Report on the Activities of the TF on ADAS

Draft Amendments to UN Regulation No. [171]

– Outline & Justification –

Content

I. Report on the Activities of the TF on ADAS

II. General Discussion about DCAS Operation

III. Regulatory Concept

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V. Items for GRVA Decision/Guidance

I. Report on the Activities of the TF on ADAS

Activities after the 18th GRVA session

- Further development of the DCAS UN Regulation - Phase 2, to address:
  - System-initiated manoeuvres (lane changes and other)
  - Withholding of Hands-On requests in driver disengagement monitoring (assessment of visual disengagement only – aka "Hands-off")
  - Other addressed topics: String instability, clarifications, editorial corrections
- Meetings & Activities:
  - Hybrid meeting, where we consolidated all the received proposals into a single master document (Brussels, 13-16 May 2024)
  - Five online meetings (15 March 2024, 16 April 2024, 10, 17 & 21 June 2024, 29 & 30 July 2024, 11 & 12 September 2024
  - Drafting Group session (4 April 2024)
  - Demonstrations of DCAS-equipped vehicles for GRVA delegates in conjunction with the informal part of the 19th GRVA session in Troy, MI, U.S. (23 May 2024)
  - An online workshop to justify the robustness of the provisions of the draft amendments to UN Regulation No. 171 (10 September 2024)

Documents in the agenda of the 20th GRVA session:

- Working document ECE/TRANS/WP.29/GRVA/2024/32 (square brackets remained)
- Informal document GRVA-20-22 amending ECE/TRANS/WP.29/GRVA/2024/32 agreed by ADAS TF at the July and September sessions, resolving issues with square brackets. The remaining text in square brackets is a subject to GRVA decisions/guidance
- Informal document GRVA-20-21 – General presentation of the TF on ADAS to GRVA

Link to the ADAS TF documents: https://wiki.unece.org/display/trans/ADAS

Organizational Changes

- This September, the TF on ADAS secretary, Mr. Marc van Impe left AVERE and Tesla.
    - The TF on ADAS expressed its thanks and appreciation to Marc for his outstanding contribution in preparation of the TF on ADAS documents and management of the TF on ADAS activities.

- Messrs. Richard Krueger (OICA, BMW) and Daniel Quirke (CLEPA, Wayve) kindly volunteered to jointly carry on the secretary duties for the TF on ADAS.

- The activities of the TF on ADAS after the 20th GRVA session will be led by the Chair - Mr. Andrei Bocharov (Russian Federation, NAMI) and the secretaries Messrs. Richard Krueger and Daniel Quirke.
    - The leadership emails:
      a.bocharov@nami.ru / ab@satrfond.ru
      Richard.Krueger@bmw.de
      daniel.quirke@wayve.ai

Further Activities of the TF on ADAS

- Further activities depend on the decisions of the 20th GRVA session.
- The TF on ADAS Chair will contact IWG on DETA to make necessary arrangements for the information exchange between Type Approval Authorities via DETA according to amended provisions for ISMR.
- Some further development of the DCAS UN Regulation is foreseen.
- The TF on ADAS leadership will develop action plan, collect proposals from the stakeholders and call for the next TF on ADAS session to discuss these proposals.
- The stakeholders already proposed organizing a session dedicated to evidenced safety issues with hands-free vehicle operations.
- The TF on ADAS leadership will announce in advance about the next TF on ADAS session.

Acknowledgements

The TF on ADAS leadership expresses its gratitude to the TF on ADAS members for their contributions and active participation in the discussions helping to reach the TF on ADAS objectives.

II. General Discussion about DCAS Operation

Continuous assistance – primarily designed to reduce the workload while driving, these systems are still beneficial for road safety (ADAS-06-10)

Key contributors to road traffic accidents:
- Speeding
- Too little distance
- driver disengagement from the driving task
- Human limitations
- Wrong judgement

The use of continuous assistance could encourage the driver to:
- Keep an appropriate distance to other road users
- Drive at the permitted speed
- React to potential hazard preventatively
- Judge situations correctly

And thereby contribute to overall road safety, provided appropriate measures are taken to ensure drivers properly monitor the system and the environment.

Benefits to the driver with system-initiated manoeuvres

Re: ADAS-29-09

Benefits compared to manual driving:

- Many drivers don't respond appropriately to the traffic situations, they start changing lanes much too late, often disrupting the flow of traffic and endangering other road users

- If those lane changes were permitted to be system initiated, they would occur:
    - With sufficient lead time, where differential speeds are still low
    - With proper indication to other road users
    - With proper regard for the distances to other road users

Benefits compared to driver confirmed lane changes:

- Driver confirmation creates a time gap between assessment of the situation by the system and the moment in time where the manoeuvre can actually be initiated (depending on driver confirmation), in which the situation might have already change, so vehicle behavior will not be as smooth as if it was system initiated.

Information from the field   Re: ADAS-29-10, ADAS-31-15

- Customers are widely using L2 Hands-free driving systems in major markets since 2018*
  - US, Canada, China: from 2018
  - Japan: from 2019
  - UK, Germany, Spain: from 2023

- Hands-free: Driver is free to chose to put hands either on or off the steering control, during hands-free operation
  - Highway lanekeeping: from 2018
  - Highway lanekeeping and lanechange: from 2022

- In Japan, nearly 400 thousand vehicles are equipped with hands-free driving systems. No accident caused by such systems has been reported so far (ADAS-31-15)

- Example GM: "More than 160 million miles (257 million kilometers) have been driven accident-free with Super Cruise" since market introduction*

- Example Ford: "System has enabled already 175 million hands-free kilometers driven in US and Canada" **

> We intend to regulate the systems, which are already on the market

Identifying Risks with SAE Level 2 Systems

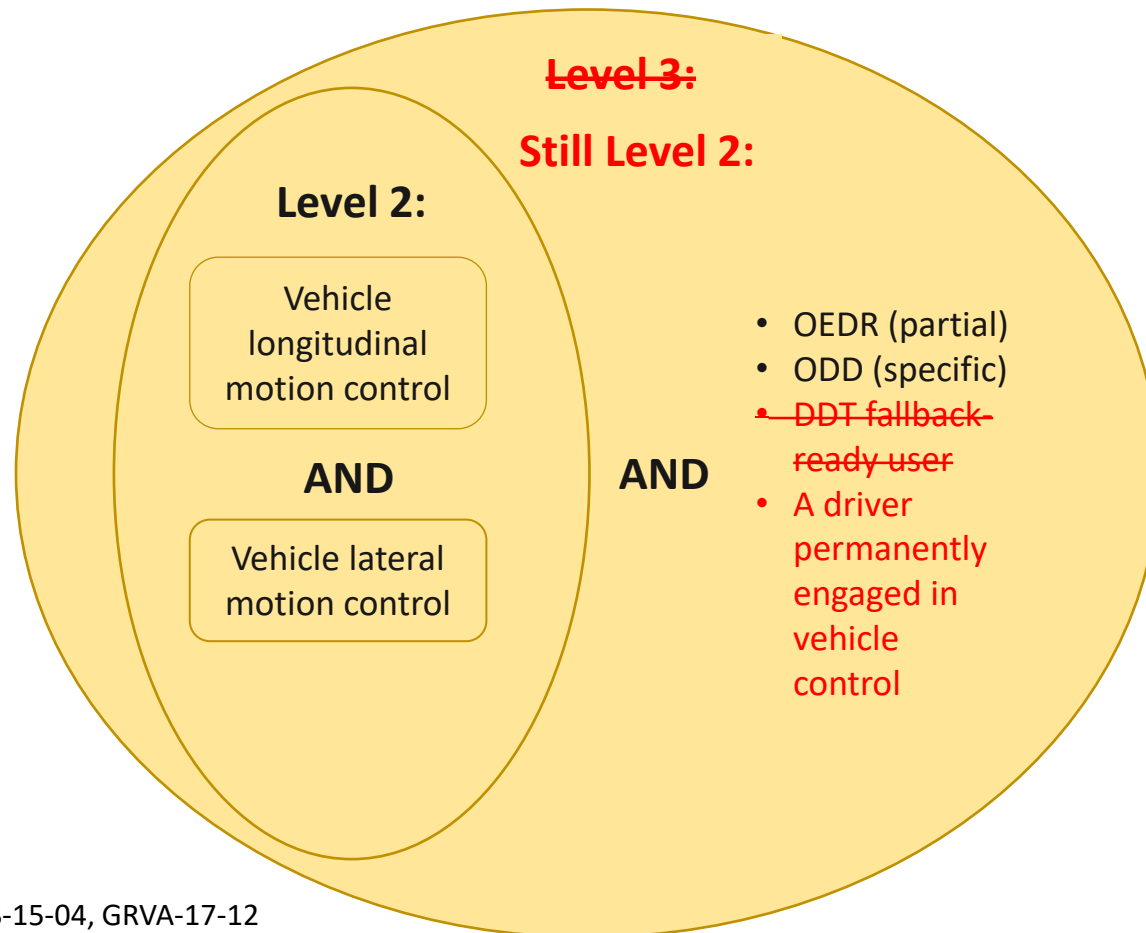SAE J 3016 Level 2
Advanced Driver Assistance:
A driver is fully responsible for driving the vehicle while the system provides continuous assistance with both accelerating/braking and steering

SAE J 3016 Level 3
Conditional Automation:
A system handles all aspects of driving while the driver remains available to take over driving if the system can no longer operate

Targeted DCAS

~~Level 3:~~

Still Level 2:

Level 2:

Vehicle longitudinal motion control

AND

Vehicle lateral motion control

AND

- OEDR (partial)
- ODD (specific)
- ~~DDT fallback-ready user~~
- A driver permanently engaged in vehicle control

Two main risks with a Level 2 System:
1. The system is so poor that the operator (driver) is constantly intervening to prevent catastrophic outcomes, and/or
2. The system is so good that the operator (driver) ceases to provide proper supervision (up to and including driver unresponsiveness).

- In the first case, the system requires so much driver intervention that it impairs driver operation of the vehicle.

- In the second case, the system is so reliable that the driver may not be available to intervene when needed.

The regulatory objectives:

- The system to provide stable control under the use conditions for which it is designed;

- The system to have safeguards to guarantee that the driver is always ready to intervene;

- The system to enable smooth transactions with the driver with safeguards to manage problematic transactions.

Re: ADAS-15-04, GRVA-17-12

DCAS is not ADS

- DCAS helps the driver to control the vehicle (SAE level 2 – advanced driver assistance). DCAS operation is a chain of control inputs
- DCAS may have a limited OEDR compare to that of ADS
- In a DCAS vehicle, the driver must be fully engaged in vehicle control
  - The driver should not wait DCAS to change the lane or perform another manoeuvre. The driver should perform a manoeuvre himself/herself.
  - The driver should monitor the environment providing an appropriate response in due time because of limited OEDR by DCAS

- ADS permanently controls the vehicle with no driver involved in vehicle control.
- ALKS as ADS completely frees the driver from vehicle control on highways at certain conditions (SAE level 3 – partial automation).

- DCAS is advanced driver assistance system (ADAS). DCAS is not a partial automation system.
- Treating DCAS as a SAE level 3 system is a wrong assumption. This would end up with erroneous conclusions about system performance.
  - DCAS should not be confused with ALKS. ALKS and DCAS have different objectives.

The Reality of DCAS Operation

- The driver controls the vehicle, while the DCAS provides control inputs from time to time.

- There is no need for a driver to supervise DCAS. DCAS inconspicuously assists the driver.

- There is no need for a driver to be trained to become a DCAS supervisor, but the driver shall be aware of DCAS operation (this is addressed in the DCAS UN Regulation, section 5.6.).

- DCAS operation is a chain of control inputs, while the driver is engaged in vehicle control and monitors the environment providing an appropriate response in due time. So that the driver does not just monitor DCAS operation, the driver controls the vehicle by his/her own.

- The driver may override DCAS anytime, including the situations ahead of or during the system-initiated manoeuvre.
  - The driver can easily suppress a lane change by just holding on to the steering control to prevent the vehicle from moving out of the lane, or can easily cancel it by some switch or the turn signal lever, etc.

Risk Management for FuSA & SOTIF

Re: Presentation by OICA-CLEPA at the workshop on 10 September 2024

Defining the expected functionality	
Functional Safety (FuSa)	**Safety of the intended functionality (SOTIF)**
IDENTIFY what is failing or not doing what it is supposed to	
Identify HW failure, or software bugs, that make the initial function unsafe	Identify conditions that could degrade system performance or expose gaps in system specifications
ANALYSE the risk(s) of failures or sub-performance	
Safety analyses such as FMEA, FTA, HAZOP	SOTIF analysis: confirm sub-performances and assess the risks
CONTROL the risk (i.e. eliminate or reduce)	
Develop safety mechanisms to detect failures and mitigate their effects	Address identified issues by refining the specifications or modifying the design (e.g., adding additional cameras)
REVIEW (i.e. Verification and Validation)	
Validate the safety mechanisms function as intended (e.g. by emulating hardware faults)	Extensive testing to prove there are no insufficiencies or that performance levels meet acceptable safety targets

Safeguard Measures in the DCAS UN Regulation

Re: ADAS-30-04, ADAS-29-09

- DCAS has already established significant safeguards aimed to ensure safe system design:
  - Annex 3 Audit and Assessment is looking at both functional and operational safety ensuring that DCAS is designed to be free of unreasonable safety risk
  - Dedicated provisions on controllability of failures and control actions by the system
- DCAS has established extensive provisions to ensure proper driver engagement, which will provide escalating warnings in case of detected misuse by the driver
- Monitoring the driver's gaze direction and giving a warning latest after 5 s of disengagement will encourage the driver to remain engaged with the driving task. Confusing DCAS for ADS would lead to the initiation of a warning cascade soon after the driver started to disengage from the driving task.
- Any system-initiated lane change is announced to the driver before its initiation. The system only changes lanes in clearly defined use cases where there is a justifiable reason for changing lanes, this makes system behavior expectable to the driver and increases controllability. The system assesses the free space in the target lane conservatively, not forcing vehicles in the target lane to decelerate unmanageably.

Addressing Mode Confusion

- DCAS operation is permanent. No mode change.
  - See DCAS modes of operation in the DCAS UN Regulation.
- DCAS does not operate such that the driver would need to predict the system control inputs.
  - DCAS involves natural vehicle control.
  - DCAS performs control inputs likely to be taken by the driver slightly ahead of the driver.
  - DCAS is designed to operate in the particular use cases specified by the manufacturer in the system design (see ADAS-29-09)
    - Safely overtaking slower moving vehicles ahead
    - Safely merging before a lane ending
    - Safety handling transitioning from one motorway to another
    - Choosing and returning to the appropriate lane of travel
- Confusing DCAS for ADS would lead to the initiation of a warning cascade soon after the driver started to disengage from the driving task.

Addressing Driver Inattention

- There is much less risk of driver inattention due to relatively short system interventions during system-initiated manoeuvres.

- There is always a certain time interval between system-initiated lane changes.

- The driver's engagement is under the system's monitoring.
  - Thus, potentially, if the driver is permanently engaged in vehicle control, then there is a low risk of the driver's delayed reaction or overcompensation.
  - If the driver's inattention is detected by DCAS, the system will provide escalating warnings to the driver.
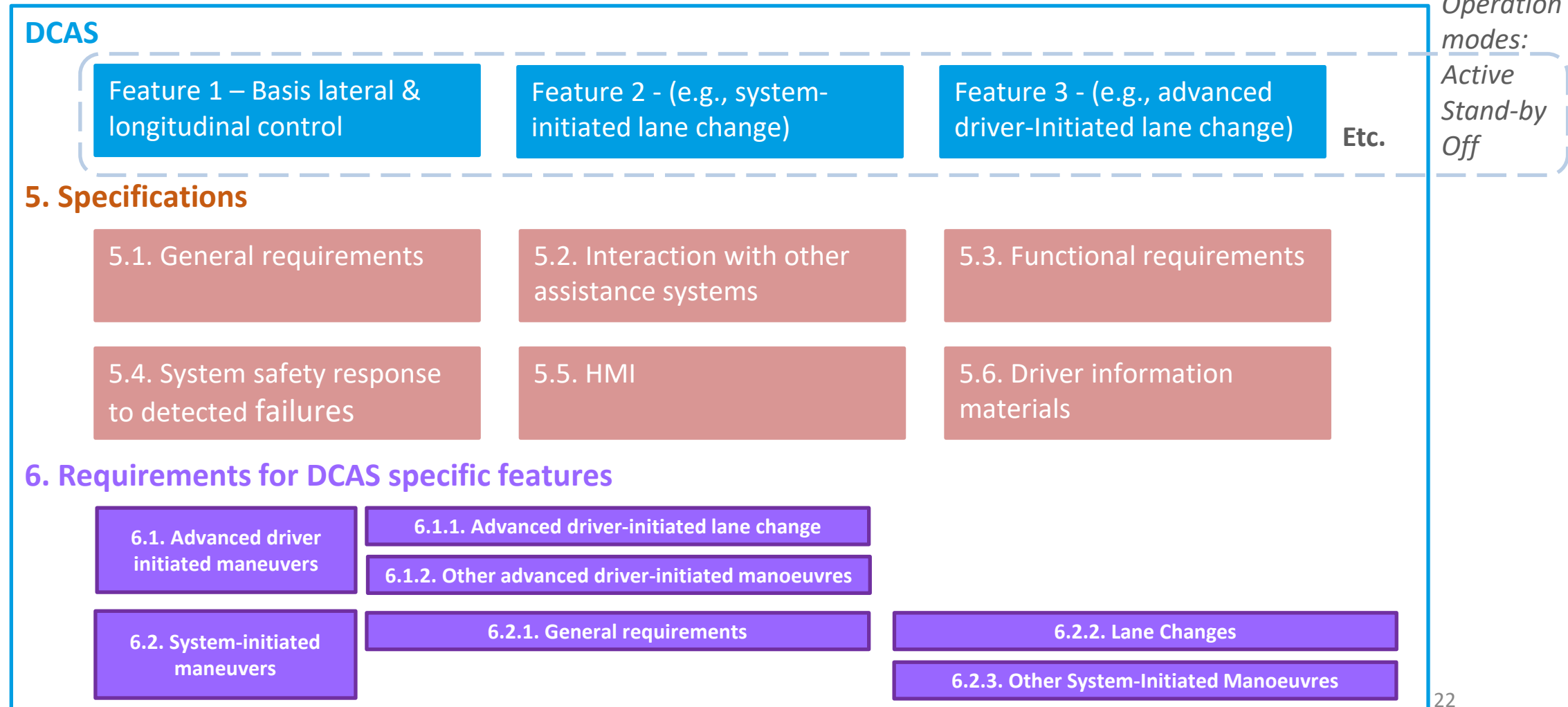
Addressing Drivers' Complacency and Overreliance

- The issues of complacency and overreliance may arise from the drivers' misunderstanding of DCAS operation.
    - These issues are addressed in the DCAS UN Regulation:
        - Specific information about DCAS operation (section 5.6.)
        - In general, the driver shall be educated and trained to operate a vehicle equipped with DCAS

III. Regulatory Concept

DCAS to be assessed as a L2 system comprising of a number of features

- *"(DCAS) Feature"* means a specific DCAS capability providing assistance to the driver in defined traffic scenarios, circumstances and system boundaries.

DCAS

| Feature 1 – Basis lateral & longitudinal control | Feature 2 - (e.g., system-initiated lane change) | Feature 3 - (e.g., advanced driver-Initiated lane change) |

Etc.

Operation modes:
Active
Stand-by
Off

5. Specifications

| 5.1. General requirements | 5.2. Interaction with other assistance systems | 5.3. Functional requirements |

| 5.4. System safety response to detected failures | 5.5. HMI | 5.6. Driver information materials |

6. Requirements for DCAS specific features

6.1. Advanced driver initiated maneuvers

- 6.1.1. Advanced driver-initiated lane change
- 6.1.2. Other advanced driver-initiated manoeuvres

6.2. System-initiated maneuvers

- 6.2.1. General requirements
- 6.2.2. Lane Changes
- 6.2.3. Other System-Initiated Manoeuvres

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Addressed Topics
in the Draft Amendments to UN Regulation No. 171

- System-initiated manoeuvres (SIM)
- Withholding of hands-on requests
- String instability
- Clarifications
- Editorial corrections

The TF on ADAS leadership noted that two NGOs, namely ETSC and FIA , did not support including into UN Regulation No. 171 the provisions related to system-initiated manoeuvres and withholding of hands-on requests.

System-initiated manoeuvres (SIM): Regulatory Concept

5.3.7. System Dynamic Control / 5.3.7.2. Manoeuvres

Requirements

Restrictions: not to initiate

5.3.7.2.3.6., 5.3.7.2.4.6. Knowingly causing other road users to unreasonably or unmanageably decelerate

5.3.7.2.3.7., 5.3.7.2.4.7. Violating applicable instructions by relevant signage or performance requirements per p. 6

5.3.7.2.4.2. An EOR was issued 7 seconds ahead of initiating a manoeuvre

5.3.7.2.4.5. Conditions for initiating in p. 5.3.7.2.3.5. are not met.

5.3.7.2.4.8. Leading the vehicle to cross lane markings which are not permitted to be crossed.

5.3.7.2.4.9. Violating appropriate right-of-way rules applicable in the country of operation

Conditions for initiating

5.3.7.2.3.5. To initiate a manoeuvre if the following conditions exist:
- Clear target area, lane or path;
- The reason for the manoeuvre exists;
- Allowance to resume stable control after the manoeuvre;
- The vehicle is anticipated not to stop (unless it is necessary for safe navigation);
- The target area, lane or path are within system boundaries;
- The driver has been detected to have directed their gaze to a driving task area relevant to the proposed manoeuvre

5.3.7.2.4.2.1. To ensure that the driver will have sufficient time to abort or override the manoeuvre

5.3.7.2.4.2.1. To ensure driver engagement prior the initiation of the manoeuvre – the strategies to be reported to TAA

5.3.7.2.4.3. Safety concept to include the system behaviour if the driver detected to be disengaged during the manoeuvre

5.3.7.2.4.4. Justifiable reason for said manoeuvre (e.g., pursuing a set destination, following traffic flow, safety-relevant manoeuvres, etc.)

System-initiated manoeuvres (SIM): Regulatory Concept

Requirements

5.3.7.2. Manoeuvres

5.3.7.2.4.10. The system shall perform the manoeuvre at the appropriate speed for the given situation or manoeuvre
5.3.7.2.5.1. Anticipatory behaviour in interaction with other road users demonstrated at the tests
5.3.7.2.5.2. Readjusting disrupted distance to the vehicle ahead
5.3.7.2.5.3. Special provisions regarding system boundaries

5.5.4.1. Driver information

5.5.4.1.9.2. The system shall aim to provide information ahead of the initiation of a relevant intended manoeuvre with sufficient notice to allow the driver to comprehend the manoeuvre and the traffic situation

System-initiated manoeuvres (SIM): Regulatory Concept

Validation

Audit

Annex 3, Appendix 4 - Declaration of system capability
 3. System's ability to ensure safe operation when assisting lane changes (applicable to both driver- and system-initiated lane changes)

Physical Tests

Demonstration of the anticipatory behaviour in interaction with other road users by avoidance a collision in the following scenarios:
- Annex 4, 4.2.5.2.6. A cut-out of the lead vehicle
- Annex 4, 4.2.5.2.5. A cut-in from the adjacent lane
- Annex 4, 4.2.5.2.4. A decelerating lead vehicle
New test procedure:
Annex 4, 4.2.5.2.15. System initiated driving around manoeuvre

Monitoring

7.2.1.1.1. Initial notification.
For systems capable of system-initiated manoeuvres, the applicable notification requirement shall apply to any instance where the feature was active within the last 7 seconds before the safety-critical occurrence
7.2.3.1. ISMR – Periodic reporting

[8. Number of aborted System-Initiated Manoeuvres
(if applicable)]

Withholding of Hands-On Requests: Regulatory Concept

5.3.6. Controllability

5.3.6.1.1. Consider the time required for the driver to respond to a DCA and to hold the steering control

5.3.6.2. Ensure controllability in accordance with the system's capabilities and within the defined system boundaries

5.3.7.2. Manoeuvres

5.3.7.2.5.1. Anticipatory behaviour in interaction with other road users demonstrated at the tests

5.3.7.2.5.2. Readjusting disrupted distance to the vehicle ahead

5.3.7.2.5.3. Special provisions regarding system boundaries

5.5.4.2. Driver state monitoring and warning strategies

5.5.4.2.5.2. Assessment of visual disengagement

5.5.4.2.5.2.2. Outline of assessment to be reported to TAA

5.5.4.2.5.3. Detection of and response to multiple short versions of the driver's gaze or head posture to be explained to TAA

5.5.4.2.6. Strengthening the escalation of warnings

5.5.4.2.6.2.2. Repetition of EOR

5.5.4.2.6.2.3. Escalation of EOR

5.5.4.2.6.5. Conditions for withholding of HORs

- On highways

- The manufacturer shall describe the boundary conditions for this feature

5.5.4.2.6.5.1. Conditions for issuing an HOR and a DCA. Demonstrate controllability in such situations to TAA

5.5.4.2.6.5.4. Conditions for issuing an EOR depending on vehicle speed

5.5.4.2.6.5.5. Issuing an EOR if no deviation of the driver's gaze or head posture. The monitoring strategy to be explained to TAA

5.5.4.2.6.5.6. Informing the driver about withholding of HORs but not promoting hands-off driving

5.5.4.2.8.2. Conditions to disable withholding of HORs (escalations of HORs, EORs, etc.)

Withholding of Hands-On Requests: Regulatory Concept

<table>
<tr><td colspan="2">**Previous measures already in the DCAS UN Regulation** (Re: ADAS-29-10)</td></tr>
<tr><td rowspan="3">Requirements</td><td>System able to assess both eye gaze and head posture</td><td>5.5.4.2.1.1. The system shall monitor if the driver is motorically (i.e., hand(s) on the steering control) and visually (e.g. gaze direction and/or head posture) disengaged.
5.5.4.2.5.1. The driver state monitoring system shall detect the driver's visual disengagement at a minimum based on the detection of the driver's eye gaze, or head posture if the driver's eye gaze cannot be determined.</td></tr>
<tr><td>All emergency assistance systems in 5.1.5 are operational</td><td>5.5.3.2.2. The system or its features shall only become 'active' if all of the following conditions are met:
(a) The driver is in the driver seat and the driver's safety belt is fastened;
(b) The system is able to monitor the driver's potential disengagement with the driving task;
(c) No failure affecting the safe operation of the system has been detected;
(d) The system or feature has not detected to be outside of its system boundaries;
(e) Other safety systems according to paragraph 5.2. are operational.</td></tr>
<tr><td>System informed the driver appropriately via the HMI about this modus of monitoring</td><td>5.5.4.1.2. The system messages and signals shall be unambiguous, timely and shall not lead to confusion.
5.5.4.1.5. The system's messages and signals shall be designed to actively encourage driver understanding of the state of the system, its capabilities and the driver's tasks and responsibilities.</td></tr>
</table>

Withholding of Hands-On Requests: Regulatory Concept

Validation

Audit

- Annex 3, 3.4.4. Controllability aspect (per paragraph 5.3.6.) is the part of the audit.
- Annex 3, Appendix 2, 2.1.1.3. Evidence of robustness of the driver disengagement monitoring accounting for differences in human characteristics and apparel, e.g., gender, age, facial hair, etc.
- Annex 3, 4. Verification and test by the manufacturer
4.1.3. Verification of the controllability under non-fault and fault conditions
4.1.3.1. Unexhaustive list of strategies for ensuring controllability in general
4.1.3.2. Unexhaustive list of strategies for ensuring controllability whilst withholding HORs

Physical Tests

Demonstration of the anticipatory behaviour in interaction with other road users by avoidance a collision in the following scenarios:
- Annex 4, 4.2.5.2.6. A cut-out of the lead vehicle
- Annex 4, 4.2.5.2.5. A cut-in from the adjacent lane
- Annex 4, 4.2.5.2.4. A decelerating lead vehicle

Monitoring

7.2.3.1. ISMR – Periodic reporting

[6. Number of events when the system is withholding HOR and is not subject to a driver override to the longitudinal control (if applicable)
6.a. where an upcoming boundary condition is not detected 5 s ahead and the system does not longer provide lateral assistance after crossing the boundary (due to been overridden or switched to "off" shortly)
6.b. where an upcoming boundary condition is not detected 5 s ahead and which requires a DCA and results in a driver override or the system being switched to 'off' shortly after the DCA
7. Driving distance while the system is withholding HORs (if applicable)]

String Instability

- Definition
  2.31. "*String Instability*" means when a disturbance in the speed profile of the vehicle in front is amplified by the following vehicle.

- Requirement
  5.3.6.3. Deceleration and Acceleration
  5.3.6.3.2. While the system is trying to maintain a constant speed without external disturbances, it shall aim to minimise unreasonable fluctuations in the vehicle's speed.

- Validation
  Annex 4, 4.2.5.2.4. New test procedure: Following a lead vehicle

IV. Content
of the Draft Amendments to UN Regulation No. 171

The Background Documents for GRVA-20-XX

- ADAS 34-02 - Master document (outcome 33rd Session) Rev2 (in session day 2);

- ADAS 34-13 - Reporting and Monitoring Table (in session);

- ADAS 34-14 - Compromise Proposal on Lockout (in session);

- ADAS 34-04 - Draft transitional provisions for the 01 series of amendments to UN R 171;

- GRVA-20-08 - Proposal for amendments to ECE/TRANS/WP.29/GRVA/2024/32.

System-initiated manoeuvres (SIM) (1/6)

- 5.3.7.2.3.5. The system shall **aim** not **to** initiate the proposed manoeuvre, even if already confirmed by the driver, unless the following conditions are met:
  (f) The driver has been detected to have directed their gaze as appropriate to the proposed manoeuvre within an appropriate period before the manoeuvre commences.

- 5.3.7.2.3.6. The system shall not propose a manoeuvre if it would knowingly cause other road users to unreasonably **or unmanageably** decelerate or evade the vehicle as a consequence of the manoeuvre.

- 5.3.7.2.3.7. The system shall aim to not ~~propose~~ **initiate** a manoeuvre if it would violate applicable instruction by relevant signage ~~or by other traffic rules~~ **or performance requirements** as specified in paragraph 6.

- 5.3.7.2.4. General requirements for system-initiated manoeuvres
  The requirements of this paragraph and its subparagraphs apply to **feature(s)** ~~systems~~ capable of performing system-initiated manoeuvres.

- **5.3.7.2.4.1. The system shall be designed to ensure that the driver has sufficient time to reject the manoeuvre announced by the system before it is performed in an easily accessible way, or to resume unassisted control, as appropriate. If the driver rejects a manoeuvre, the system shall not initiate the same manoeuvre unless the circumstances change or there is a risk of an imminent collision.**

System-initiated manoeuvres (SIM) (2/6)

- **5.3.7.2.4.2. A manoeuvre shall not be initiated if system has presented an EOR to the driver in the 7 seconds leading up to the initiation of the manoeuvre.**
5.3.7.2.4.2.1. In addition, further strategies shall be implemented to ensure appropriate driver engagement prior to the initiation of the manoeuvre, which shall be documented and explained.

- **5.3.7.2.4.3. The manufacturer shall also describe in the safety concept the system behaviour in case the driver is detected to be disengaged during a manoeuvre…**

- **5.3.7.2.4.4. A manoeuvre shall only be performed if there is a justifiable reason for said manoeuvre (e.g., pursuing a set destination, following traffic flow, safety-relevant manoeuvres, etc.)…**

- **5.3.7.2.4.5. The system shall not initiate the manoeuvre if the conditions outlined in paragraph 5.3.7.2.3.5. are not met.**

- **5.3.7.2.4.6. The system shall aim to not initiate a manoeuvre if it would cause other road users to unreasonably or unmanageably decelerate or evade the vehicle as a consequence of the manoeuvre.**

- **5.3.7.2.4.7. The system shall aim to not initiate a manoeuvre if it would violate applicable instruction by relevant signage or performance requirements as specified in paragraph 6.**

- **5.3.7.2.4.8. The system shall not initiate a manoeuvre if it would lead the vehicle to cross lane markings which are not permitted to be crossed.**

System-initiated manoeuvres (SIM) (3/6)

- **5.3.7.2.4.9. The system shall aim not to violate appropriate right-of-way rules applicable in the country of operation where relevant to the manoeuvre.**

- **[5.3.7.2.4.10. The system shall only initiate a manoeuvre if the vehicle is located on a highway (including highway slip roads) and it is not withholding HORs.]**

- **5.3.7.2.5. Special provisions for systems capable of performing system-initiated manoeuvres and/or withholding of HORs**

    - **5.3.7.2.5.1. The system shall be designed to have anticipatory behaviour in interaction with other road user(s)... This shall be demonstrated by avoidance of a collision in the following scenarios, accounting for the robustness criteria outlined in Annex 3 Appendix 4:**
      (a) A cut-out of the lead vehicle as outlined in Annex 4, paragraph 4.2.5.2.6.;
      (b) A vehicle cutting in from the adjacent lane as outlined in Annex 4, paragraph 4.2.5.2.5.;
      (c) A decelerating lead vehicle as outlined in Annex 4, paragraph 4.2.5.2.4.

    - **5.3.7.2.5.2. In case the following distance to a vehicle in front is temporarily disrupted... the vehicle shall readjust the following distance at the next available opportunity without any harsh braking, implementing strategies aiming to address significant string instability...**

System-initiated manoeuvres (SIM) (4/6)

- **5.3.7.2.5.3. Special provisions regarding system boundaries:**
  5.3.7.2.5.3.1. During highway operation, the system shall aim to respond to work zones, lane reductions, lane closures, toll stations and end of highways
  5.3.7.2.5.3.2. For non-highway operation, if system-initiated maneuvers can be activated the system shall aim to respond relevant situations when the vehicle could be expected to stop, give way or required to change lane…
  5.3.7.2.5.3. The system shall be able to recognize lane markings as outlined in Annex 3 of the 01 or later series of amendments to UN Regulation No. 130, as relevant to the countries in which the system can be activated.

- **5.5.4.1.9.2. The system shall aim to provide information ahead of the initiation of a relevant intended manoeuvre with sufficient notice to allow the driver to comprehend…**
  In addition, the initiation of a lane change procedure shall be announced by another modality unless the system has assessed that the driver has observed the visual information.

System-initiated manoeuvres (SIM) (5/6)

- 6.2.9.2. Additional requirements for system-initiated lane changes
    - 6.2.9.2.1. **The requirements outlined in paragraph 6.2.9.1. shall equally apply:**
    6.2.9.1.1. Additional requirements for lane changes: The system shall aim not to make an approaching vehicle in the target lane **unreasonably** decelerate… **(particular specifications)**
    6.2.9.1.2. Notwithstanding the requirements in paragraph 6.2.4.2. (b), the approaching vehicle in the target lane is assumed to be travelling with the allowed maximum speed + 10% or 130 km/h, whichever is lower.
    - **6.2.9.2.2. The system shall aim to detect restricted lanes of travel which restrict access to specific vehicle road users (e.g., bus, bike or taxi lanes) and shall aim to refrain from initiating lane changes to such lanes.**
- 6.3.9.4. The system shall not suggest a manoeuvre to the driver **or perform a system-initiated manoeuvre**, which intends to cross a solid lane marking that is not permitted to be crossed, unless permitted by the situation as described in **paragraph** 6.3.9.1. (c).
    - 6.3.9.1. (c). The manoeuvre is instructed by legitimate external sources (e.g., static and dynamic road signs, road works, emergency or enforcement instruction, etc.), if applicable to the system's design.

System-initiated manoeuvres (SIM) (6/6)

- **7.2.1.1.1.** Initial notification of Safety-Critical Occurrences **For systems capable of system-initiated manoeuvres, the applicable notification requirement shall apply to any instance where the feature was active within the last 7 seconds before the safety-critical occurrence.**

- 7.2.3.1., Table – New conditions for periodic reporting

  [8. Number of aborted System-Initiated Manoeuvres (if applicable)]

- Annex 1, **6.3. The system is / is not capable of performing System-initiated manoeuvres. Description of system capabilities…**

- Annex 3, Appendix 4, 3. System's ability to ensure safe operation when assisting lane changes (applicable to both driver- and system-initiated lane changes)

- Annex 4, **4.2.5.2.15. New test procedure: System-initiated driving around manoeuvre**

Withholding of Hands-On Requests (1/9)

- **2.32.** Definition of **"*Hands On Request (HOR)*" – a request from the system to the driver to motorically reengage**

- **2.33.** Definition of **"*Eyes On Request (EOR)*" – a request from the system to the driver to visually reengage**

- **2.34.** Definition of **"Direct Control Alert (DCA)" – an instruction from the system to the driver to immediately resume at least lateral control of the vehicle**

- **5.3.6.1.1.** Controllability: **Whilst withholding HORs, the manufacturer shall consider the time required for the driver to respond to a DCA and to hold the steering control. This shall never be assumed to be less than 1 second, unless the manufacturer is able to demonstrate that controllability is ensured through specific strategies.**

- 5.3.6.1.2. Controllability: New text: **The system shall be designed to ensure controllability in accordance with the system's capabilities and within the defined system boundaries. In the case that HORs are being withheld, the system shall take into account that the driver may be motorically disengaged.**

- 5.3.7.2.1.1. Manoeuvre - General Requirements: New text: **Motoric disengagement may not be considered when HORs are being withheld by the system.**

Withholding of Hands-On Requests (2/9)

- **5.3.7.2.5. Special provisions for systems capable of performing system-initiated manoeuvres and/or withholding of HORs**

    - **5.3.7.2.5.1. The system shall be designed to have anticipatory behaviour in interaction with other road user(s)… This shall be demonstrated by avoidance of a collision in the following scenarios, accounting for the robustness criteria outlined in Annex 3 Appendix 4:**
    (a) A cut-out of the lead vehicle as outlined in Annex 4, paragraph 4.2.5.2.6.;
    (b) A vehicle cutting in from the adjacent lane as outlined in Annex 4, paragraph 4.2.5.2.5.;
    (c) A decelerating lead vehicle as outlined in Annex 4, paragraph 4.2.5.2.4.

    - **5.3.7.2.5.2. In case the following distance to a vehicle in front is temporarily disrupted… the vehicle shall readjust the following distance at the next available opportunity without any harsh braking, implementing strategies aiming to address significant string instability…**

    - **5.3.7.2.5.3. Special provisions regarding system boundaries:**
    5.3.7.2.5.3.1. During highway operation, the system shall aim to respond to work zones, lane reductions, lane closures, toll stations and end of highways
    5.3.7.2.5.3.2. For non-highway operation, if system-initiated manoeuvres can be activated, the system shall aim to respond to relevant situations when the vehicle could be expected to stop, give way or required to change lane.
    5.3.7.2.5.3. The system shall be able to recognize lane markings as outlined in Annex 3 of the 01 or later series of amendments to UN Regulation No. 130, as relevant to the countries in which the system can be activated.

Withholding of Hands-On Requests (3/9)

- 5.5.4.2.5.2. The driver shall be deemed to be visually disengaged when the driver's eye gaze and/or head posture, as relevant, is directed away from any currently driving task relevant area…

  - **5.5.4.2.5.2.2. An outline of the sufficient duration depending on the situation shall be specified by the manufacturer in the documentation provided to the Type Approval Authority.**

- 5.5.4.2.5.3. ~~The manufacturer shall implement strategies~~ **The system shall be designed** to address the detection and response to multiple subsequent short aversions of eye gaze or head posture by the driver (e.g. increased reengagement time and/or immediate issuing of an EOR). **This functionality shall be documented and explained by the manufacturer to the Type Approval Authority.**

- **5.5.4.2.6.1.3. The initiation of an HOR may be withheld in accordance with the provisions of paragraph 5.5.4.2.6.5.**

- **5.5.4.2.6.1.4. The system shall be designed to avoid misuse (e.g., nudging the steering wheel in response to an HOR without becoming, as requested by the system, motorically engaged).**

Withholding of Hands-On Requests (4/9)

- **5.5.4.2.6.2.2. Following an EOR, if the driver has been deemed visually reengaged according to paragraph 5.5.4.2.5.2.1 and is subsequently deemed to be visually disengaged again within 2 seconds, an EOR shall be given immediately.**

- 5.5.4.2.6.2.~~2.~~**3.** In the event of continued visual disengagement, the ~~system~~ **EOR** shall **be** escalate~~d the EOR~~ **at the** latest 3 seconds after the initial EOR according to the warning strategy with increased intensity. ~~This escalation~~ **The escalated EOR** shall always ~~include~~ **contain** acoustic and/or haptic information.

- 5.5.4.2.6.5. ~~(Reserved for hands-off requirements)~~ **Withholding of HORs: The system may withhold HORs when the vehicle is located on a "Highway" and is operated at a speed up to 130 km/h. As outlined in paragraph 5.3.5.2., the manufacturer shall describe in detail, as part of the documentation required for section 9, the boundary conditions under which HORs can be withheld.**

Withholding of Hands-On Requests (5/9)

- **5.5.4.2.6.5.1. In case of a detected upcoming boundary condition which requires an HOR, this HOR shall be given at the latest 5 seconds in advance of reaching the boundary condition(s).**
For situations not detected 5 seconds in advance:
- a DCA shall be issued unless lateral assistance will still be provided after the driver is motorically reengaged;
- where a DCA is not issued, an HOR shall be issued upon detection of the upcoming boundary condition(s);
- the vehicle manufacturer shall demonstrate the controllability of such situations to the Type Approval Authority during the inspection of the safety concept.

- **5.5.4.2.6.5.2. The system shall issue an HOR or DCA as appropriate upon reaching the system boundaries due to a driver override of the longitudinal control by acceleration.**

- **5.5.4.2.6.5.3. If the system has the ability to suppress accelerator input in order to avoid exceeding the system boundaries, the driver shall be able to override this.**

Withholding of Hands-On Requests (6/9)

- **5.5.4.2.6.5.4. Notwithstanding paragraph 5.5.4.2.6.2.1., an EOR shall be given at the latest when the driver has been deemed visually disengaged for the relevant time period according to the table below.**

Vehicle Speed (km/h)	Latest EOR timing (s)
130 km/h	3.5
10 km/h to 60 km/h	5.0

  For vehicle speeds values between 60 km/h and 130 km/h, a linear interpolation shall be used to calculate the corresponding EOR timing.

- **5.5.4.2.6.5.5. The system shall be designed to determine when there has been no deviation in eye gaze (or movement of head position when this is being used to determine visual engagement) for a significant period of time. An EOR shall be issued in this case. These strategies shall be documented and explained by the manufacturer to the Type Approval Authority.**

- **5.5.4.2.6.5.6. The system shall inform the driver whether HORs are currently being withheld or not in a clearly distinguishable way.**
  This information shall be designed to not actively promote that the driver should remove their hands from the steering control…

Withholding of Hands-On Requests (7/9)

- **5.5.4.2.8.1. The system shall be disabled for a period of at least 30 minutes whilst the powertrain is active when the driver is detected to have insufficient engagement.**

- **5.5.4.2.8.2. The driver is deemed to have insufficient engagement when this leads to:**
  a) one unavailability response initiation;
  b) at most 2 DCAs due to prolonged insufficient engagement; or
  c) at most 3 engagement request escalations.
  For a) and b), counting is reset when the system is no longer disabled.
  For c), this is determined over a rolling time window of 30 minutes during the activation of the powertrain.

- **5.5.4.2.8.3. The driver is also deemed to have insufficient engagement if there are repeated EOR or HOR due to driver disengagement within a given time period. The number of warnings and the time interval over which these are counted shall be defined by the manufacturer and justified to the Type Approval Authority.**

Withholding of Hands-On Requests (8/9)

- 7.2.3.1., Table – New conditions for periodic reporting

[6. Number of events when the system has been disabled due to insufficient engagement by the driver]
[6.a. Number of events where the system was only disabled for less than 5 minutes]
[6.b. Number of events where the system was disabled due to repeated EOR or HOR warnings (including the thresholds used)]
[7. Number of events where 5 EORs are issued in a 10-minute period]
[8. Number of events where 5 HORs are issued in a 10-minute period]
[6. Number of events when the system is withholding HOR and is not subject to a driver override to the longitudinal control (if applicable) and
[6.a. where an upcoming boundary condition is not detected 5 s ahead and the system does not longer provide lateral assistance after crossing the boundary (due to been overridden or switched to "off" shortly)]
[6.b. where an upcoming boundary condition is not detected 5 s ahead and which requires a DCA and results in a driver override or the system being switched to 'off' shortly after the DCA]
[7. Driving distance while the system is withholding HORs (if applicable)]

Withholding of Hands-On Requests (9/9)

- Annex 1, **6.4. The system is / is not capable of withholding HORs**

- Annex 3, 3.4.4. (a) (ii) The Type Approval Authority shall perform an assessment of the application of the analytical approach(es). The assessment shall include:
(ii) Malfunctions of the system, within the scope of this UN Regulation, **including the controllability aspect in accordance with paragraph 5.3.6. of this UN Regulation**

- Annex 3, **4.1.3.** Verification and test: **Verification of the controllability**
The verification under non-fault (paragraph 4.1.1.1.) and fault (paragraph 4.1.2.1.) conditions shall be adequate from a controllability perspective.

  - **4.1.3.1. Unexhaustive list of strategies for ensuring controllability (Reinstating the former content of paragraph 5.3.6.2.)**

  - **4.1.3.2. Unexhaustive list of strategies for ensuring controllability whilst withholding HORs**

- Annex 3, Appendix 2 - System design to be assessed during the audit/assessment
2.1.1.3. Evidence of robustness of the driver disengagement monitoring accounting for differences in human characteristics and apparel. This shall include a description of how the system is affected by e.g., gender, age, etc.

String Instability

- 2.31. Definition – **"*String Instability*" means when a disturbance in the speed profile of the vehicle in front is amplified by the following vehicle.**

- 5.3.6.3. Deceleration and Acceleration
  5.3.6.3.2. **While the system is trying to maintain a constant speed without external disturbances, it shall aim to minimise unreasonable fluctuations in the vehicle's speed.**

- Annex 4, 4.2.5.2.4. ~~(Reserved)~~ **New test procedure: Following a lead vehicle**

Clarifications (1/7)

- 5.1.2., 5.1.3., 5.5.3.4.1.5. ~~The manufacturer shall implement strategies~~ **The system shall be designed** to…

- 5.3.5.1.1. ~~The manufacturer shall implement strategies~~ **The system shall aim** to…

- 5.3.6.1. Controllability: The system shall be designed to ensure that control actions by the system including, but not limited to… **aborting manoeuvres…** remain controllable for the driver.

- 5.3.7.2.3.2. A request by the system for the driver to confirm a manoeuvre shall at least be indicated through a specific ~~visual~~ signal **(or combination of signals) in accordance with paragraph 5.5.4.1**.

- 5.3.7.2.3.3. In the event that the driver does not confirm a request by the system ~~or a driver disengagement warning is currently being given~~, the system shall not initiate ~~the~~ **that** manoeuvre.

- 5.3.7.2.3.5. The system shall **aim** not **to** initiate the proposed manoeuvre, even if already confirmed by the driver, unless the following conditions are met:
(a) The target area, lane or path ~~of the manoeuvre is not obstructed~~ **is determined by the system to be clear**

Clarifications (2/7)

- **5.3.7.3.2. The system shall be designed to select an appropriate target stop area based on the system capabilities and current circumstances (e.g. traffic situation, road infrastructure) with the aim of minimising risk.**

- ~~5.3.7.3.2.~~ **5.3.7.3.3.** Where the system is equipped with a driver-confirmed or system-initiated lane change feature, the RMF shall be capable of performing lane changes, **in compliance with the technical requirements … of the 04 or later series of amendments to UN Regulation No. 79…**

- 5.3.7.4.7.2. The system may incorporate a feature allowing the driver to confirm or reject any change in **the** current maximum speed before it is ~~implemented~~ **automatically changed** by the system.

- 5.3.7.4.7.3.2. If the current maximum speed before the change was a driver set maximum speed **and the driver set maximum speed is lower than both the previous system-determined road speed limit as well as the new system-determined road speed limit,** then the current maximum speed shall not automatically change to the new system-determined road speed limit

- 5.3.7.4.10. Technically reasonable tolerances (e.g., related to speedometer inaccuracy) may be applied to the warning thresholds and ~~operational limits~~ **the system's designed speed range**

- **[5.5.3.2.1. Activation of the system upon acknowledgement by the driver]**

Clarifications (3/7)

- **5.5.3.4.1.1.** Conditions for driver override: specifications for the driver's input to the braking control

- **5.5.3.4.1.4.1. When the driver override occurs while the system is performing a manoeuvre, the manoeuvre shall be terminated unless the steering input is in support of the intended manoeuvre and/or providing minor lateral corrections.**

- 5.5.4.1.1. The system shall inform or warn the driver about:
  (h) Status of the manoeuvres including initiation, cancellation or if it will be recommenced after the vehicle is forced to come to a stop during the manoeuvre.

- **5.5.4.1.8.2.** System Messages and Signals for Driver-Confirmed Manoeuvres: **The direction indicators shall not be used to inform of the proposed manoeuvre.**

- 5.5.4.2.3.1.2. An HOR, as a minimum, shall be considered confirmed when the driver **is no longer motorically disengaged** ~~has placed the hand(s) on the steering control~~.

- 5.5.4.2.3.3. Direct Control Alert (DCA):
  - 5.5.4.2.3.3.1. A DCA shall clearly and prominently instruct the driver to immediately resume ~~either~~ **at least** lateral~~, or lateral and longitudinal unassisted~~ control…
  - 5.5.4.2.3.3.1. A DCA shall clearly and prominently instruct the driver to immediately resume ~~either~~ **at least** lateral~~, or lateral and longitudinal unassisted~~ control of the vehicle **without any continuous lateral assistance** as requested by the DCA.

Clarifications (4/7)

- 6.1.1.1. The feature may be permitted to induce higher lateral acceleration values than 3 m/s²…, provided the following conditions are met:
  (e) The driver is not determined to be motorically disengaged.

- 6.1.2.1. **If the system has the capability to assist in merging roads,** the system shall aim to…

- 6.2.4.1. The system shall be designed to not make an approaching vehicle decelerate at a higher level than 3 m/s²… **[conditions]**

- 6.2.6. The system shall generate a signal to activate ~~and deactivate~~ the direction indicator **unless already activated by the driver**…

- 6.2.9.1.1. Additional requirements for lane changes: The system shall aim not to make an approaching vehicle in the target lane **unreasonably** decelerate… **(particular specifications)**

- 6.3. Specific requirements for other manoeuvres other than a lane change
  6.3.1. The provisions of this paragraph apply for manoeuvres which lead the vehicle to:
  … (d) **Provide sufficient lateral distance to safely pass an object adjacent to the lane of travel (e.g., a cyclist in a cycle lane)** …

- 6.3.9.3. **The system shall appropriately indicate the manoeuvre to other road users throughout the manoeuvre.**

Clarifications (5/7)

- 7.2.1.1. The manufacturer shall notify the Type Approval Authority **without unreasonable delay** ~~as soon as practical~~ about any safety-critical occurrence the manufacturer becomes aware of **through a monitoring program**, where the system or its features were ~~switched to~~ **in** 'on' mode...

- 7.2.1.2. The initial notification may be limited to high-level data **but shall contain information about the features in 'on' mode, or which had been switched to 'on' mode with the last 5 seconds before the safety-critical occurrence...**

- 7.2.2.2. **If remedial action is required, the Type Approval Authority shall upload this information in English language to the secure database "DETA"... to communicate this information to all Type Approval Authorities.**

- 7.2.3.1. The manufacturer shall report at least once a year... on the information deemed to be proper evidence of the intended operation **collected through the monitoring program** and safety of the system in the field **until the production is definitively discontinued according to paragraph 14**...

- Annex 1, **6.1. The system is / is not capable of performing Driver-initiated manoeuvres. Description of system capabilities...**

- Annex 1, **6.2. The system is / is not capable of performing Driver-confirmed manoeuvres. Description of system capabilities...**

Clarifications (6/7)

- Annex 3, 3.4.4.1. This documentation shall itemize the parameters being monitored and shall set out, for each **relevant** failure condition…

- Annex 3, 4.4. …scenarios that are critical for controllability of system boundaries by the driver (e.g., … **, system fault conditions**)…

- Annex 3, Appendix 2, 1. **This Appendix reflects a summary of system design aspects outlined in the core text of this Regulation to be assessed during the audit/assessment.**

- Annex 3, Appendix 4, 1. System's capability to respond to other road users
  Table – **Vehicle in front braking higher than 4 ms^{-2}** scenario added

- Annex 3, Appendix 4, 4. (Header) The system's ability to safely perform other driver-initiated or system-initiated manoeuvres **or to respond to the target** in non-highway environments

- Annex 3, Appendix 4, ~~6. System's ability to operate in accordance with traffic rules related to a certain system-initiated manoeuvre~~ (delete entire section 6)

- Annex 4, **4.2.5.1.1.1.3. …when test tracks with an appropriate radius to meet the lateral acceleration conditions outlined in paragraphs 4.2.5.1.1.1.1. or 4.2.5.1.1.1.2. are not available, meeting the objectives of paragraphs 5.3.7.1.1., 5.3.7.1.2. or 6.1.1., as applicable, … may be demonstrated through alternative means… (conditions)**

Clarifications (7/7)

- Annex 4, 4.2.5.1.1.2.1.The test shall be executed at least:
  (b) For different road curvatures, including an S-bend with the parameters according to paragraph 4.2.4.1. or equivalent, and different initial speeds, at least one **of which would require the vehicle to** exceed~~ing~~ the maximum lateral acceleration declared by the manufacturer **in order to remain in the lane at this speed**

- Annex 4, 4.2.5.1.2. Driver-initiated Lane changes
  4.2.5.1.2.1. Base Test
  ~~4.2.5.1.2.1.2. The VUT and the lead vehicle shall travel in a straight line, in the same direction, for at least two seconds prior to the functional part of the test with a VUT to lead vehicle centreline offset of not more than 1 m.~~
  ~~4.2.5.1.2.1.3. Tests shall be conducted with a lead vehicle travelling at least 20 km/h slower than the set speed limit of the VUT.~~
  4.2.5.1.2.2. Extended Testing: The test shall assess the system's ability to assist the driver … at the conditions:
  ~~(a) With other speed differences between the lead vehicle and VUT (Vehicle Under Test);~~
  (d) Presence of a lead vehicle.

- Annex 4, 4.2.5.1.3. (header) **Driver-confirmed or s**ystem-initiated lane changes

Editorial Corrections

- 2.4. Definition of "Dynamic Control" – DCAS **assists** the driver

- 2.24. Definition of "Safety-Critical Occurrence" – Resulting an injury **or a death** of at least one person

- 5.3.2. The system shall be able to **detect**, assess and respond...

- 5.3.5.4., 6.1.1.2., 14.1. **Type** Approval Authority

- 5.3.5.5. ... **sufficient** ~~appropriate~~ lead time **for the driver to respond appropriately**

- 5.3.7.1.1. The ~~DCAS feature~~ **system**

- 5.3.7.2.2., 5.3.7.2.3. **feature(s)** ~~systems~~

- 5.5.4.2.1.1., 7.2.2.1. Added references to paragraph numbers

- 6.3.9.2. ~~object~~ **obstruction** ~~obstructing the lane of travel~~

- 7.1.2. ~~To fulfil this provision, the~~ **The** manufacturer

- Annex 3, Appendix 4, 2.1. Road ~~events~~ **attributes**

Editorial Corrections per the Comments by the EC

- 2.25. Definition of "Controllability" – … **by** the system…

- 3.2. It shall be accompanied by the following documentation: ~~(a model of the information document is provided in Annex 2):~~

- 4.3. Communication **of** approval **or** ~~of~~ extension **of approval** or ~~of~~ refusal **of approval** or ~~of~~ withdrawal of approval or of production definitively discontinued…

- 4.4. Annex ~~3~~ **2**

- 4.4.2. ~~An oval surrounding the letters "UI" followed by the Unique Identifier.~~ (not relevant anymore)

- 9.1.1. & 9.1.2. the paragraph was divided into two paragraphs

- Annex 1, 8.2. Information document form (Appendix **1** to Annex 3)

- Annex 3, 2.9. … paragraph 2.~~6.~~**5.** ~~of Section 2~~ …

- Annex 4, 3.1.5.2. Category **L₃**

- Annex 4, 4.2.5.2.13.1.1. & 4.2.5.2.14.1.1. ~~motorist~~ **motorcycle**

- Annex 5, 3.4.8.2. & 3.6.5.5.1. ~~as defined in Annex II~~

- Annex 5, 3.4.8.2.1. Effect of the data quality **on** M&S credibility

V. Items for GRVA Decision/Guidance

1. To confirm the addition of a new paragraph in the Introduction

Adapted proposal by Japan in GRVA-20-08

[17.　　　While DCAS is currently being diligently developed by many manufacturers and is supposed to be further developed in the future, this UN Regulation is established based on the current technology and data from limited number of vehicles introduced to the market. This UN Regulation implements such an instrument as monitoring of DCAS operation intended for collecting more data from the vehicles with DCAS which will be introduced into the market. This UN Regulation is a subject to continuous review based on examining the technology development and the data obtained through the monitoring of DCAS operation.]

2. Whether to limit the operational conditions for the system-initiated manoeuvres

[5.3.7.2.4.10. The system shall only initiate a manoeuvre if the vehicle is located on a highway (including highway slip roads) and it is not withholding HORs.]

Notes by the TF on ADAS leadership:

1. GRVA may wish to extend the operational conditions for the system-initiated manoeuvres for the non-highway environment with limited vehicle speed, e.g., up to 70 km/h;

2. If GRVA would agree on the provision above, GRVA would be requested to endorse further activities of the TF on ADAS dedicated to the extension of the operational conditions for the system-initiated manoeuvres.

3. Additional conditions for the activation of DCAS

[5.5.3.2.1.   Option 1:

It shall only be possible to activate the system if the driver has acknowledged that they have read the information describing the functionality and its limitation and will maintain control of the vehicle while any feature is operating. This shall be performed on each activation of the powertrain while the vehicle is in a stopped position, unless it can be identified that the same driver has previously acknowledged this information.

Option 2:

Latest upon its first activation in the drive cycle, the system shall once provide a driver-confirmed visual information to the driver requesting them to remain engaged with the driving task while using the system.]

Note by the TF on ADAS leadership:

Option 1 would add extra burden on the driver, who will act formally, without thinking of his/her action.

4. To confirm the specific requirements for lane change with an approaching vehicle

6.2.4.1. When there is an approaching vehicle.

[The system shall be designed to not make an approaching vehicle decelerate at a higher level than 3.0 m/s²,

(a) 1.4 seconds after the system starts the lateral movement of the lane change procedure; and

(b) 0.4 seconds after the system starts the lane change manoeuvre, provided that the approaching vehicle was detected by the DCAS vehicle for a duration of at least 1.0 seconds immediately before the lane change manoeuvre starts, if applicable,

to ensure that the distance between the two vehicles is never less than that which the DCAS vehicle travels in 1 second.]

The explanation is on the next slide.

Timing of the DCAS Lane Change Procedure

Re: ADAS-34-07 by EC, Germany, OICA-CLEPA
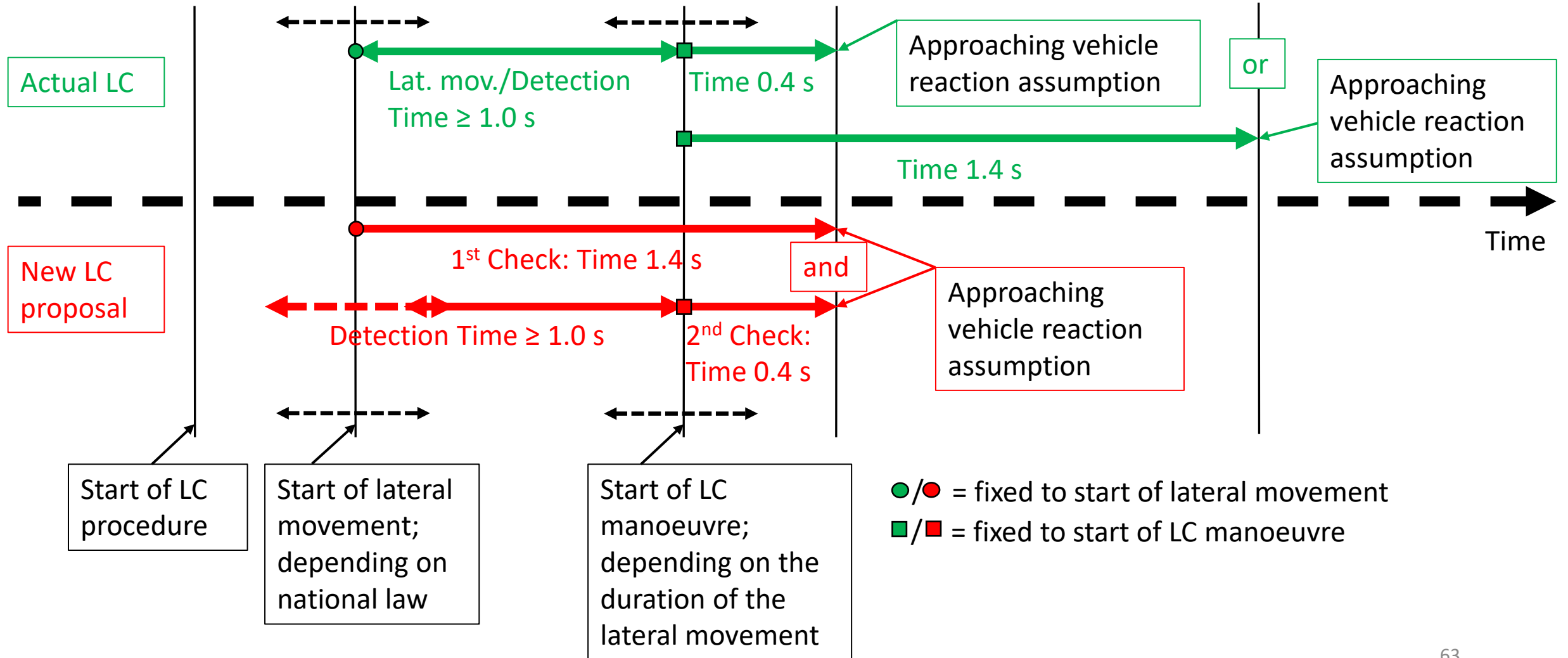
5. To confirm the information to be requested for periodic reporting

Paragraph 7.2.3.1., Table 1

[6. Number of events when the system has been disabled due to insufficient engagement by the driver]
[6.a. Number of events where the system was only disabled for less than 5 minutes]
[6.b. Number of events where the system was disabled due to repeated EOR or HOR warnings (including the thresholds used)]
[7. Number of events where 5 EORs are issued in a 10-minute period]
[8. Number of events where 5 HORs are issued in a 10-minute period]
[6. Number of events when the system is withholding HOR and is not subject to a driver override to the longitudinal control (if applicable) and
[6.a. where an upcoming boundary condition is not detected 5 s ahead and the system does not longer provide lateral assistance after crossing the boundary (due to been overridden or switched to "off" shortly)]
[6.b. where an upcoming boundary condition is not detected 5 s ahead and which requires a DCA and results in a driver override or the system being switched to 'off' shortly after the DCA]
[7. Driving distance while the system is withholding HORs (if applicable)]
[8. Number of aborted System-Initiated Manoeuvres (if applicable)]

6. Transitional Provisions (1/2)

Re: ADAS-34-04

The text is based on the WP.29 guidelines ECE/TRANS/WP.29/1044/Rev.3.

16.1. (V.1.) As from the official date of entry into force of the 01 series of amendments, no Contracting Party applying this Regulation shall refuse to grant or refuse to accept type approvals under this Regulation as amended by the 01 series of amendments.

16.2. (V.2.) As from 1 September [2026], Contracting Parties applying this Regulation shall not be obliged to accept type approvals to the preceding series of amendments, first issued after 1 September [2026].

16.3. (V.3.) Until 1 September [2028], Contracting Parties applying this Regulation shall accept type approvals to the preceding series of amendments, first issued before 1 September [2026].

16.4. (V.5.) Notwithstanding the transitional provisions above, Contracting Parties who start to apply this Regulation after the date of entry into force of the most recent series of amendments are not obliged to accept type approvals which were granted in accordance with the original version (00 series of amendments) of this Regulation.

6. Transitional Provisions (2/2)

Re: ADAS-34-04

16.5. (V.7.) Contracting Parties applying this Regulation shall continue to accept type approvals issued according to the original version (00 series of amendments) of this Regulation, for the vehicles/vehicle systems which are not affected by the changes introduced by the 01 series of amendments.

16.6. (V.8.) Contracting Parties applying this Regulation shall continue to accept type approvals issued according to the original version (00 series of amendments) of this Regulation first issued before 1 September [2026].

16.7. (V.9.) Contracting Parties applying this Regulation may grant type approvals according to the original version (00 series of amendments) of this Regulation.

16.8. (V.9bis.) Contracting Parties applying this Regulation shall continue to grant extensions of existing approvals to the original version (00 series of amendments) of this Regulation.

7. Editorial Corrections per the Comments by the EC

- 2.25. Definition of "Controllability" – … **by** the system…

- 3.2. It shall be accompanied by the following documentation: ~~(a model of the information document is provided in Annex 2):~~

- 4.3. Communication **of** approval **or** ~~of~~ extension **of approval** or ~~of~~ refusal **of approval** or ~~of~~ withdrawal of approval or of production definitively discontinued…

- 4.4. Annex ~~3~~ **2**

- 4.4.2. ~~An oval surrounding the letters "UI" followed by the Unique Identifier.~~ (not relevant anymore)

- 9.1.1. & 9.1.2. the paragraph was divided into two paragraphs

- Annex 1, 8.2. Information document form (Appendix **1** to Annex 3)

- Annex 3, 2.9. … paragraph 2.~~6.~~**5.** ~~of Section 2~~ …

- Annex 4, 3.1.5.2. Category **L$_3$**

- Annex 4, 4.2.5.2.13.1.1. & 4.2.5.2.14.1.1. ~~motorist~~ **motorcycle**

- Annex 5, 3.4.8.2. & 3.6.5.5.1. ~~as defined in Annex II~~

- Annex 5, 3.4.8.2.1. Effect of the data quality **on** M&S credibility

8. An Additional Editorial Correction from the UK

- Preamble, paragraph 7 (b)

"Some requirements are such that whilst the system is generally expected to fulfil them, this might not always be appropriate or achievable under the specific circumstances, or external disturbances may still lead to a varying output. These provisions are phrased as "the system shall ~~be~~ aim to…"; and"

Thank you for your attention!