the manufacturer, or developing a specific procedure). - The test track might need specific requirements to support navigation and path planning of the automated vehicle.		
Notes	This Regulation only applies to vehicles with engines fuelled with petrol / reference fuels.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Annex 5

Results of the review – GRSG Regulations

Figure 6
Results of the review of GRSG Regulations

Regulation No.	26R04/00 (External projections)	**Date of review**	30 January 2023
Scope	M_1		
Content of existing Regulation	Provisions for protruding parts of the external surface of the vehicle, to ensure the safety of Vulnerable Road Users	**Specifics for dual-mode vehicles**	None
Content relevant for vehicles equipped with an ADS	External projections due to sensors	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	None
Summary of recommended changes	The Regulation is applicable in its current state. Improvements could be considered, such as provisions for sensors replacing devices for indirect vision.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**	X	
	Major amendments needed		

Regulation No.	34R03/02 (Prevention of fire risks)	**Date of review**	30 January 2023
Scope	M, N, O; components		
Content of existing Regulation	Safety of fuel tanks, and their installation in vehicles, specifically regarding the prevention of fire risks	**Specifics for dual-mode vehicles**	None
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	References are made to Regulations (R94, R95) that expect the vehicle having occupants.
Summary of recommended changes	References to other Regulations (R94, R95) should be investigated if they are not applicable to automated vehicles without occupants.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**	X	
	Major amendments needed		

Regulation No.	35R01/00 (Foot controls)	**Date of review**	30 January 2023
Scope	M_1		
Content of existing Regulation	Arrangement and mode of operation of pedals.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	None
Summary of recommended changes	None		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		

Regulation No.	39R01/02 (Speedometer and odometer)	**Date of review**	30 January 2023
Scope	L, M, N		
Content of existing Regulation	Provisions regarding the installation of speedometers (precision, legibility, markings) and odometers.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	- Odometers remain relevant for automated vehicles, e.g. for PTI or resale of the vehicle. - Speedometers are not needed for automated vehicles, but may be desirable for different reasons (on-board operator, information to passengers)	**Specifics for vehicles without manual driving capabilities**	The definitions of speedometer and odometer refer to "the driver": the odometer might need to refer to the vehicle user or owner instead.
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	None
Summary of recommended changes	Minor amendments should be made, e.g. regarding the option to set units, the position of the odometer, etc.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed		X

Regulation No.	43R01/09 (Safety glazing)	**Date of review**	14 March 2023
Scope	L, M, N, O, T		
Content of existing Regulation	Safety glazing requirements for windscreens and windows with regards to driver visibility and occupant safety.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	The relevance of impact and optical requirements may depend on the specific use case of the ADS.	**Specifics for vehicles without manual driving capabilities**	Several definitions, general requirements, and tests may not be needed for ADS (e.g. Optical-distortion test and Wiper laboratory test). Annex 3 references the driver's visibility, steering wheel, eye point, and R point of the driver's seat.
Content to be covered by (potential) ADS Regulation	Equivalent occupant safety requirements for HUD screens or alternative windscreen solutions.	**Specifics for vehicles without occupants**	If occupants are not present but the vehicle is fitted with safety glazing, parts of the Regulation may still be applicable in the interest of the protection of the other road users.
Summary of recommended changes	- Modify definitions that reference driver, driver's field of vision, steering wheel, etc. - Modify the compliance tests (e.g. wiper laboratory and optical distortion test) to be performed if occupants are present. - Testing provisions may need to be amended to account for automated vehicles (e.g. requiring that a test mode be provided by the manufacturer, or developing a specific procedure).		
Notes	If bi-directional vehicles are to be considered, further amendments will be required, e.g. extending impact requirements to the rear windscreen.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	46R05/00 (Devices for indirect vision)	**Date of review**	21 February 2023
Scope	L, M, N; components		
Content of existing Regulation	- Performance criteria for mirrors - Performance criteria for Camera-Monitor-Systems - Functional requirements for CMS - Mandatory required fields of vision to be displayed to the driver - Geometrical requirements, minimum radii for mirrors and CMS - Impact tests for protruding parts	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	The concept of indirect vision is irrelevant for an ADS.	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	The ADS should sense its environment with a level of coverage at least equal to what would be achieved by a driver, from the driver's seat.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	If certain use cases require some kind of device indirect vision (on-board operator or user who needs to monitor or interact with the exterior of the vehicle), and if it is determined that these devices should be regulated, a new Regulation could be considered.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		

Regulation No.	55R02/02 (Mechanical coupling devices)	**Date of review**	14 March 2023
Scope	Components		
Content of existing Regulation	Requirements for coupling devices (design, operation, robustness) and vehicles fitted with such devices (attachment including remote indication and controls of coupling).	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Coupling requirements are not depending on whether a driver or occupants are present in the vehicle.	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	- The ADS should function with all types of trailers which are part of its ODD. - The ADS should be able to handle any incorrect engagement of the locking system detected while driving, and to detect any abnormal dynamic behaviour resulting from incorrect coupling.	**Specifics for vehicles without occupants**	Remote coupling (indication and control) is particularly relevant for vehicles with no occupants on board.
Summary of recommended changes	- Certain references to driver, including those mentioning verifications by "feel", "sight" or "touch", should be amended. - Specific requirements related to remote indication and remote control should be considered for fully automated vehicles without occupants.		
Notes	Whether automated vehicles without human interaction (either on board, or during the coupling phase) are allowed to tow trailers is independent from this screening process.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	58R03/03 (Rear Underrun Protection - RUP)	**Date of review**	14 March 2023
Scope	M, N_1, O_1, O_2; components		
Content of existing Regulation	Provision for ensuring that vehicles protect other vehicles from rear underrun.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	For adjustable RUPDs only: an operator must verify the correct position of the device.
Summary of recommended changes	Requirements for adjustable RUPD, where an operator must verify the right position of the device, should be amended for vehicles with no occupants.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**	X	
	Major amendments needed		

Regulation No.	60R00/05 (Controls & tell-tales)	**Date of review**	4 February 2023
Scope	L_1, L_3		
Content of existing Regulation	Control device, control position, control form operated by the driver (rider). Tell-tales, indicators, symbols, display positions, colours, etc. that informs the driver of the status of the vehicle.	**Specifics for dual-mode vehicles**	Dual mode vehicles must comply in manual mode, but do not need to provide tell-tales in automated mode.
Content relevant for vehicles equipped with an ADS	All controls should be directly actionable by the ADS, and all tell-tale information should be transmitted to the ADS directly.	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	- Overall management of failures - Communication with vehicle occupants, remote supervision centres, on-board operator, etc.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	None		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		

Regulation No.	61R00/03 (External projections, commercial vehicles)	**Date of review**	30 January 2023
Scope	N		

Content of existing Regulation	Provisions for protruding parts of the external surface of the vehicle, to ensure the safety of Vulnerable Road Users	**Specifics for dual-mode vehicles**	None
Content relevant for vehicles equipped with an ADS	External projections due to sensors.	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	References to the "cab" of the vehicle should be amended if the vehicle has no occupants, and therefore no compartment for a driver of passengers.
Summary of recommended changes	The Regulation should be slightly reworked to become applicable to automated vehicles without occupants. Other improvements could be considered, such as provisions for sensors replacing devices for indirect vision.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed		X

Regulation No.	62R01/00 (Protection against unauthorised use)	**Date of review**	4 February 2023
Scope	L_1–L_7, if fitted with handlebars		
Content of existing Regulation	Provisions for the steering lock of the vehicle and its security (breaking torque), security of physical keys (number of possible combinations).	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	This Regulation cannot be relevant for automated vehicles without introducing provisions for digital keys.	**Specifics for vehicles without manual driving capabilities**	The Regulation is inapplicable to vehicles without manual driving capabilities, as they would not be fitted with handlebars.
Content to be covered by (potential) ADS Regulation	Protection against unauthorised use in automated mode should also be guaranteed by the compliance of the vehicle with R155. However, as of June 2023, R155 is not applicable to L1–L5 vehicles.	**Specifics for vehicles without occupants**	The Regulation is inapplicable to vehicles without occupants, as they would not be fitted with handlebars.
Summary of recommended changes	None		
Notes	This Regulation does not seem to be relevant for automated vehicles, as it relies on the vehicle being fitted with handlebars.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		

Regulation No.	66R02 (Strength of superstructure)	**Date of review**	16 January 2023
Scope	M_2, M_3		
Content of existing Regulation	Provisions to ensure that the superstructure of the vehicle shall have the sufficient strength to ensure that the residual space during and after the rollover test on complete vehicle is unharmed.	**Specifics for dual-mode vehicles**	None
Content relevant for vehicles equipped with an ADS	References to the driver	**Specifics for vehicles without manual driving capabilities**	Reference to the driver's compartment
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	The Regulation is not applicable to vehicles with no occupants.
Summary of recommended changes	Minor references to the driver and the driver's compartment should be amended.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed		X

Regulation No.	67R04/01 (Liquified Petroleum Gas)	**Date of review**	13 January 2023
Scope	M and N vehicles equipped with LPG		
Content of existing Regulation	Specifications for and approval of LPG components, and vehicles equipped with an LPG system. Overall safety of the LPG system against overpressure, corrosion, ageing, extreme temperatures, etc.	**Specifics for dual-mode vehicles**	None
Content relevant for vehicles equipped with an ADS	Warnings, communication with the LPG ECU	**Specifics for vehicles without manual driving capabilities**	Reference to the accelerator pedal, etc.
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	References to the passenger compartment
Summary of recommended changes	- Minor references to warnings, passenger compartment, etc. should be amended. - Communication between the LPG ECU and the ADS should be detailed. - Testing provisions may need to be amended to account for automated vehicles (e.g. requiring that a test mode be provided by the manufacturer, or developing a specific procedure).		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed		X

Regulation No.	71R00/00 (Driver's field of vision)	**Date of review**	21 February 2023
Scope	T		
Content of existing Regulation	- Minimum required field of vision - Requires the equipment of wipers if a windscreen is mounted	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	The ADS should sense its environment with a field of vision at least equal to what is required by the Regulation.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	If certain use cases require some kind of field of vision (on-board operator or user who needs to monitor or interact with the exterior of the vehicle, passenger comfort), and if it is determined that these fields of vision should be regulated, a new Regulation could be considered.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		

Regulation No.	73R01/02 (Lateral Underrun Protection - LUP)	**Date of review**	14 March 2023
Scope	N_2, N_3, O_3, O_4; components		
Content of existing Regulation	Provision for ensuring that vehicles protect other vehicles from lateral underrun.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	For adjustable LUPDs only: an operator must verify the correct position of the device.
Summary of recommended changes	Requirements for adjustable LUPDs, where an operator must verify the right position of the device, should be amended for vehicles with no occupants.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**	X	
	Major amendments needed		

Regulation No.	81R00/02 (Rear-view mirrors)	**Date of review**	4 February 2023
Scope	L_1, L_3, L_4		
Content of existing Regulation	- Size, shape, and curvature of mirror surface. - Impact test method of the mirror surface. - Strength test method of the mirror holder.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	The ADS should gather rear-view information by other means than R81-compliant mirrors.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	None		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		

Regulation No.	93R00/01 (Front Underrun Protection - FUP)	**Date of review**	13 January 2023
Scope	N_2, N_3; components		
Content of existing Regulation	Provision for ensuring that vehicles of categories N2 and N3 protect other vehicles from front underrun.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	References to the driver's cabin
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	None
Summary of recommended changes	Minor references to the driver's cabin should be amended.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed		X

Regulation No.	97R01/08 (Vehicle Alarm Systems - VAS)	**Date of review**	16 December 2022
Scope	M_1, N_1; components		
Content of existing Regulation	Provisions on the efficacy of Vehicle Alarm Systems, including the design of the alarm signal and its reliability (test scenarios for true positives, absence of false positives)	**Specifics for dual-mode vehicles**	None
Content relevant for vehicles equipped with an ADS	Relevance depending on the use case: some automated vehicles may have no "compartment" to monitor with an alarm system.	**Specifics for vehicles without manual driving capabilities**	References to "driver's door", etc.
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	Many references are made to "passenger compartment", "glazed area", "authorised user".
Summary of recommended changes	Many references to actions by a human (driver or "authorised user") should be amended, especially those implying the action of a human ("rotation of the ignition key", "opening the driver's door").		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed		X

Regulation No.	102R00/00 (Close Coupling Device - CCD)	**Date of review**	22 March 2023
Scope	Components		
Content of existing Regulation	Provisions on the automatic coupling and system failures of CCDs.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Several testing provisions expect a driver to "feel" any difficulty or abnormal behaviour in controlling the vehicle	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	The ADS should be able to handle any incorrect engagement of the locking system detected while driving, and to detect any abnormal dynamic behaviour resulting from incorrect coupling.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	The Regulation should be modernised overall, and specifically testing provisions should be reworked with the assumption that the driving task might not be performed by a human.		
Notes	It is unclear at this stage whether this Regulation is likely to be applied to automated vehicles.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**	X	
	Major amendments needed		X

Regulation No.	105R06/01 (Construction of ADR vehicles)	**Date of review**	3 February 2023
Scope	N, O transporting dangerous goods		
Content of existing Regulation	Construction of vehicles intended for the transportation of dangerous goods, such as their electrical and braking equipment.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	References to the driver and their actions	**Specifics for vehicles without manual driving capabilities**	References to the driver's cab etc.
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	References to the driver may be transformed into references to an operator, but this assumes that a human is present inside the vehicle.
Summary of recommended changes	If the Regulation is applicable to automated vehicles, references to the driver and the cab should be amended.		
Notes	The screening process only considers the technical applicability of the Regulation to automated vehicles. It is still unclear whether automated vehicles should be able to transport dangerous goods, and if so, whether they are allowed to function with no human on board.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	107R10/00 (General construction)	**Date of review**	22 February 2023
Scope	M_2, M_3		
Content of existing Regulation	Provisions for the general construction of buses and coaches such as: protection against fire risks, masses & dimensions, stability, service doors and (emergency) exits, interior arrangements, etc.	**Specifics for dual-mode vehicles**	Clarifications are needed when certain provisions are handled differently in manual and automated mode.
Content relevant for vehicles equipped with an ADS	All interactions between passengers and the driver, or functions which the driver is expected to perform.	**Specifics for vehicles without manual driving capabilities**	Many schematics and provisions related to the driver's compartment should be reworked.
Content to be covered by (potential) ADS Regulation	The ADS must be able to handle all requirements related to the driver unless an on-board operator is present.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	- Many provisions should be created related to the information of passengers, interaction with the ADS, etc. - Many schematics and provisions related to the driver's compartment should be reworked. - Some provisions require further exploration, such as those implying that the driver or crew can physically offer their assistance in case of emergency: should on-board operators be required for certain classes of vehicles?		
Notes	The Regulation is not currently adapted for automated urban shuttles, as no category for such vehicles (standing passengers and fewer than 9 seats) exists in RE.3.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	110R05/00 (Compressed / Liquified Natural Gas)	**Date of review**	4 March 2023
Scope	M, N		
Content of existing Regulation	Provisions for the installation of compressed natural gas (CNG) and/or liquefied natural gas (LNG) for propulsion.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Provisions related to fuel selection and indicators	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	The ADS should be able to handle fuel selection	**Specifics for vehicles without occupants**	Provisions regarding manual shut off valves and other manual components should be considered, if the Regulation is to be applicable to vehicles without occupants.
Summary of recommended changes	- In addition to amending provisions for pressure and fuel indicators, it should be clarified how fuel selection may be carried out in a fully automated vehicle. - Testing provisions may need to be amended to account for automated vehicles (e.g. requiring that a test mode be provided by the manufacturer, or developing a specific procedure).		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed		X

Regulation No.	116R01/00 (Protection against unauthorised use)	**Date of review**	7 March 2023
Scope	M_1, N_1; components		
Content of existing Regulation	- Locking systems (keys, including digital keys): provisions on the number of combinations or lock design, locking of the steering system, brakes, etc. - Alarm systems (efficiency, absence of false positives, etc.) - Immobilisers (setting and unsetting, etc.)	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	All provisions that are not purely physical (digital keys, impact of immobilisers on the engine, etc.)	**Specifics for vehicles without manual driving capabilities**	Some parts of the Regulation become irrelevant if there are no driving capabilities (physical keys, locking of the gear shaft, etc.)
Content to be covered by (potential) ADS Regulation	Protection against unauthorised use in automated mode should also be guaranteed by the compliance of the vehicle with R155.	**Specifics for vehicles without occupants**	Alarm systems remain relevant for detecting interference with the vehicle, even if there is no compartment subject to intrusion.
Summary of recommended changes	Minor amendments are required, such as references to the "driver's intention" and provisions related to manual driving capabilities or the presence of occupants.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed		X

Regulation No.	118R04/01 (Burning behaviour)	**Date of review**	14 March 2023
Scope	M_3 classes II and III		
Content of existing Regulation	Burning behaviour (ignitibility, burning rate and melting behaviour) and capability to repel fuel or lubricants of materials used in vehicles.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	The absence of a driver may negatively impact the reactivity on the measures that allow the evacuation (absence of anticipated indicators or remote interventions). Extending the scope to more categories of vehicles would give passengers more time for evacuation due to the use of materials with regulated performance regarding their fire behaviour.	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	None
Summary of recommended changes	The Regulation is ready, but the scope may be extended to M_2 and all M_3 automated vehicles for safety reasons.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**	X	
	Major amendments needed		

Regulation No.	121R01/05 (Controls, tell-tales and indicators)	**Date of review**	16 January 2023
Scope	M, N		
Content of existing Regulation	Provisions on the location and identification (symbols, illumination, colour) of controls, tell-tales, and indicators	**Specifics for dual-mode vehicles**	It should be specified whether tell-tales and indicators should be illuminated during automated mode.
Content relevant for vehicles equipped with an ADS	All controls should be directly actionable by the ADS, and all tell-tale information should be transmitted to the ADS directly.	**Specifics for vehicles without manual driving capabilities**	Vehicles without manual driving capabilities should not be equipped with controls related to the driving task.
Content to be covered by (potential) ADS Regulation	- Overall management of failures - Communication with vehicle occupants, remote supervision centres, on-board operator, etc.	**Specifics for vehicles without occupants**	The Regulation is not applicable to vehicles without occupants.
Summary of recommended changes	For dual-mode vehicles, the behaviour of tell-tales and indicators in automated mode should be specified. If certain use cases require some kind of controls, tell-tales, or indicators (on-board operator who should be informed in case of failures, information to the passengers), and if it is determined that they need to be regulated, drafting provisions for R121, R107 or a new Regulation could be considered.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		

Regulation No.	122R00/06 (Heating systems)	**Date of review**	3 February 2023
Scope	M, N, O		
Content of existing Regulation	Requirements on heating systems, if fitted, either to heat the passenger compartment or the loading compartment.	**Specifics for dual-mode vehicles**	None
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	None
Summary of recommended changes	None		
Notes	The Regulation may not be applicable to certain automated vehicles with no passenger compartment and no loading compartment.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**	X	
	Major amendments needed		

Regulation No.	125R02/02 (Forward field of vision of drivers)	**Date of review**	3 February 2023
Scope	M_1, N_1		
Content of existing Regulation	Provisions defining the zone which must be directly visible by the driver, from the driver's seat	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	The ADS should sense its environment with a field of vision at least equal to what is required by the Regulation.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	If certain use cases require some kind of field of vision (on-board operator or user who needs to monitor or interact with the exterior of the vehicle, passenger comfort), and if it is determined that these fields of vision should be regulated, a new Regulation should be considered.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		

Regulation No.	144R01/01 (Accident Emergency Call System)	**Date of review**	7 February 2023
Scope	M_1, N_1		
Content of existing Regulation	Provisions on Emergency Call Systems in case of accidents: position determination, data transfer and voice communication with PSAPs, resistance to impact, etc.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	All	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	- The ADS should handle the malfunction of the system. - The ADS Regulation might need to introduce the possibility for the ADS to voluntarily activate the AECS in certain situations.	**Specifics for vehicles without occupants**	Some requirements are irrelevant or inapplicable (e.g. manual activation, reference to airbags) to vehicles without occupants, but AECS in general remain relevant.
Summary of recommended changes	Several requirements should be amended for vehicles without occupants: some to clarify their inapplicability (see above), others to introduce the notion of "user in charge" or "remote operator" as a point of contact with PSAPs.		
Notes	- AECS are currently intended to communicate with PSAPs (emergency services). Direct communication with remote supervision centres could be considered under R144. - The scope of the Regulation could be extended to include all vehicles equipped with an ADS and carrying occupants.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	147R00/00 (Mechanical coupling components for agricultural vehicles)	**Date of review**	22 March 2023
Scope	R, S, T; components		

Content of existing Regulation	Requirements for coupling devices (design, operation, robustness) and vehicles fitted with such devices (attachment including remote indication and controls of coupling).	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Coupling requirements are not depending on whether a driver or occupants are present in the vehicle.	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	- The ADS should function with all types of trailers which are part of its ODD. - The ADS should be able to handle any incorrect engagement of the locking system detected while driving, and to detect any abnormal dynamic behaviour resulting from incorrect coupling.	**Specifics for vehicles without occupants**	Remote coupling (indication and control) is particularly relevant for vehicles with no occupants on board.
Summary of recommended changes	- References to a driver or operator should be amended when relevant. - The Regulation should be modernised overall, and specifically testing provisions should be reworked with the assumption that the driving task might not be performed by a human.		
Notes	Whether automated vehicles without human interaction (either on board, or during the coupling phase) are allowed to tow trailers is independent from this screening process.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	151R00/03 (Blind Spot Information System)	**Date of review**	30 January 2023
Scope	M_2, M_3, N_2, N_3		
Content of existing Regulation	Functional and performance requirements for blind spot information systems to inform the driver when turning to the right.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	The ADS should provide the same level of performance and detection as what is required by the Regulation.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	None		
Notes	If information for low-speed manoeuvres is desirable (e.g. for on-board operators), it should not be regulated under R151.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		

Regulation No.	158R00/01 (Reversing motion)	**Date of review**	4 February 2023
Scope	M, N; components		
Content of existing Regulation	Provisions for means of rear visibility and detection by direct vision, rear-view Mirror, rear-View Camera System or Detection System	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	The ADS should provide the same level of performance and detection as what is required by the Regulation.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	None		
Notes	If information for rear visibility is desirable (e.g. for on-board operators), it should not be regulated under R158.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		

Regulation No.	159R00/01 (Moving Off Information System)	**Date of review**	4 February 2023
Scope	M_2, M_3, N_2, N_3		
Content of existing Regulation	Onboard system to detect and inform the driver of the presence of pedestrians and cyclists in the close-proximity forward blind-spot of the vehicle and, if deemed necessary based on manufacturer strategy, warn the driver of a potential collision	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	The ADS should provide the same level of performance and detection as what is required by the Regulation.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	None		
Notes	If information while moving off is desirable (e.g. for on-board operators), it should not be regulated under R159.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		

Regulation No.	160R01/01 (Event Data Recorder)	**Date of review**	6 February 2023
Scope	M_1, N_1		
Content of existing Regulation	Provisions for the recording, storage and retrieval of certain driving data. List of specific elements to record.	**Specifics for dual-mode vehicles**	An element indicating the driving mode at the time of the accident should be included.
Content relevant for vehicles equipped with an ADS	Most of the content is relevant. Specific elements related to the ADS and that are not in the scope of the DSSAD should be recorded by the EDR. Different conditions for triggering the recording of data should be considered (e.g. Minimum Risk Manoeuvre)	**Specifics for vehicles without manual driving capabilities**	Certain elements to record may no longer be relevant (including the driving mode indicator proposed above)
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	Existing elements to record conditions for triggering the recording of data may no longer be relevant (e.g. activation of a non-reversible occupant restraint system)
Summary of recommended changes	The Regulation could be applicable in its current state but should be improved. Specific elements related to the ADS and that are not in the scope of the DSSAD should be recorded by the EDR. Different conditions for triggering the recording of data should be considered (Minimum Risk Manoeuvre).		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	161R00/02 (Locking systems)	**Date of review**	8 March 2023
Scope	M_1, N_1; components		
Content of existing Regulation	Provisions for locking devices against unauthorised use (keys, including digital keys): provisions on the number of combinations or lock design., locking of the steering system, brakes, etc.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	All provisions other than the strictly mechanical protection against unauthorised use are relevant for automated vehicles.	**Specifics for vehicles without manual driving capabilities**	Some parts of the Regulation become irrelevant if there are no driving capabilities (physical keys, locking of the gear shaft, etc.)
Content to be covered by (potential) ADS Regulation	Protection against unauthorised use in automated mode should also be guaranteed by the compliance of the vehicle with R155.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	Minor amendments are required, such as references to the "driver's intention".		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed		X

Regulation No.	162R00/03 (Immobiliser)	**Date of review**	7 March 2023
Scope	M_1, N_1; components		
Content of existing Regulation	Provisions for immobilisers against unauthorised use (preventing the use of the engine without removing the immobiliser with the correct key or other device)	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	Protection against unauthorised use in automated mode should also be guaranteed by the compliance of the vehicle with R155.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	None		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**	X	
	Major amendments needed		

Regulation No.	163R00/02 (Alarm system)	**Date of review**	8 March 2023
Scope	M_1, N_1; components		
Content of existing Regulation	Provisions for alarm systems against unauthorised use (indicating intrusion in or interference with the vehicle)	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	Protection against unauthorised use in automated mode should also be guaranteed by the compliance of the vehicle with R155.	**Specifics for vehicles without occupants**	The Regulation remains relevant for detecting interference with the vehicle, even if there is no compartment subject to intrusion.
Summary of recommended changes	None		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**	X	
	Major amendments needed		

Regulation No.	166R00/00 (Close-Proximity to the Front and Lateral Sides of Vehicles)	**Date of review**	4 February 2023
Scope	M_1, N_1; components		
Content of existing Regulation	Provisions for means of front and lateral visibility and detection by direct vision, rear-view Mirror, rear-View Camera System or Detection System	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	The ADS should provide the same level of performance and detection as what is required by the Regulation.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	None		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		

Regulation No.	167R00/00	**Date of review**	3 February 2023
Scope	M_2, M_3, N_2, N_3		
Content of existing Regulation	Direct Vision requirements to reduce blind spots for drivers.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Most of the Regulation refers to the sight of the driver, from the driver's seat, making the requirements inapplicable.	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	The ADS should have sensing abilities at least equal to what is required by the Regulation.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	If certain use cases require some kind of direct vision (on-board operator or user who needs to monitor or interact with the exterior of the vehicle, passenger comfort), and if it is determined that this kind of direct vision should be regulated, a new Regulation could be considered.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		

Regulation No.	GTR 6 am 3 (Safety glazing)	**Date of review**	14 March 2023
Scope	Category 1 and 2 as defined in S.R. 1		
Content of existing Regulation	Safety glazing requirements for windscreens and windows with regards to driver visibility and occupant safety.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	If occupants are present: Impact requirements would be applicable. Optical requirements may not be relevant.	**Specifics for vehicles without manual driving capabilities**	Several definitions, general requirements, and tests may not be needed for ADS (e.g. Optical-distortion test and Wiper laboratory test). Annex 3 references the driver's visibility, steering wheel, eye point, and R point of the driver's seat.
Content to be covered by (potential) ADS Regulation	Equivalent occupant safety requirements for HUD screens or alternative windscreen solutions.	**Specifics for vehicles without occupants**	If occupants are not present but the vehicle is fitted with safety glazing, parts of the Regulation may still be applicable in the interest of the protection of the other road users.
Summary of recommended changes	- Modify definitions which reference the driver, the driver's field of vision, or the steering wheel. - Extend the applicability of the impact requirements to the rear windscreen for bi-directional vehicles. - Testing provisions may need to be amended to account for automated vehicles (e.g. requiring that a test mode be provided by the manufacturer, or developing a specific procedure		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	GTR12 am 1 (Motorcycle controls, tell-tales, and indicators)	**Date of review**	14 March 2023
Scope	3-3 as defined in S.R.1		
Content of existing Regulation	Control device, control position, control form operated by the driver (rider). Tell-tales, indicators, symbols, display positions, colours, etc. that informs the driver of the status of the vehicle.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	All controls should be directly actionable by the ADS, and all tell-tale information should be transmitted to the ADS directly.	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	- Overall management of failures - Communication with vehicle occupants, remote supervision centres, on-board operator, etc.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	None		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		

Annex 6

Results of the review – GRSP Regulations

Figure 7
Results of the review of GRSP Regulations

Regulation No.	11R04/02 (Door locks and hinges)	**Date of review**	29 November 2022
Scope	M_1, N_1		
Content of existing Regulation	Provisions to the performance of door locks and door hinges, including provisions on Child locks.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	The notion of operating doors and locks becomes more complex, as they might be operated by either the ADS or by occupants.	**Specifics for vehicles without manual driving capabilities**	Definitions such as "driver side" becomes irrelevant for vehicle without manual driving capabilities.
Content to be covered by (potential) ADS Regulation	The ADS should be able to open and close the doors of the vehicle. Regarding the operation of locks, more consideration should be given (see below).	**Specifics for vehicles without occupants**	The Regulation only applies to doors of compartments with occupants.
Summary of recommended changes	The concept of Child lock and locking in general should be carefully considered: should an ADS be able to lock occupants in the vehicle? Should children be able to travel unattended in automated vehicles? (See Open Issues)		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	12R04/05 (Protection against the steering mechanism)	**Date of review**	30 January 2023
Scope	M_1, N_1		
Content of existing Regulation	Protection of the driver (maximum force applied) against the steering mechanism in the event of impact and behaviour of the electrical power train (no electric shock, no electrolyte leakage)	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	If the vehicle is equipped with a steering column, and if an occupant might be present in front of it, the Regulation remains fully applicable.	**Specifics for vehicles without manual driving capabilities**	The Regulation is not applicable to vehicle without manual steering control. The electrical protection needs to be covered by R94 or R137.
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	The Regulation is not applicable. The electrical protection needs to be covered by R94 or R137.
Summary of recommended changes	Minor amendments are needed: for instance, they could indicate the inapplicability of the Regulation to automated vehicles without manual controls, and which already comply with R94 or R137.		
Notes	If new seating positions are to be considered (side- or rear-facing seats, torso recline angles greater than 25°), major amendments will be needed.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		

Regulation No.	14R09/02 (Safety belt anchorages)	**Date of review**	8 May 2023
Scope	M, N		
Content of existing Regulation	Provisions for the location, design and robustness of safety belt anchorages	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	Provisions related to the driver's seat, steering wheel or R point become inapplicable.
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	The Regulation is inapplicable to vehicles without occupants
Summary of recommended changes	Minor amendments are needed for automated vehicles without manual driving capabilities.		
Notes	If new seating positions are to be considered (side- or rear-facing seats, torso recline angles greater than 25°), more significant amendments will be needed.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed		X

Regulation No.	16R08/03 (Safety belts)	**Date of review**	8 May 2023
Scope	M, N, O, L_2, L_4, L_5, L_6, L_7, T; components		
Content of existing Regulation	Provisions on: - Safety-belts, restraint systems, child restraint systems (incl. ISOFIX); - vehicles equipped with safety-belts, safety-belt reminders, restraint systems, child restraint systems (incl. ISOFIX)	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Provisions regarding safety belt reminders and failure warnings.	**Specifics for vehicles without manual driving capabilities**	Provisions related to the driver's seat, steering wheel or R point become inapplicable
Content to be covered by (potential) ADS Regulation	- The ADS should be able to detect whether safety belts are fastened and take appropriate action. - The ADS should be able to handle failure warnings.	**Specifics for vehicles without occupants**	The Regulation is inapplicable to vehicles without occupants
Summary of recommended changes	- Many minor amendments regarding the driver's seat are needed, e.g. substituting it to a passenger seat; - The concept of safety belt reminder should be carefully considered: how should the ADS react if passengers unfasten their safety belt while the vehicle is driving?		
Notes	If new seating positions are to be considered (side- or rear-facing seats, torso recline angles greater than 25°), major amendments will be needed.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	17R10 (Seats, anchorages and head restraints)	**Date of review**	13 March 2023
Scope	M_1, N_1, (M_2, M_3)		
Content of existing Regulation	Provisions on seats, their anchorages and their head restraints: design (size, seating positions, etc.) and safety performance (resistance to impact, moment, displaced luggage, etc.)	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	Provisions related to the driver's seat, steering wheel or R point become inapplicable
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	The Regulation is inapplicable to vehicles without occupants.
Summary of recommended changes	Many minor amendments regarding the driver's seat are needed, e.g. substituting it to a passenger seat;		
Notes	- If new seating positions are to be considered (side- or rear-facing seats, torso recline angles greater than 25°), major amendments will be needed. - If bidirectional vehicles are to be considered, current restrictions on rear-facing seats for certain vehicle categories should be reconsidered.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	21R01/04 (Interior fittings)	**Date of review**	2 December 2022
Scope	M_1		
Content of existing Regulation	Provisions regarding: - the interior parts of the passenger compartment other than the rear-view mirror or mirrors; - the arrangement of the controls; - the roof or opening roof, and - the seat-back and the rear parts of seats. - power-operation of windows, roof panels and partition systems.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Most provisions regarding the protection of occupants and the operation of windows etc. by occupants remain relevant. Provisions related to driver controls (especially operation of windows etc. only possible for the driver) are not relevant.	**Specifics for vehicles without manual driving capabilities**	Provisions related to physical controls around the driver, such as the steering control, instrument panel, handbrake, pedals etc. are inapplicable to vehicles without manual driving capabilities.
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	The Regulation is inapplicable to vehicles without occupants.
Summary of recommended changes	- The concept that some controls are only possible for the driver (one-touch closing, switching off rear window operation) should be re-evaluated. This issue is related to the question on whether children should be able to travel unattended in automated vehicles. (See Open Issues) - Many minor amendments regarding the interior layout of the vehicle related to the driver are needed.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	25R04/01 (Head restraints)	**Date of review**	26 December 2022
Scope	Components		
Content of existing Regulation	Requirements for head restraints to reduce the frequency and severity of injuries caused by rearward displacement of the head.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	References to "driver head restraint" become irrelevant for vehicles with no manual driving capabilities.
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	Regulation not applicable
Summary of recommended changes	Minor amendments related to the driver's seat are needed.		
Notes	If new seating positions (side- or rear-facing seats, torso recline angles greater than 25°, unconventional seating layout) or bidirectional vehicles are to be considered, more work on the Regulation will be needed.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed		X

Regulation No.	29R03/05 (Protection of the occupants of the cab of a commercial vehicle)	**Date of review**	1 February 2023
Scope	N		
Content of existing Regulation	Provisions on the design of cabs to eliminate to the greatest possible extent the risk of injury to the occupants in the event of an accident. Provisions on the survival space in the cab after impact tests.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	Some provisions related to the steering wheel or the instrument panel become inapplicable to vehicles without manual driving capabilities.
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	The Regulation is inapplicable to vehicles without occupants.
Summary of recommended changes	Amendments are needed for automated vehicles without manual driving capabilities (redefinitions related to the steering wheel and instrument panel)		
Notes	If new seating positions are to be considered (side- or rear-facing seats, torso recline angles greater than 25°), major amendments will be needed.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	42R00/02 (Front and rear protective devices)	**Date of review**	16 January 2023
Scope	M_1		
Content of existing Regulation	Provisions on the behaviour of protective devices (bumpers, etc.) when involved in a collision at low speed so as to allow contacts and small shocks to occur without causing any serious damage.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Currently, the Regulation allows sensors to become damaged or broken after impact tests, but also requires the vehicle's steering and braking system to keep operating in a normal manner.	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	None
Summary of recommended changes	The current tolerance for sensors to become broken after an impact test should be investigated, as the Regulation did not consider sensors as being a critical component of basic braking and steering performance.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**	X	
	Major amendments needed		

Regulation No.	44R04/18 (Child restraint systems)	**Date of review**	31 January 2023
Scope	Components		
Content of existing Regulation	Design and performance requirements for the type-approval of child restraint systems, either as components or built into vehicle seating.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	The Regulation is inapplicable to vehicles without occupants.
Summary of recommended changes	None at this stage. However, consideration should be given on whether it is appropriate to leave R44 open to built-in child restraint systems in the long term.		
Notes	UN R44 was amended in recent years, firstly, to stop new type-approvals for most categories of child restraint system, and secondly, to remove the obligation of Contracting Parties to accept R44 type-approvals. Going forward, WP.29/GRSP intends that all new child restraints are approved to R129 only and has given Contracting Parties the option of refusing to allow the sale of R44 CRS in their territory. However, R44 type-approval can still be granted to child restraints in Mass Group III. Furthermore, the obligation to accept R44 type-approvals still applies for child restraints that are built-in to the vehicle seating. This means that new Group III boosters that are built-in to vehicle seats can continue to be approved to R44 and they must be accepted by all Contracting Parties. Built-in child restraints are currently rare. However, some OEMs report that built-in child restraints may be the best solution for driverless shuttle vehicles and car-share services. If built-in child restraints become more common, it may be necessary to update UN R44 to stop new type-approvals and to allow Contracting Parties to stop accepting approvals in their territory.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		

Regulation No.	80R04 (Strength and anchorages of seats in buses and coaches)	**Date of review**	13 March 2023
Scope	Components; M_2, M_3 of Classes II, III and B		
Content of existing Regulation	Provisions on seats, their anchorages and their installation in buses and coaches: design and safety performance.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	The Regulation is inapplicable to vehicles without occupants.
Summary of recommended changes	None strictly related to vehicle automation.		
Notes	- If new seating positions are to be considered (side- or rear-facing seats, torso recline angles greater than 25°), major amendments will be needed. - If bidirectional vehicles are to be considered, current restrictions on rear-facing seats should be reworked.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**	X	
	Major amendments needed		

Regulation No.	94R04/01 (Protection of occupants in the event of a frontal collision)		**Date of review**	5 December 2022
Scope	M_1, N_1			
Content of existing Regulation	- Protection of front passengers in case of a frontal impact; protection of the occupants of vehicles operating on electrical power from high voltage. - Provisions on electrical safety, fuel leakage, etc.		**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Some provisions are currently not fit for automated vehicles, such as door openings "de-activated by the driver"		**Specifics for vehicles without manual driving capabilities**	Provisions related to the driver's seat, steering wheel etc. are inapplicable to vehicles without manual driving capabilities.
Content to be covered by (potential) ADS Regulation	None		**Specifics for vehicles without occupants**	- Provisions related to the safety of occupants are not applicable for vehicles without occupants. - Provisions regarding leakage, fuel system integrity, etc. might be applicable. - Provision on the opening of doors might not be applicable.
Summary of recommended changes	- Many minor amendments regarding the interior layout of the vehicle, especially around the driver's seat, are needed. The definition of vehicle width should be reconsidered to take into account sensors. - If the provisions on leakage etc. are applicable to vehicles without occupants, this should be clearly specified.			
Notes	- If new seating positions are to be considered (side- or rear-facing seats, torso recline angles greater than 25°), major amendments will be needed. - If bidirectional vehicles are to be considered, current restrictions on rear-facing seats should be reworked.			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	95R05/02 (Protection of occupants in the event of a lateral collision)	**Date of review**	30 November 2022
Scope	M_1, N_1		

Content of existing Regulation	- Protection of front passengers in case of a lateral impact; protection of the occupants of vehicles operating on electrical power from high voltage. - Provisions on electrical safety, fuel leakage, etc.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Some provisions are currently not fit for automated vehicles, such as door locking systems "de-activated by the driver"	**Specifics for vehicles without manual driving capabilities**	Provisions related to the driver's seat, steering wheel etc. are inapplicable to vehicles without manual driving capabilities.
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	- Provisions related to the safety of occupants are not applicable for vehicles without occupants. - Provisions regarding leakage, fuel system integrity, etc. might be applicable. - Provision on the opening of doors might not be applicable.
Summary of recommended changes	- Many minor amendments regarding the interior layout of the vehicle, especially around the driver's seat, are needed. The definition of vehicle width should be reconsidered to take into account sensors. - If the provisions on leakage etc. are applicable to vehicles without occupants, this should be clearly specified.		
Notes	- If new seating positions are to be considered (side- or rear-facing seats, torso recline angles greater than 25°), major amendments will be needed. - If bidirectional vehicles are to be considered, current restrictions on rear-facing seats should be reworked.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	100R03/01 (Electric power train)	**Date of review**	28 November 2022
Scope	M, N; components		
Content of existing Regulation	Provisions on the safety of the electric power train (electrical shock), Rechargeable Electrical Energy Storage System (shocks, vibrations, fire resistance, low and high temperatures, thermal propagation, warnings)	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	- The provisions on the warning system are relevant to vehicles equipped with an ADS. - Many definitions, such as active driving possible mode, are inapplicable when an ADS is controlling the vehicle.	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	- The ADS should consider the energy level of the REESS and adjust its high-level route planning accordingly. - The ADS should be able to handle warnings (for failures, thermal events, etc.) and take appropriate action.	**Specifics for vehicles without occupants**	Most provisions remain relevant for vehicles without occupants, for the protection of other road users, the prevention of thermal events, the intervention of emergency services, etc.
Summary of recommended changes	- Many minor amendments are required, especially definitions related to driving modes (reference to the acceleration pedal), driving conditions, and the behaviour of the warning system (which warning signals should be directly communicated to the passengers of an automated vehicle?) - Certain provisions on charging, besides the obvious difficulty of charging the vehicle in the absence of a driver, should be investigated to understand any potential effect on the ADS, such as the impossibility of vehicle movement while charging.		
Notes	The absence of a driver may negatively impact the speed of the evacuation of the vehicle in case of thermal propagation or other critical events, despite the presence of advance warnings in the Regulation. Whether this negative impact is significant and whether specific provisions should be drafted for automated vehicles is unclear at this stage.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	114R00/00 (Replacement airbag modules)	**Date of review**	13 March 2023
Scope	Components		
Content of existing Regulation	Provisions for replacement airbag modules and systems.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Provisions related to the driver are inapplicable to automated vehicles.	**Specifics for vehicles without manual driving capabilities**	Provisions for airbag modules for steering wheels are inapplicable.
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	The Regulation is inapplicable to vehicles without occupants
Summary of recommended changes	Minor amendments related to the driver are needed, but the Regulation is already easily applicable to automated vehicles in its current state.		
Notes	If bidirectional vehicles are to be considered, more significant work on the Regulation will be needed.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**	X	
	Major amendments needed		

Regulation No.	127R04/00 (Pedestrian safety)	**Date of review**	11 January 2023
Scope	M_1, N_1		
Content of existing Regulation	Provisions on minimising the risk of injuries in case of collision (leg or head) of a pedestrian (child or adult) with the vehicle.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Provisions related to ARHSS are relevant for automated vehicles that are equipped with one.	**Specifics for vehicles without manual driving capabilities**	- Provisions related to the driver's seat, R point etc. are inapplicable to automated vehicles without manual driving capabilities - Vehicles without a windscreen may be the object of specific provisions
Content to be covered by (potential) ADS Regulation	The ADS should be able to use ARHSS automatically in compliance with the Regulation.	**Specifics for vehicles without occupants**	New geometric criteria are needed for vehicles not designed to carry occupants.
Summary of recommended changes	- Amendments related to the interior layout of the vehicle are needed, such as references to the driver's R point. - Vehicles without a windscreen might need further consideration. - ARHSS for automated vehicles might need further consideration.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	129R03/06 (Enhanced child restraint systems)	**Date of review**	26 January 2023
Scope	Components		
Content of existing Regulation	Design and performance requirements for the type-approval of enhanced child restraint systems, including i-Size and ISOFIX, either as components or built into vehicle seating.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	The Regulation is inapplicable to vehicles without occupants.
Summary of recommended changes	None at this stage.		
Notes	This regulation applies to child restraint systems only. In most cases, these are separate from the vehicle, but they can also be "built-in" to the vehicle seating. The compatibility between child restraints and vehicles is regulated closely between UN R129 and UN R14, R16 and R145. Although not stated explicitly, UN R129 assumes that vehicles travel forwards only and that all seating in the vehicle is forward-facing. The regulation then defines child restraints according to the direction they face in the vehicle. It also sets different limits on the approval of child restraints and the requirements they must fulfil according to their orientation. Today, vehicles with rear-facing seating are a grey area with respect to the installation of CRS, but they are also quite rare. If bi-directional vehicles, and vehicles with new seating layouts become more common, it may be necessary to amend UN R129 to specify clear limits on the use of child restraints and/or to explain the basis for the direction they face in the vehicle. Some examples are shown below, but there are numerous references to the child restraint orientation throughout UN R129. Similarly, the provisions in UN R129 for built-in child restraints are vague and incomplete. Built-in child restraints are currently rare. However, some OEMs report that built-in child restraints may be the best solution for driverless shuttle vehicles and car-share services. If built-in child restraints become more common, it will be necessary to update UN R129 to ensure built-in products are subject to a complete set of provisions and requirements.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**	X	
	Major amendments needed		

Regulation No.	134R01/01 (Hydrogen-fuelled vehicles - HFCV)	**Date of review**	10 January 2023
Scope	M, N; components		
Content of existing Regulation	Performance and testing requirements for compressed hydrogen storage systems (impact, extreme temperatures, on-road performance etc.), their components, and the vehicle incorporating them (fuelling, protection against flammable conditions and leakage, post-crash integrity, etc.)	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Provisions on the tell-tale signal warning are inapplicable to automated vehicles.	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	The ADS should handle failure warnings and take action accordingly.	**Specifics for vehicles without occupants**	- Certain provisions related to the passenger compartment might not apply to vehicles without occupants. - Other than the above, the possibility of requiring a lower level of safety for vehicles without occupants is not considered at this stage.
Summary of recommended changes	- Amendments are needed regarding warning signals to the driver. - If certain provisions (e.g. leakage in the passenger compartments) are not applicable to vehicles without occupants, they should be clearly specified.		
Notes	If bidirectional vehicles are to be considered, more significant work on the Regulation will be needed (labelling location of the vehicle, installation of the hydrogen storage system not subject to the frontal impact test)		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed		X

Regulation No.	135R02/00 (Pole-side impact)	**Date of review**	10 January 2023
Scope	M_1, N_1		
Content of existing Regulation	- Provisions to reduce the risk of serious and fatal injury of vehicle occupants in pole-side impact crashes by limiting the forces, accelerations and deflections measured by anthropomorphic test devices in pole side impact crash tests and by other means. - Provisions on fuel system integrity, electrical and hydrogen safety	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Some provisions are currently not fit for automated vehicles, such as door openings "de-activated by the driver"	**Specifics for vehicles without manual driving capabilities**	Provisions related to the driver's seat, steering wheel etc. are inapplicable to vehicles without manual driving capabilities.
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	- Provisions related to the safety of occupants are not applicable for vehicles without occupants. - Provisions regarding leakage, fuel system integrity, etc. might be applicable. - Provision on the opening of doors might not be applicable.
Summary of recommended changes	- Many amendments regarding the interior layout of the vehicle, especially around the driver's seat, are needed. The definition of vehicle width should be reconsidered to take into account sensors. - If the provisions on leakage etc. are applicable to vehicles without occupants, this should be clearly specified.		
Notes	- If new seating positions are to be considered (side- or rear-facing seats, torso recline angles greater than 25°), major amendments will be needed. - If bidirectional vehicles are to be considered, more significant work on the Regulation will be needed.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	137R02/02 (Frontal collision, restraint system)	**Date of review**	4 December 2022
Scope	M_1, N_1		
Content of existing Regulation	- Protection of passengers in case of a frontal impact; protection of the occupants of vehicles operating on electrical power from high voltage. - Provisions on electrical safety, fuel leakage, etc.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Some provisions are currently not fit for automated vehicles, such as door openings "de-activated by the driver"	**Specifics for vehicles without manual driving capabilities**	Provisions related to the driver's seat, steering wheel etc. are inapplicable to vehicles without manual driving capabilities.
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	- Provisions related to the safety of occupants are not applicable for vehicles without occupants. - Provisions regarding leakage, fuel system integrity, etc. might be applicable. - Provision on the opening of doors might not be applicable.
Summary of recommended changes	- Many minor amendments regarding the interior layout of the vehicle, especially around the driver's seat, are needed. The definition of vehicle width should be reconsidered to take into account sensors. - If the provisions on leakage etc. are applicable to vehicles without occupants, this should be clearly specified.		
Notes	- If new seating positions are to be considered (side- or rear-facing seats, torso recline angles greater than 25°), major amendments will be needed. - If bidirectional vehicles are to be considered, more significant work on the Regulation will be needed.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	145R00/02 (ISOFIX anchorages and i-Size seating positions)	**Date of review**	1 February 2023
Scope	Any vehicle fitted with ISOFIX or i-Size		
Content of existing Regulation	Provisions on the design, positioning and robustness of ISOFIX anchorages and i-Size seating positions.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	The Regulation is inapplicable to vehicles without occupants.
Summary of recommended changes	Minor amendments related to the driver's seat are needed.		
Notes	If new seating positions (side- or rear-facing seats, torso recline angles greater than 25°, unconventional seating layout) or bidirectional vehicles are to be considered, more work on the Regulation will be needed.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed		X

Regulation No.	146R00/00 (Hydrogen-fuelled vehicles – L1–L5)	**Date of review**	10 January 2023
Scope	L_1–L_5; components		
Content of existing Regulation	Performance and testing requirements for compressed hydrogen storage systems, their components, and the vehicles incorporating them.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Provisions on the tell-tale signal warning are inapplicable to automated vehicles.	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	The ADS should handle failure warnings and take action accordingly.	**Specifics for vehicles without occupants**	- Certain provisions related to the passenger compartment might not apply to vehicles without occupants. - Other than the above, the possibility of requiring a lower level of safety for vehicles without occupants is not considered at this stage.
Summary of recommended changes	- Amendments are needed regarding warning signals to the driver. - If certain provisions (e.g. leakage in the passenger compartments) are not applicable to vehicles without occupants, they should be clearly specified.		
Notes	If bidirectional vehicles are to be considered and compatible with vehicle categories in the scope of this Regulation, more significant work will be needed.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed		X

Regulation No.	153R00/02 (Electric power train safety and fuel system integrity at rear-end collision)	**Date of review**	2 December 2022
Scope	M_1, N_1		

Content of existing Regulation	Provisions on electrical safety, fuel leakage, etc. in the event of a rear-end collision against the vehicle.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	One provision referring to the driver's seat becomes inapplicable.
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	- All provisions related to the interior layout of the vehicle, especially the passenger compartment, are inapplicable. - The rest of the Regulation may be applicable.
Summary of recommended changes	Many amendments regarding the interior layout of the vehicle, especially around the passenger compartment, are needed for automated vehicles without occupants.		
Notes	If bidirectional vehicles are to be considered, more significant work will be needed.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	GTR01 am 2 (Door locks and door retention components)	**Date of review**	26 December 2022
Scope	Components		
Content of existing Regulation	Requirements for vehicle door locks and door retention components, including latches, hinges, and other supporting means, to minimize the likelihood of occupants being thrown from a vehicle as a result of impact. This regulation applies to vehicle door locks and door retention components on side or back doors that lead directly into a compartment that contains one or more seating accommodations.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	Some notions such as "driver side" become meaningless when the vehicle has no manual driving capabilities.
Content to be covered by (potential) ADS Regulation	The ADS should be able to handle door closure warnings and take action accordingly, including in situations where the ADS cannot close the door automatically.	**Specifics for vehicles without occupants**	The Regulation is not applicable to vehicles without passengers containing seating accommodations.
Summary of recommended changes	Minor amendments (redefinitions) are needed to make the Regulation applicable to automated vehicles with occupants.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed		X

Regulation No.	GTR07 am 1 (Head restraints)	**Date of review**	26 December 2022
Scope	1-1, 1-2, 2 as defined in S.R.1		
Content of existing Regulation	Requirements for head restraints to reduce the frequency and severity of injuries caused by rearward displacement of the head.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	References to "driver head restraint" become irrelevant for vehicles with no manual driving capabilities.
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	Regulation not applicable
Summary of recommended changes	Minor amendments related to the driver's seat are needed.		
Notes	If new seating positions (side- or rear-facing seats, torso recline angles greater than 25°, unconventional seating layout) or bidirectional vehicles are to be considered, more work on the Regulation will be needed.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed		X

Regulation No.	GTR09 am 2 (Pedestrian safety)	**Date of review**	27 December 2022
Scope	1-1, 1-2, 2 as defined in S.R.1		
Content of existing Regulation	Provisions to bring about an improvement in the construction of certain parts of the front of vehicles, include passenger cars, vans and light trucks, which have been identified as causing injury when in collision with a pedestrian or other vulnerable road user.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	- Provisions related to the driver's seat, R point etc. are inapplicable to automated vehicles without manual driving capabilities - Vehicles without a windscreen may be the object of specific provisions
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	New geometric criteria are needed for vehicles not designed to carry occupants.
Summary of recommended changes	- Amendments related to the interior layout of the vehicle are needed, such as references to the driver's R point. - Vehicles without a windscreen might need further consideration.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	GTR13 (Hydrogen Fuel Cell Vehicles - HFCV)	**Date of review**	16 January 2023
Scope	1-1, 1-2 as defined in S.R.1		
Content of existing Regulation	Provisions to minimize human harm that may occur as a result of fire, burst or explosion related to the vehicle fuel system and/or from electric shock caused by the vehicle's high voltage system.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	Provisions on tell-tales	**Specifics for vehicles without manual driving capabilities**	Testing provisions using the driver's seat as a reference point
Content to be covered by (potential) ADS Regulation	The ADS should be able to handle failure warnings and take appropriate action.	**Specifics for vehicles without occupants**	- Certain provisions related to the passenger compartment might not apply to vehicles without occupants. - Other than the above, the possibility of requiring a lower level of safety for vehicles without occupants is not considered at this stage.
Summary of recommended changes	Minor amendments are needed, especially provisions on tell-tales and testing provisions.		
Notes	Bidirectional vehicles should be considered in a second step - Identification of Hydrogen Fuelled Vehicles: labelling location of the vehicle. - Installation of the hydrogen storage system not subject to the frontal impact test: it restricts currently only front of the vehicle. In case of bi-directional vehicle, it could be both front and rear.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed		X

Regulation No.	GTR14 (Pole-side impact)	**Date of review**	22 February 2023
Scope	1-1, 1-2, 2 as defined in S.R.1		
Content of existing Regulation	Provisions to reduce the risk of serious and fatal injury of vehicle occupants in side impact crashes by limiting the forces, accelerations and deflections measured by anthropomorphic test devices in pole side impact crash tests and by other means. This may complement other side impact tests.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	All provisions related to the driver's seat, pedals, steering wheel etc. become inapplicable to vehicles without manual driving capabilities.
Content to be covered by (potential) ADS Regulation	The ADS should be able to handle warnings and take appropriate action.	**Specifics for vehicles without occupants**	Provisions related to the safety of occupants are not applicable for vehicles without occupants; however, provisions regarding leakage, fuel system integrity, etc. may be applicable to these vehicles.
Summary of recommended changes	- Many minor amendments regarding the interior layout of the vehicle, especially around the driver's seat, are needed. - If the provisions on leakage etc. are applicable to vehicles without occupants, this should be clearly specified.		
Notes	- If new seating positions are to be considered (side- or rear-facing seats, torso recline angles greater than 25°), major amendments will be needed. - If bidirectional vehicles are to be considered, current restrictions on rear-facing seats should be reworked.		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	GTR20 (Electric vehicle safety)	**Date of review**	2 December 2022
Scope	1, 2 as defined in S.R.1		
Content of existing Regulation	Safety-related performance of electrically propelled road vehicles and their rechargeable electric energy storage systems. The purpose of this regulation is to avoid human harm that may occur from the electric power train.	**Specifics for dual-mode vehicles**	None (full compliance required)
Content relevant for vehicles equipped with an ADS	- The provisions on the warning system are relevant to vehicles equipped with an ADS. - Many definitions, such as active driving possible mode, are inapplicable when an ADS is controlling the vehicle.	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	- The ADS should consider the energy level of the REESS and adjust its high-level route planning accordingly. - The ADS should be able to handle warnings (for failures, thermal events, etc.) and take appropriate action.	**Specifics for vehicles without occupants**	Most provisions remain relevant for vehicles without occupants, for the protection of other road users, the prevention of thermal events, the intervention of emergency services, etc.
Summary of recommended changes	- Many minor amendments are required, especially definitions related to driving modes (reference to the acceleration pedal), driving conditions, and the behaviour of the warning system (which warning signals should be directly communicated to the passengers of an automated vehicle?) - Certain provisions on charging, besides the obvious difficulty of charging the vehicle in the absence of a driver, should be investigated to understand any potential effect on the ADS, such as the impossibility of vehicle movement while charging.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

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Annex 7

Results of the review – GRVA Regulations

Figure 8
Results of the review of GRVA Regulations

Regulation No.	13R12/02 (Braking)	**Date of review**	11 May 2023
Scope	M_2, M_3, N, O		
Content of existing Regulation	- Applicable to towing and towed vehicles, incl. those involved in a modular vehicle combination - No physical breakage of mechanical components (well dimensioned) - Operating forces of service braking system, secondary braking system and parking brake system to ensure they can be handled by the driver - Connections, communication, compatibility between towing and towed vehicles - Operating of endurance braking systems; coupling force control - Braking performance in nominal cases (Service, parking brake, endurance brake) - Braking performance in failure cases (Secondary and residual braking) - HMI: controls available to the driver and warnings issued to warn the driver - ABS requirements & EVSC requirements - Requirements regarding energy supply and storage	**Specifics for dual-mode vehicles**	- Consider that the braking demand can be requested by the actuation of manual controls (driver) or by generation of the ADS - HMI - Warning/failure signals (system status/condition)
Content relevant for vehicles equipped with an ADS	- System robustness (well dimensioned) - Connections, communication and compatibility between towing and towed vehicles - Operating of endurance braking systems; coupling force control - ABS requirements & EVSC requirements - Braking performance service/secondary/parking braking under nominal conditions - Braking performance under failure conditions and in "maintenance mode" - Warnings, failure, status signals to be provided to the	**Specifics for vehicles without manual driving capabilities**	- HMI - Warning/failure signals (system status/condition)

	ADS (e.g. to ensure ADS algorithm to respond adequately, to warn the operator, control tower, occupants if or when appropriate, etc.) - Status and warning signals sent by trailer regarding braking, EVSC, ABS, TPMS - Performance considering max design speed of the vehicles, that the ADS is in control of the entire driving dynamics (safety concept incl. transfer to MRC) - Annex "CEL" (safety concept) to be applied to the basic braking system (from interface receiving the braking demand originating from the ADS to its actuation)		
Content to be covered by (potential) ADS Regulation	- Generation of braking demand by the ADS - Response to warning, failure and status signals from both the towing and the towed vehicle - HMI intended for communication with driver (control tower, occupants, etc.) (- Overarching safety concept and management for the safe operation of the ADS)	**Specifics for vehicles without occupants**	None
Summary of recommended changes	- Replacing the driver actuating the braking control with the braking demand generated by the ADS (external brake request via interface) - Testing section, Annex 4 to be updated, including some pass criteria related to the driver and require special software, test mode, or other means of implementing test protocols. - If testing provisions can depend on the ODD, the vehicle speed control strategy and the likelihood of frequent braking should be considered. - Warnings, failure and status signals to be transmitted to the ADS to ensure adequate response , including those from the trailer(s) and those linked to truck–trailer incompatibility - Definitions to be checked, e.g. for Automatically Commanded Braking - Update of Annex 18 as appropriate: Annex "CEL" (safety concept) to be applied to the basic braking system (from interface receiving the braking demand originating from the ADS to its actuation)		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	13HR01/04 (Braking)	**Date of review**	11 May 2023
Scope	M_1, N_1		
Content of existing Regulation	-No physical breakage of mechanical components (well dimensioned) - Operating forces of service braking system, secondary braking system and parking brake system to ensure they can be handled by the driver - Braking performance in nominal cases (Service and parking brake) - Braking performance in failure cases (Secondary braking system) - Warnings to be issued to warn the driver - ABS requirements - (ESC regulated in UN R 140) - (BAS regulated in UN R 139)	**Specifics for dual-mode vehicles**	- Consider that the braking demand can be requested by the actuation of manual controls (driver) or by generation of the ADS - HMI - Warning/failure signals (system status/condition)
Content relevant for vehicles equipped with an ADS	- System robustness (well dimensioned) - Braking performance under nominal conditions - Braking performance under failure conditions - Braking performance in "maintenance mode" - Warnings/failure signals to be provided to the ADS (e.g. to ensure ADS algorithm to respond adequately, to warn the operator/control tower/occupants as/if appropriate, etc.) - Performance considering max design speed of the vehicles, that the ADS is in control of the entire driving dynamics (safety concept incl. transfer to MRC), - Annex "CEL" (safety concept) to be applied to the basic braking system (from interface receiving the braking demand originating from the ADS to its actuation)	**Specifics for vehicles without manual driving capabilities**	- HMI - Warning/failure signals (system status/condition)
Content to be covered by (potential) ADS Regulation	- Generation of braking demand by the ADS - Response to warning/failure signals - HMI intended for communication with driver (control tower, occupants, etc.) (- Overarching safety concept and management for the safe operation of the ADS)	**Specifics for vehicles without occupants**	None

Summary of recommended changes	- Provisions related to the driver or driver control should be deleted or amended as appropriate. - Test procedure, Annex 3 should be reconsidered regarding necessity and implementation method with the case of mode/vehicles without manual driving capabilities. -- Special software, test mode, or other means of implementing test protocols: to keep the specified vehicle speed, to achieve the maximum deceleration instead of 500 N pedal input by the driver, etc. -- If testing provisions can depend on the ODD, the vehicle speed control strategy and the likelihood of frequent braking should be considered. - Update of Annex 18 as appropriate: Annex "CEL" (safety concept) to be applied to the basic braking system (from interface receiving the braking demand originating from the ADS to its actuation)
Notes	Applicability to certain use cases (such as low-speed automated vehicles) is still unclear, and could be solved by introducing vehicles categories for automated vehicles, by creating a new Regulation, etc.

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	79R04/03 (Steering)	**Date of review**	22 May 2023
Scope	M, N, O		
Content of existing Regulation	- Ensure that all components of the steering system are designed properly to ensure a high level of safety: - No physical breakage of mechanical components (well dimensioned) - Steering forces are at levels which can be handled by the driver, even in case of failure - Steering performance (including behaviour, e.g. self-centring) in nominal cases - Steering performance in failure cases - Warnings to be issued to the driver - ADAS specific requirements	**Specifics for dual-mode vehicles**	Consider that the steering demand can be requested by the actuation of manual controls (driver) or by the ADS HMI Warning/failure signals (system status/condition) State of ADAS features after transitions of control State of ADAS features during ADS control
Content relevant for vehicles equipped with an ADS	- System robustness (well dimensioned) - Steering performance under nominal conditions - Steering performance under failure conditions - Steering performance in any "maintenance mode" - Warnings/failure signals to be provided to the ADS (e.g. to ensure ADS algorithm to respond adequately, to warn the operator as/if appropriate, etc.) - Performance considering max design speed of the vehicles, that the ADS is in control of the entire driving dynamics (safety concept incl. transfer to MRC) - Annex "CEL" (safety concept) to be applied to the basic steering system (from interface receiving the steering demand originating from the ADS to actuation)	**Specifics for vehicles without manual driving capabilities**	Need for behavioural requirements (e.g. self-centring, rear-wheel steer prohibition) Applicability of ADAS features
Content to be covered by (potential) ADS Regulation	Detection of failures (including those which would normal be recognised by a driver but not electrically detected). Overarching safety concept and management for the safe operation of the ADS.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	- Revise Scope with respect to "ACSF-B2, ACSF-E, Autonomous Steering" and associated definitions. - Revise provisions covering handling and driveability. - Revise definition of "steering control" and all references to driver operation. - Introduce provisions covering the state of ADAS systems during ADS operation and following transition to manual driving. - Revise testing requirements, considering ADS actuation ("test mode"). - Revise failure warnings to cover transmission to ADS.		

	- Consider failures that are currently detected directly by the driver (vibration, noise, increase in force, etc). - Revise PTI / roadworthiness provisions. - Revise Annex 6 (CEL) to clarify boundary of assessment; ensure alignment with corresponding annexes in other Regulations.
Notes	If bidirectional vehicles are considered, further amendments will be required. If test provisions can be adapted depending on the ODD, further work on the Regulation will be required.

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	89R00/03 (Speed Limiting Devices and functions)	**Date of review**	10 May 2023
Scope	M, N; components		
Content of existing Regulation	- Speed Limiting Devices and Functions (setting a fixed, maximum speed to the vehicle) - Adjustable Speed Limiting Devices and Functions (where the driver can set the speed limit of the vehicle)	**Specifics for dual-mode vehicles**	Transition between automated and manual mode. State of the device or function during automated mode
Content relevant for vehicles equipped with an ADS	The interaction between the SLD and automated driving is unclear: should the device work during automated driving? Should the speed limitation be managed in the ADS regulation?	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	- The ADS must comply with traffic rules, which includes any potential maximum speed for certain vehicles. - Any adjustable speed limitation feature should be handled by the ADS.	**Specifics for vehicles without occupants**	None
Summary of recommended changes	- Harmonize the following with other Regulations for functions affecting speed: transition between automated and manual mode, state of the system during automated mode. - If SLDs remain active during automated mode, specific provisions should be added. For now, it is assumed that SLDs and SLFs are not relevant for automated vehicles.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		

Regulation No.	90R02/10 (Replacement brake parts)	**Date of review**	11 May 2023
Scope	Components		
Content of existing Regulation	Provisions for approval of replacement brake parts	**Specifics for dual-mode vehicles**	None
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	- Test procedures where pedal force or line pressure is the input (without a brake pedal, how may this be generated and measured?) - Changes may be introduced to R13 and R13-H for vehicles not equipped with a brake pedal, such as achieving service braking performance within a certain time as an alternative to the 500N pedal force at 6.43m/s²
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	None
Summary of recommended changes	- Vehicle categories to be updated to cover new automated vehicles categories - Several parts of the test procedure need to be addressed.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**		X
	Major amendments needed	X	

Regulation No.	130R00/01 (Lane Departure Warning System)	**Date of review**	14 November 2022
Scope	M_2, M_3, N_2, N_3		
Content of existing Regulation	- Provides warning to driver when they drift out of lane - Performance requirements (lane markings to be identified, conditions under which it should operate, response to lane crossing, failure detection, activation and deactivation criteria) - Degree of warnings and timings for the driver	**Specifics for dual-mode vehicles**	Transition between automated and manual mode. State of the system during automated mode.
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	None
Summary of recommended changes	Harmonise the following with other Regulations for active safety functions: transition between automated and manual mode, state of the system during automated mode.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		

Regulation No.	131R02/00 (Advanced Emergency Braking System - AEBS)	**Date of review**	9 May 2023
Scope	M_2, M_3, N_2, N_3		
Content of existing Regulation	- The system detects a potential forward collision, provides the driver with an appropriate warning and activates the vehicle braking system to decelerate the vehicle with the purpose of avoiding or mitigating the severity of a collision in the event that the driver does not respond to the warning. - During any action taken by the system, the driver can take control and override the system.	**Specifics for dual-mode vehicles**	Transition between automated and manual mode. State of the system during automated mode.
Content relevant for vehicles equipped with an ADS	Emergency braking demand, speed range and speed reduction in specified scenarios.	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	- The ADS should specifically guarantee the same level of performance as what is required by the AEBS. - Response to warning/failure signals. - HMI intended for communication (with remote supervision, occupants, etc.)	**Specifics for vehicles without occupants**	None
Summary of recommended changes	Harmonise the following with other Regulations for active safety functions: transition between automated and manual mode, state of the system during automated mode.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		

Regulation No.	139R00/01 (Brake Assist System - BAS)	**Date of review**	14 November 2022
Scope	M_1, N_1		
Content of existing Regulation	Prescriptions on systems for delivering strong braking when detecting a certain force or speed applied by the driver to the braking pedal.	**Specifics for dual-mode vehicles**	Transition between automated and manual mode. State of the system during automated mode.
Content relevant for vehicles equipped with an ADS	None	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	None
Summary of recommended changes	Harmonise the following with other Regulations for active safety functions: transition between automated and manual mode, state of the system during automated mode.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		

Regulation No.	140R00/04 and GTR8 (Electronic Stability Control - ESC)	**Date of review**	9 May 2023
Scope	M_1, N_1		
Content of existing Regulation	- Yaw moment generated by adjusting the braking force of a single wheel to enhance the directional stability of the vehicle; - Control algorithm to determine whether there is a need to change the output torque of the engine; corresponding method to achieve the adjustment of the output torque, helping the driver maintain the control of the car. - Test Procedures (e.g. Sine with Dwell test and "ESC Off" control check.).	**Specifics for dual-mode vehicles**	Transition between automated and manual mode. State of the system during automated mode.
Content relevant for vehicles equipped with an ADS	Emergency braking demand, speed range and speed reduction in specified scenarios.	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	- The ADS should specifically guarantee the same level of performance as what is required by the ESC. - Response to warning/failure signals. - HMI intended for communication (with remote supervision, occupants, etc.)	**Specifics for vehicles without occupants**	None
Summary of recommended changes	Harmonise the following with other Regulations for active safety functions: transition between automated and manual mode, state of the system during automated mode.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		

Regulation No.	152R02/02 (Advanced Emergency Braking System - AEBS)	**Date of review**	9 May 2023
Scope	M_1, N_1		

Content of existing Regulation	- The system automatically detects a potential forward collision, provides the driver with an appropriate warning and activates the vehicle braking system to decelerate the vehicle with the purpose of avoiding or mitigating the severity of a collision in the event that the driver does not respond to the warning. - During any action taken by the system, the driver can take control and override the system.	**Specifics for dual-mode vehicles**	Transition between automated and manual mode. State of the function during automated mode.
Content relevant for vehicles equipped with an ADS	Emergency braking demand, speed range and speed reduction in specified scenarios.	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	The ADS should specifically guarantee the same level of performance as what is required by the AEBS. Response to warning/failure signals. HMI intended for communication (with remote supervision, occupants, etc.)	**Specifics for vehicles without occupants**	None
Summary of recommended changes	Harmonise the following with other Regulations for active safety functions: transition between automated and manual mode, state of the system during automated mode.		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		

Regulation No.	155R00/01 (Cybersecurity)	**Date of review**	14 November 2022
Scope	M, N; O if fitted with ECU; L_6-L_7 if ADS		
Content of existing Regulation	Company-wide management of cybersecurity and implementation on the electronic architecture of vehicles (Risk assessment, test results and mitigations) Management of risks along the whole supply chain (including suppliers) Detection of and response to cyberattacks, analysis and forensics of successful attacks Periodical reporting to authorities of surveillance activities	**Specifics for dual-mode vehicles**	None
Content relevant for vehicles equipped with an ADS	All parts related to the vehicle type	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	The ADS Regulation should be contingent to the existence and validity of a R155 type approval	**Specifics for vehicles without occupants**	None
Summary of recommended changes	None		
Notes	(Keeping the lists in Annex 5 up to date with the technology used in automated vehicles, e.g. interactions with infrastructure or other vehicles)		

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**	X	
	Major amendments needed		

Regulation No.	156R00/00 (Software Updates)	**Date of review**	14 November 2022
Scope	M, N, O, R, S, T		

Content of existing Regulation	Company-wide management of software updates and implementation on vehicles Security of software updates and safety of their execution Traceability of updates, in particular changes related to type approved functions and communication with the Approval Authority to ensure continuous validity of Type Approvals Specific prescriptions for over-the-air updates	**Specifics for dual-mode vehicles**	None
Content relevant for vehicles equipped with an ADS	All parts related to the vehicle type HMI for fully automated vehicles may not be present inside the vehicle (e.g. remote supervision centre)	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	The ADS Regulation should be contingent to the existence and validity of a R156 type approval	**Specifics for vehicles without occupants**	None
Summary of recommended changes	None		
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles		X	
Readiness:	**Regulation ready**	X	
	Major amendments needed		

Regulation No.	157R01/00 (Automated Lane Keeping System)	**Date of review**	14 November 2022
Scope	M, N		
Content of existing Regulation	Definition of an operational design domain Level 3 system: details on fail-safe response (MRM, transitions) Human-Machine Interface and communication of information to the human driver Guidance on scenarios Data storage (DSSAD) Series 01 of amendments: lane change procedures	**Specifics for dual-mode vehicles**	None
Content relevant for vehicles equipped with an ADS	Regulation is not inherently relevant because the task force covers automated driving systems which do not issue transition demands	**Specifics for vehicles without manual driving capabilities**	None
Content to be covered by (potential) ADS Regulation	None	**Specifics for vehicles without occupants**	None
Summary of recommended changes			
Notes			

Outcome of the review			
		Yes	**No**
Regulation relevant for fully automated vehicles			X
Readiness:	**Regulation ready**		
	Major amendments needed		