Status and Feedback Request

Task Force
Separate Technical Unit (STU)
within IWG VRU-Proxi

for
Agenda item 4
130th GRSG meeting
6th to 9th October 2025

Agenda

- Request for ToR Changes – Timeline and Scope
  IWG VRU-Proxi – Related to Separate Technical Units (STU)

- Status and Feedback Request from the STU TF
  within the IWG VRU-Proxi
  - Context, Goals and Challenges
  - R159 Draft Approval Routes
  - R159 Draft Structural Changes
  - R158 Outlook
  - Questions / Thoughts / Feedback

Timeline – Request for ToR Change

IWG VRU-Proxi – Related to Separate Technical Units (STU)

- Propose extension to October 2026 for work item Separate Technical Units (STU)

- Proposal considerations and justifications
  - Assessment based on current rate of progress from and R159 work and initial assessment for R158.
  - Assuming at least one iteration cycle, means two IWG meetings for review covering each of the 4 draft regulations.
  - Submission deadline to GRSG for informal and working documents.
  - Review demands between IWG and TF.
  - Expect efficiencies for R151 due to applying the concept from R159.
  - More traditional approach for R158 due to its content however taking in account the alternative means in the regulation.
  - Expect efficiencies for R166 due to applying the approach from R158 and its similarities.
  - Guestimate for submission of at least one draft amendment for GRSG session in April 2026.

Scope – Request for ToR Change

IWG VRU-Proxi – Related to Separate Technical Units (STU)

- Proposed change of the ToR for work item Part Separate Technical Units (STU)

  "…

  Completing ~~draft~~ regulatory proposals for **Component and** Separate Technical Units (STU) approvals for the following regulations (if applicable):

  - UN Regulation No. 151;
  - UN Regulation No. 158;
  - UN Regulation No. 159;
  - UN Regulation No. 166.

  …"

  Note: Component and Separate Technical Units as defined in UNECE framework document "Consolidated Resolution on the Construction of Vehicles (R.E.3)", see ECE_TRANS_WP.29_78_Rev.7e

- Proposal Considerations and Justifications
  - The IWG colleagues involved in the definition of the TF scope around 2023 to 2024 likely had limited awareness of the latest updated framework document as stated above.
  - This framework defines both, Components and STU in UNECE terms.
  - Suggest to cover both in the scope to allow Component and STU approach for flexibility and economic benefits for the industry fulfilling the regulation demands.
    This was the original goal in the initial version of the ToR mentioning "component" at that time.

Context – Key Part from UNECE Framework R.E.3

STU TF within the IWG VRU-Proxi

Definitions

UNECE has defined Manufacturer, Component and Separate Technical Unit in the latest update of the framework document:

“Consolidated Resolution on the Construction of Vehicles (R.E.3)”

See link: ECE_TRANS_WP.29_78_Rev.7e

Extract of Definitions:

“…

1.13 **“Manufacturer"** means the person or body who is **responsible to the Approval Authority** for all aspects covered by the UN Regulations requirements for approval process and for ensuring the conformity of production. It is not essential that the person or body is directly involved in all stages of the construction of the vehicle or component which is the subject of the approval process.

1.14. **"Component"** means a device intended to be part of a vehicle, which may be **approved independently of a vehicle** where relevant UN Regulation(s) provide express provisions for so doing.

1.15. **"Separate technical unit"** means a device intended to be part of a vehicle, which may be **approved separately, but only in relation to one or more specified types of vehicle** where relevant UN regulation(s) provide express provisions for so doing.

…”

Note: For “Manufacturer “ frequently the phrase of “approval requester” is used.

Context, Goals and Challenges

STU TF within the IWG VRU-Proxi

Context

- Familiarising with various regulations containing Component or STU approach – all dealing with a specific system, having at the outset a basic specific universal structure, which is picked up in the structure of the regulation.
- STU TF is dealing with regulations which are mostly pure functional and technology independent (especially R151 BSIS and R159 MOIS).
- Consultations suggested such will become a more common matter for regulations with e. g. ADAS functions or self-driving vehicles.
- Focus so far has been mostly on R159 MOIS.

Goals

- All changes should not make the regulation less or more stringent however adding wider scope – allowing an “Amendment as a Supplement” (and not a new series).
- Current scheme for full vehicle approval will be maintained and ensures possible extension of current approvals.

Challenges

Efficiency	Avoid or limit the same testing on Component or STU level vs. integration of an approved Component or STU on vehicle level.
Dependency	Taking in account vehicle features which significantly influence the performance of a STU or Component.
Stringency	Ensure fulfilment for all requirement demands after the integration of an approved Component or STU on vehicle level approval.
Simplicity	Guidance for the approval requester providing the information for Component, STU or integration of an approved Component or STU on vehicle level. Ensuring the Technical Service and approval authority can fulfil their responsibilities.

R159 Draft Approval Routes – New Types

STU TF within the IWG VRU-Proxi

1) Vehicle fitted with a Moving Off Information System (not type approved as a Component or STU)
   (Note: As current text, this “full vehicle” approval will be maintained and related content stays unchanged)

2) Component

3) STU

4) Vehicle fitted with a Moving Off Information System type approved as a Component or STU

R159 Draft Approval Routes – Component

STU TF within the IWG VRU-Proxi

Component:
There are 2 starting points

Already existing full vehicle type ghi approval *

E11 159R-001234

OR

In case no existing vehicle type approval

Component type approval

→ E11 159R-007531

(Independent of vehicle type)

Already existing full vehicle type ghi approval stays as it is:
E11 159R-001234

(assumed to be very unlikely *)

Vehicle ghi with component type approval (either due to system update, special request to unify a range of vehicle types and re-approve the same vehicle type, …)
→ E11 159R-001546 with support of E11 159R-007531

Any vehicle type with component type approval
→ E11 159R-007647 / E11 159R-007654 / …
with support of E11 159R-007531

* not needed as a precondition for component type approval but possible

R159 Draft Approval Routes – STU

STU TF within the IWG VRU-Proxi

STU:

There are 2 starting points

Already existing full vehicle type ghi approval *

E11 159R-001234

OR

In case no existing vehicle type approval

STU type approval

→ E11 159R-004568

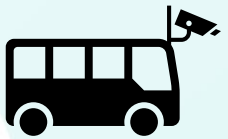
With relevant vehicle type list abc, def, ghi

(Vehicle type definition is regulation specific)

Already existing full vehicle type ghi approval stays as it is:
E11 159R-001234

(assumed to be very unlikely *)

Vehicle ghi with STU type approval (either due to system update, special request to unify a range of vehicle types and re-approve the same vehicle type, …)
→ E11 159R-001546 with support of E11 159R-004568



Vehicle abc with STU type approval
→ E11 159R-009876 with support of E11 159R-004568

Vehicle def with STU type approval
→ E11 159R-007531 with support of E11 159R-004568

* not needed as a precondition for STU type approval but possible

R159 Draft Structural Changes – Overview

STU TF within the IWG VRU-Proxi

Current Chapters

0. Introduction
1. Scope
2. Definitions
3. Application for approval
4. Approval
5. Specifications
6. Test procedure
7. Modification of vehicle type and ...
8. Conformity of production
9. Penalties for non-conformity of production
10. Production definitively discontinued
11. Names and addresses of the Tech...

Appendix 1

Annexes
1 Communication
2 Arrangements of approval marks
3 Test method for determining blind spot boundary

Proposed Changes for Chapters *

0. Introduction
1. Scope
2. Definitions
3. Application for approval
4. Approval
5. Part 1: Full vehicle type approval with unapproved MOIS
   - 5.1 Specifications
   - 5.2 Test procedure
6. Part 2: Vehicle fitted with already approved Component or STU
   - 6.1 Specifications (tbc.)
   - 6.2 Test procedure
7. Part 3 and 4: Component or STU
   - 7.1 Specifications
     - 7.1.1 Detection
     - 7.1.2 Control
     - 7.1.3 HMI
   - 7.2 Test procedure
8. Modification of vehicle type and ...
9. Conformity of production
10. Penalties for non-conformity of production
11. Production definitively discontinued
12. Names and addresses of the Tech...

Appendix 1

Annexes
1 Communication
- Part 1 Vehicle fitted with a MOIS
- Part 2 Component
- Part 3 STU
- Part 4 Vehicle fitted with a MOIS type approved as a Component or STU

2 Information Document
- Part 1 Vehicle fitted with a MOIS
- Part 2 Component
- Part 3 STU
- Part 4 Vehicle fitted with a MOIS type approved as a Component or STU

3 Arrangements of approval marks
4 Test method for determining blind spot boundary

* Colour scheme for highlighted text: added paragraphs / major updates / new / no or minor updates

R159 Draft Structural Changes – Informal Document

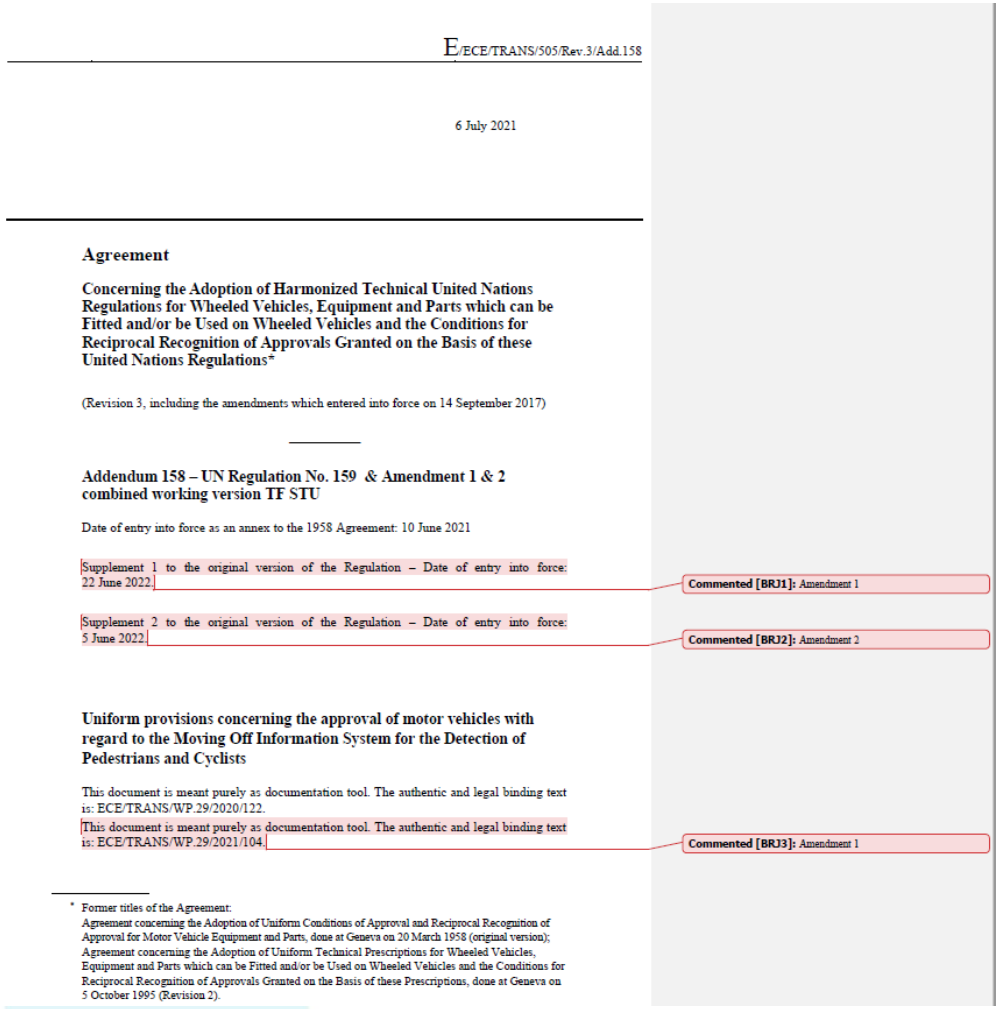
STU TF within the IWG VRU-Proxi

- Working Version document for R159 drafting
  - Consolidates all present amendments merged into one document for simplification of work using comment function referencing changes from which amendment.
  - Text changes are logged.
  - Submitted current draft in progress as an informal document – for orientation / overview only.

    (not yet ready for word by work review Document:
    TF-STU-18-06 R159 & Amendment 1 & 2 combined Working Version Rev3)

- Goal “Amendment as a Supplement” document

  Document will be created when drafting is complete and after iterative reviews within STU TF and IWG.



E/ECE/TRANS/505/Rev.3/Add.158

6 July 2021

Agreement

Concerning the Adoption of Harmonized Technical United Nations Regulations for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these United Nations Regulations*

(Revision 3, including the amendments which entered into force on 14 September 2017)

Addendum 158 – UN Regulation No. 159 & Amendment 1 & 2 combined working version TF STU

Date of entry into force as an annex to the 1958 Agreement: 10 June 2021

Supplement 1 to the original version of the Regulation – Date of entry into force: 22 June 2022.

Commented [BRJ1]: Amendment 1

Supplement 2 to the original version of the Regulation – Date of entry into force: 5 June 2022.

Commented [BRJ2]: Amendment 2

Uniform provisions concerning the approval of motor vehicles with regard to the Moving Off Information System for the Detection of Pedestrians and Cyclists

This document is meant purely as documentation tool. The authentic and legal binding text is: ECE/TRANS/WP.29/2020/122.

This document is meant purely as documentation tool. The authentic and legal binding text is: ECE/TRANS/WP.29/2021/104.

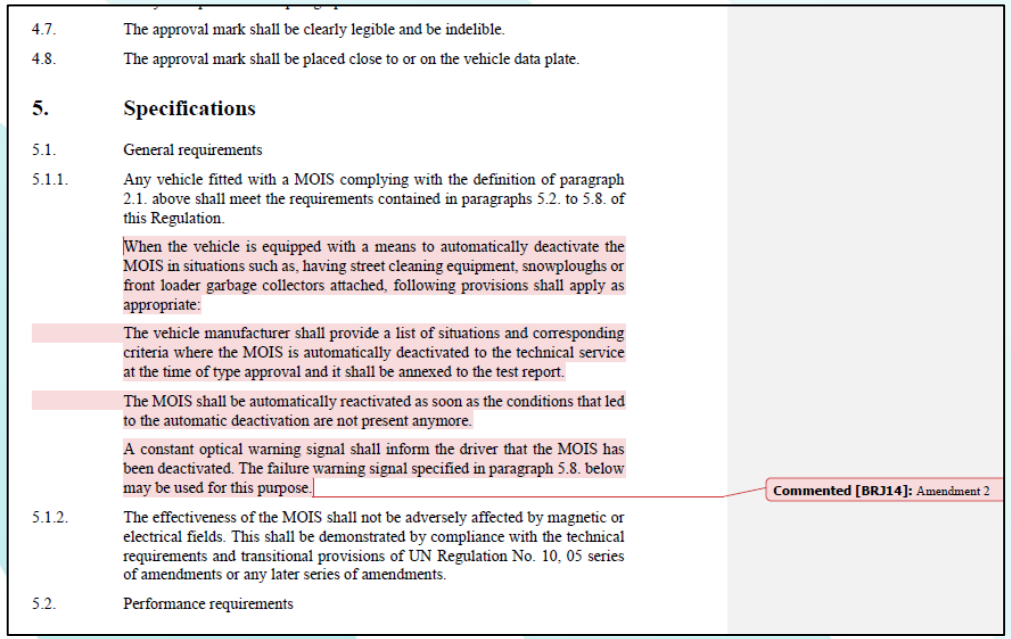
Commented [BRJ3]: Amendment 1

* Former titles of the Agreement:
Agreement concerning the Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts, done at Geneva on 20 March 1958 (original version);
Agreement concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these Prescriptions, done at Geneva on 5 October 1995 (Revision 2).

R159 Draft Structural Changes – Details 1

STU TF within the IWG VRU-Proxi

- For **requirements** adding chapters to cover for the new types.
  (currently called “5. Specification” and “6. Testing”)
- Introduce universal functional blocks structure for the new types separating the functions for **detection, control and HMI** with connections to vehicle integration and vehicle inputs elements.



4.7. The approval mark shall be clearly legible and be indelible.

4.8. The approval mark shall be placed close to or on the vehicle data plate.

5. Specifications

5.1. General requirements

5.1.1. Any vehicle fitted with a MOIS complying with the definition of paragraph 2.1. above shall meet the requirements contained in paragraphs 5.2. to 5.8. of this Regulation.

When the vehicle is equipped with a means to automatically deactivate the MOIS in situations such as, having street cleaning equipment, snowploughs or front loader garbage collectors attached, following provisions shall apply as appropriate:

The vehicle manufacturer shall provide a list of situations and corresponding criteria where the MOIS is automatically deactivated to the technical service at the time of type approval and it shall be annexed to the test report.

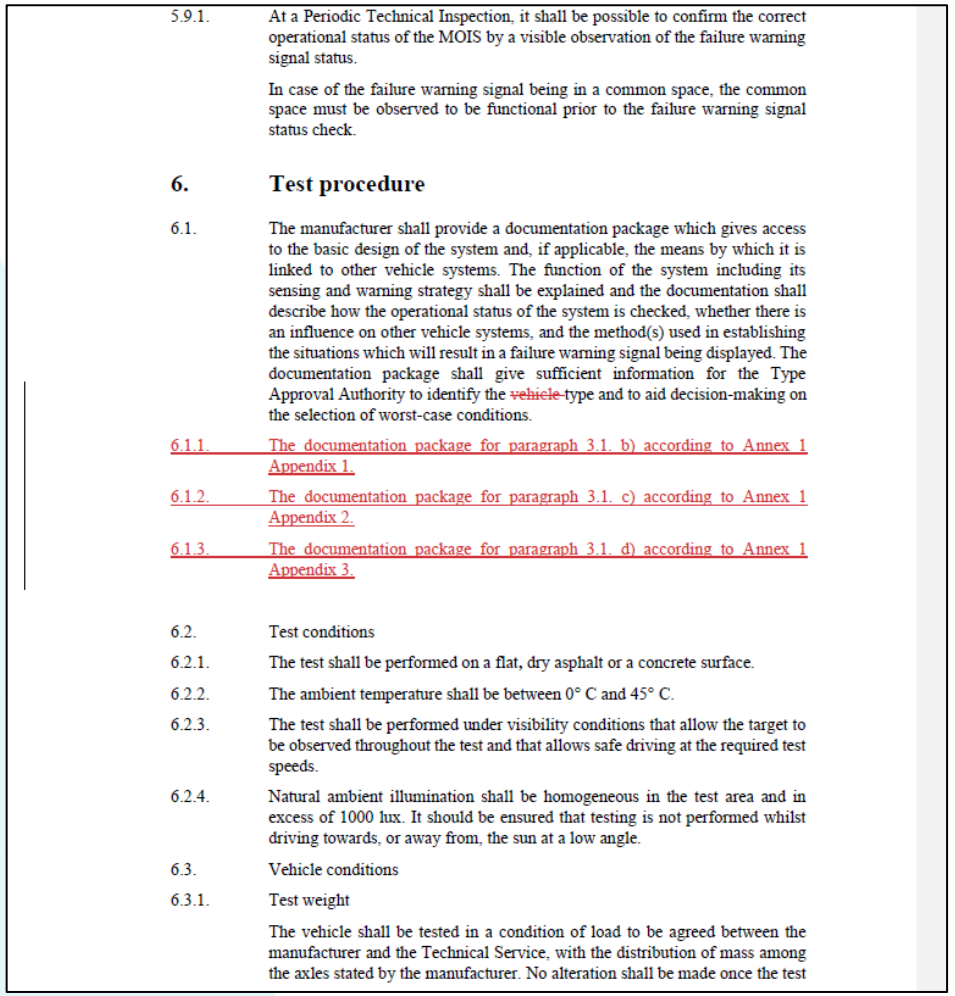
The MOIS shall be automatically reactivated as soon as the conditions that led to the automatic deactivation are not present anymore.

A constant optical warning signal shall inform the driver that the MOIS has been deactivated. The failure warning signal specified in paragraph 5.8. below may be used for this purpose.

Commented [BRJ14]: Amendment 2

5.1.2. The effectiveness of the MOIS shall not be adversely affected by magnetic or electrical fields. This shall be demonstrated by compliance with the technical requirements and transitional provisions of UN Regulation No. 10, 05 series of amendments or any later series of amendments.

5.2. Performance requirements



5.9.1. At a Periodic Technical Inspection, it shall be possible to confirm the correct operational status of the MOIS by a visible observation of the failure warning signal status.

In case of the failure warning signal being in a common space, the common space must be observed to be functional prior to the failure warning signal status check.

6. Test procedure

6.1. The manufacturer shall provide a documentation package which gives access to the basic design of the system and, if applicable, the means by which it is linked to other vehicle systems. The function of the system including its sensing and warning strategy shall be explained and the documentation shall describe how the operational status of the system is checked, whether there is an influence on other vehicle systems, and the method(s) used in establishing the situations which will result in a failure warning signal being displayed. The documentation package shall give sufficient information for the Type Approval Authority to identify the ~~vehicle~~ type and to aid decision-making on the selection of worst-case conditions.

6.1.1. The documentation package for paragraph 3.1. b) according to Annex 1 Appendix 1.

6.1.2. The documentation package for paragraph 3.1. c) according to Annex 1 Appendix 2.

6.1.3. The documentation package for paragraph 3.1. d) according to Annex 1 Appendix 3.

6.2. Test conditions

6.2.1. The test shall be performed on a flat, dry asphalt or a concrete surface.

6.2.2. The ambient temperature shall be between 0° C and 45° C.

6.2.3. The test shall be performed under visibility conditions that allow the target to be observed throughout the test and that allows safe driving at the required test speeds.

6.2.4. Natural ambient illumination shall be homogeneous in the test area and in excess of 1000 lux. It should be ensured that testing is not performed whilst driving towards, or away from, the sun at a low angle.

6.3. Vehicle conditions

6.3.1. Test weight

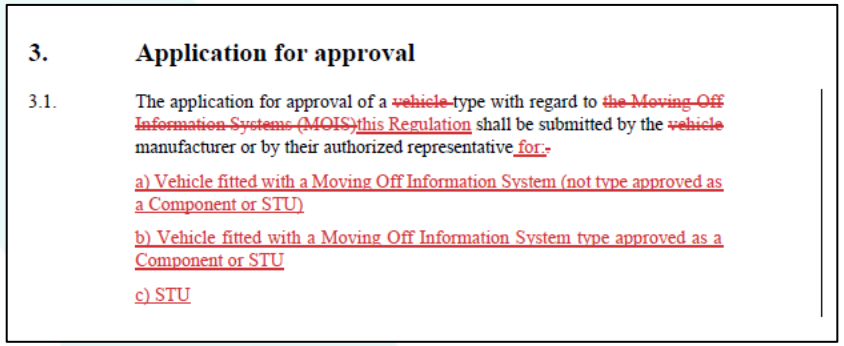
The vehicle shall be tested in a condition of load to be agreed between the manufacturer and the Technical Service, with the distribution of mass among the axles stated by the manufacturer. No alteration shall be made once the test

R159 Draft Structural Changes – Details 2

STU TF within the IWG VRU-Proxi

- For Component or STU types approval, the system shall fulfil the **minimum functions** for Detection and Control requirements.
- Approval for **HMI function** shall be only applied on vehicle type approval* or may be include in Component or STU approval.
- **Testing** requirements may be **forwarded** from Component or STU to vehicle type approval*.
  (Note: This allows some flexibility due to possible dependencies on vehicle integration and vehicle inputs subject of a particular system or technology.)
- Goal is to have a set of **simple verification** testing for vehicle type approval*.

* Refence to type approval for “Vehicle fitted with a MOIS type approved as a Component or STU“.



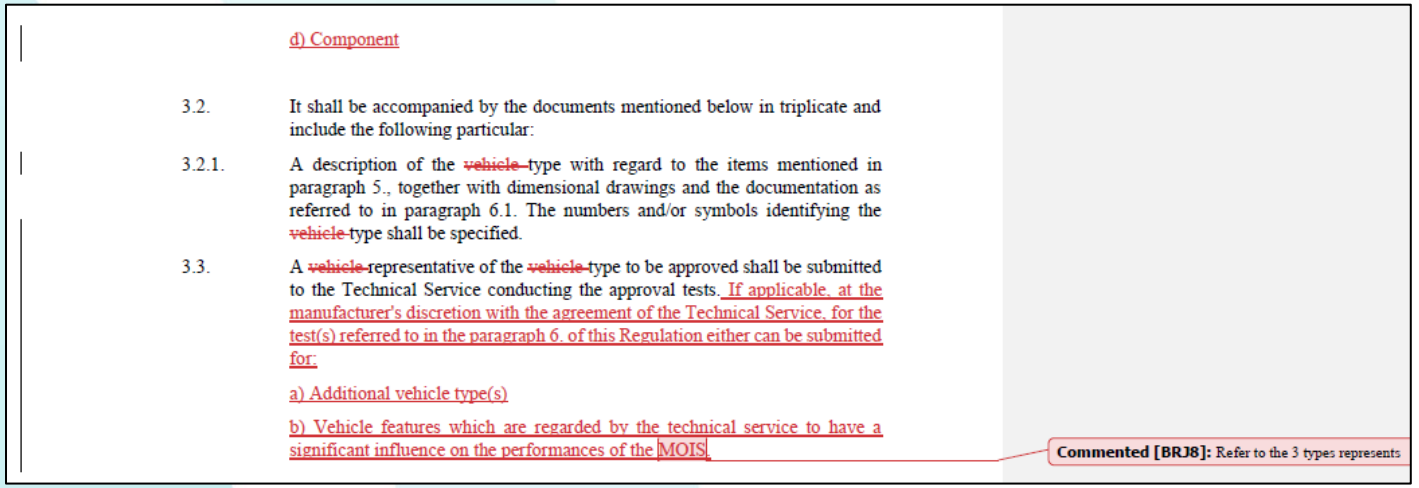
3. Application for approval

3.1. The application for approval of a ~~vehicle~~ type with regard to ~~the Moving Off Information Systems (MOIS)~~this Regulation shall be submitted by the ~~vehicle~~ manufacturer or by their authorized representative for:~~.~~

a) Vehicle fitted with a Moving Off Information System (not type approved as a Component or STU)

b) Vehicle fitted with a Moving Off Information System type approved as a Component or STU

c) STU



d) Component

3.2. It shall be accompanied by the documents mentioned below in triplicate and include the following particular:

3.2.1. A description of the ~~vehicle~~ type with regard to the items mentioned in paragraph 5., together with dimensional drawings and the documentation as referred to in paragraph 6.1. The numbers and/or symbols identifying the ~~vehicle~~ type shall be specified.

3.3. A ~~vehicle~~ representative of the ~~vehicle~~ type to be approved shall be submitted to the Technical Service conducting the approval tests. If applicable, at the manufacturer's discretion with the agreement of the Technical Service, for the test(s) referred to in the paragraph 6. of this Regulation either can be submitted for:

a) Additional vehicle type(s)

b) Vehicle features which are regarded by the technical service to have a significant influence on the performances of the MOIS.

Commented [BRJ8]: Refer to the 3 types represents

R159 Draft Structural Changes – Details 3

STU TF within the IWG VRU-Proxi

- Add to "**Annex 1 Communication**" appendixes for each type.
- New annex for "**Information Document**" with appendixes for each type.
  (Note: Currently covered under requirements in testing chapter)
- Reduce the amount of text to limit multiplying same or common text for each type.
- A range of advised administrative changes to bring text in line with latest UNECE directions for structure and content.

6. Test procedure

6.1. The manufacturer shall provide a documentation package which gives access to the basic design of the system and, if applicable, the means by which it is linked to other vehicle systems. The function of the system including its sensing and warning strategy shall be explained and the documentation shall describe how the operational status of the system is checked, whether there is an influence on other vehicle systems, and the method(s) used in establishing the situations which will result in a failure warning signal being displayed. The documentation package shall give sufficient information for the Type Approval Authority to identify the ~~vehicle~~ type and to aid decision-making on the selection of worst-case conditions.

Annex 1

Communication

(Maximum format: A4 (210 x 297 mm)

issued by: (Name of administration)

E 1 ...

Concerning: [2] Approval granted
Approval extended
Approval refused
Approval withdrawn
Production definitively discontinued

of a type of vehicle with regard to the Moving Off Information System (MOIS) pursuant to UN Regulation No. 159

Approval No.:

1. Trademark:
2. Type and trade name(s):
3. Name and address of manufacturer:
4. If applicable, name and address of manufacturer's representative:
5. Brief description of vehicle:
6. Date of submission of vehicle for approval:
7. Technical Service performing the approval tests:
8. Date of report issued by that Service:
9. Number of report issued by that Service:
10. Reason(s) for extension (if applicable) :
11. Approval with regard to the MOIS is granted/refused:[2]
12. Place:
13. Date:
14. Signature:
15. Annexed to this communication are the following documents, bearing the approval number indicated above:
16. Any remarks:

R158 Outlook

STU TF within the IWG VRU-Proxi

- More **traditional approach** having from the outset a specific universal structure for the each of the define system.
  (called “means” in text)

- Introduce Component or STU types only on provisions for:
  - **Rear view camera system**
    (similar to R46)
  - **Detection systems**

15. Requirements

15.1. General

For the purpose of this Regulation, the vehicle shall fulfil the following requirements:

During a backing event at least one means of rear visibility or detection shall be provided to the driver.

Means of rear visibility provide a close-proximity rear-view field of vision as defined in paragraph 15.2 below. Possible means are:

(a) Direct vision,

(b) Devices approved to UN Regulation No. 46,

(c) Close Proximity Rear-view Mirror complying with this Regulation,

(d) Rear-View Camera System complying with this Regulation.

Means of detection provide an information other than vision for field of detection as defined in paragraphs 15.3 below. Possible means are:

(a) Detection System complying with this Regulation.

15.1.1. Backing event starts when the vehicle is in Active vehicle mode and the

15.2. Close Proximity Rear-View Field of Vision

The field of vision shall be bounded by the following planes:

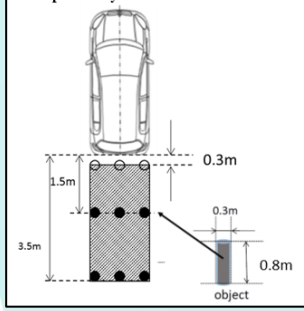
(a) A transverse vertical plane passing through a point 0.3m from the outermost point of the rear of the vehicle;

(b) A transverse vertical plane passing through a point 3.5m behind the outermost point of the rear of the vehicle.

(c) Two longitudinal vertical planes parallel to the longitudinal vertical median plane passing through the outermost point of each side of the vehicle.

The height of the field of vision is defined at nine positions within the boundaries of the field of vision with test objects with a height of 0.8m and a diameter of 0.3m which are located on the ground plane as defined in Figure 3 below:

Figure 3
Close-proximity rear-view field of vision



15.3. Field of detection

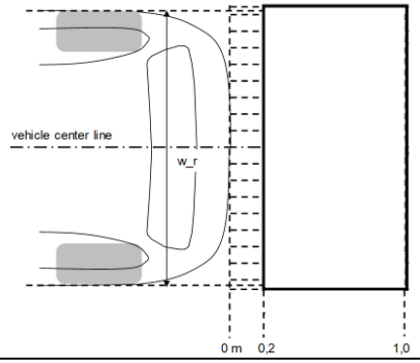
The field of detection shall be bounded by the following planes (see figure 4):

(a) A transverse vertical plane passing through a point 200 mm from the outermost point of the rear of the vehicle;

(b) A transverse vertical plane passing through a point 1,000 mm behind the outermost point of the rear of the vehicle;

(c) Two longitudinal vertical planes parallel to the longitudinal vertical median plane passing through the outermost point of each side of the vehicle.

Figure 4
Field of detection



Thank You – for Supporting the STU TF

Questions / Thoughts / Feedback ?