

DRAFT MINUTES

1st meeting of GRRF informal group on

Automatic Emergency Braking Systems (AEBS) and  
Lane Departure Warning Systems (LDWS)

25-26 June 2009

Venue: OICA offices, 4 rue de Berri, F 75008 Paris  
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## Table of contents

<b>1.-</b>	<b>WELCOME AND INTRODUCTION .....</b>	<b>1</b>
<b>2.-</b>	<b>ROLL CALL OF DELEGATES .....</b>	<b>1</b>
<b>3.-</b>	<b>APPROVAL OF THE AGENDA .....</b>	<b>1</b>
<b>4.-</b>	<b>REMINDER OF THE BACKGROUND .....</b>	<b>1</b>
<b>5.-</b>	<b>REVIEW OF THE TERMS OF REFERENCE AND RULES OF PROCEDURE .....</b>	<b>1</b>
5.1	CONFIRMATION OF OBJECTIVES AND SCOPE .....	1
5.1.1	<i>Terminology and abbreviations .....</i>	<i>1</i>
5.1.2	<i>Focus.....</i>	<i>2</i>
5.1.3	<i>Regulatory approach .....</i>	<i>2</i>
5.1.4	<i>Target categories .....</i>	<i>2</i>
5.2	CONSIDERATION OF TIMESCALES AND DEADLINES .....	2
5.3	CONCLUSIONS ON TOR AND ROP: .....	3
<b>6.-</b>	<b>AEBS (ADVANCED EMERGENCY BRAKING SYSEMS).....</b>	<b>4</b>
6.1	CONSIDERATION OF EXISTING STANDARDS .....	4
6.2	OVERVIEW OF THE EXISTING TECHNOLOGIES .....	4
6.3	DRAFT OUTLINE DEFINITION OF THE SCOPE AND FIELD OF APPLICATION .....	7
6.3.1	<i>Definition .....</i>	<i>7</i>
6.3.2	<i>Scope of application.....</i>	<i>7</i>
6.4	DRAFT OUTLINE DEFINITION OF AN OPERATION SCENARIO AND FUNCTIONAL REQUIREMENTS.....	8
6.4.1	<i>Accident scenarios .....</i>	<i>8</i>
6.4.2	<i>Conditions for activation .....</i>	<i>8</i>
6.4.3	<i>Speed range.....</i>	<i>8</i>
6.4.4	<i>Road geometry boundaries .....</i>	<i>9</i>
6.4.5	<i>HMI issues (driver control and warnings).....</i>	<i>9</i>
6.4.6	<i>Failure modes and in-use assessment .....</i>	<i>9</i>
6.5	DRAFT OUTLINE DEFINITION OF A TEST METHOD.....	10
6.6	CONCLUSIONS AND ACTION POINTS ON AEBS: .....	10
<b>7.-</b>	<b>LDWS (LANE DEPARTURE WARNING SYSTEMS).....</b>	<b>10</b>
7.1	CONSIDERATION OF EXISTING STANDARDS .....	10
7.2	OVERVIEW OF THE EXISTING TECHNOLOGIES .....	11
7.3	DRAFT OUTLINE DEFINITION OF THE SCOPE AND FIELD OF APPLICATION .....	12
7.4	DRAFT OUTLINE DEFINITION OF AN OPERATION SCENARIO AND FUNCTIONAL REQUIREMENTS.....	12
7.4.1	<i>Lane departure scenarios.....</i>	<i>12</i>
7.4.2	<i>Detection capabilities .....</i>	<i>12</i>
7.4.3	<i>Conditions for activation .....</i>	<i>13</i>
7.4.4	<i>Speed range.....</i>	<i>13</i>
7.4.5	<i>Road geometry boundaries .....</i>	<i>13</i>
7.4.6	<i>HMI issues .....</i>	<i>13</i>
7.5	DRAFT OUTLINE DEFINITION OF A TEST METHOD.....	13
7.5.1	<i>Discussions .....</i>	<i>13</i>
7.5.2	<i>Conclusion .....</i>	<i>14</i>
7.6	CONCLUSIONS AND ACTION POINTS ON LDWS: .....	14
<b>8.-</b>	<b>OTHER BUSINESS.....</b>	<b>14</b>
<b>9.-</b>	<b>LIST OF ACTION ITEMS .....</b>	<b>15</b>
9.1	ADMINISTRATIVE.....	15
9.2	AEBS .....	15
9.3	LDWS .....	15
<b>10.-</b>	<b>DATE AND PLACE OF NEXT MEETINGS .....</b>	<b>15</b>

## 1.- Welcome and Introduction

## 2.- Roll call of delegates

See list of attendees as in Annex 1.

## 3.- Approval of the agenda

- Reference to document S08-10 (OICA) is lacking
- Agenda adopted with the above document reference addition

## 4.- Reminder of the background

Documents: GRRF-64-18 & GRRF-64-19 (EC)  
ECE/TRANS/WP.29/GRRF/64 (para 55 +56)  
GRRF-65-19 (GRRF Chairman)  
GRRF-S08-07 (EC) + update (AEBS/LDW-01-02 and AEBS/LDW-01-04)  
GRRF-S08-11 (TRL)  
ECE/TRANS/WP.29/GRRF/65 (para 53 +54)  
ECE/TRANS/WP.29/1072 (para 45)

The Chair reminded the background for the establishment of this informal group (IG) as per documents AEBS/LDW-01-02 and AEBS/LDW-01-04. He provided also an update on the EU Regulation on the General Safety of Motor Vehicles (GSR), which mandates in the EU the installation of AEBS and LDWS to vehicles of categories M<sub>2</sub>, M<sub>3</sub>, N<sub>2</sub> and N<sub>3</sub> as from 1 November 2013 for new types and 1 November 2015 for existing types. The procedure under the GSR for exempting some vehicles or classes of vehicles from this installation requirement was explained, as well as the link between the implementing measures on AEBS and LDWS to be adopted by the Commission under the GSR and the future UNECE Regulations on AEBS and LDWS to be developed by the GRRF informal group.

## 5.- Review of the Terms of Reference and Rules of Procedure

Documents: GRRF-65-38(GRRF Chairman)  
WP.29/GRRF/65-Annex III  
AEBS-LDW-01-07 (AEBS/LDWS IG)

### 5.1 Confirmation of objectives and scope

#### 5.1.1 Terminology and abbreviations

- **AEBS** to read “Advanced Emergency Braking System”, as per General Safety Regulation vocabulary, Article 3 (3)
- **LDWS** to read “Lane Departure Warning System”, as per General Safety Regulation vocabulary, Article 3 (2)
- Current document nomenclature to be improved to (addition of “S” after LDW): AEBS/LDWS-meeting number-document number

### 5.1.2 Focus

- Informal Group to clearly distinguish its task of developing technical provisions for UNECE Regulations on AEBS and LDWS from the process for exempting certain vehicles and classes of vehicles from the AEBS and LDWS installation requirements under the GSR at EU level.

### 5.1.3 Regulatory approach

- Existing vs. new regulations:
  - Japan favours introduction of both technologies into new regulations
  - OICA principle: new technology in new regulation, current technology in existing regulation
  - USA favour introduction of both technologies into new regulations for the sake of harmonization
  - CLEPA favours introduction of both technologies into existing regulations
  - Chairman reminded that decision on this issue has to be taken by GRRF and WP.29.
- "If fitted" vs. "shall be fitted":
  - Japan keen to remain with "if fitted" requirements; AEBS will become mandatory in Japan

### 5.1.4 Target categories

- Focus on: N<sub>2</sub>, N<sub>3</sub>, M<sub>2</sub>, and M<sub>3</sub> vehicles [of Classes B, II and III]
- Inclusion of M<sub>1</sub>/N<sub>1</sub>:
  - PROS: this approach is supported by the user's perspective, one regulation could cover all categories
  - CONS: IG timing does not permit considering light vehicles, would lead to compromises.
  - [Vehicles of category M<sub>1</sub> and N<sub>1</sub> may be covered in a later stage.]

([ ] = further guidance from GRRF needed)

## 5.2 Consideration of timescales and deadlines

- Chair suggested to put forward deadlines with one GRRF session, i.e. submission of draft regulatory texts by GRRF-68 (September 2010) and GRRF-69 (February 2011) as target completion date for the work of the IG, for the following reasons:
  - IG to focus on technical provisions only
  - Exercise for exemptions from installation requirements to be run in parallel forum, such as EU TCMV/WFAG.
  - Keeping the proposed deadlines for the submissions of the draft regulatory texts for the UNECE Regulations on AEBS and LDWS will make it difficult for the EC to adopt in time (i.e. by end of 2011) the implementing measures under the GSR (as these measures should be based on the future UNECE Regulations on AEBS and LDWS).

- If the development of the draft proposals for these UNECE Regulations would be promising so that they can be expected to become sufficiently stable at an early stage, the initiation of the EU implementing process could eventually be advanced with the aim to respect the implementing deadline.
- D: considered that the (EU) exemption process based on a cost/benefit analysis should be carried out first before the IG could develop proposals for UNECE Regulations on AEBS and LDWS.
- ACEA: suggested a consensus in a 2-step approach:
  - Step 1: Mandatory equipment (LDWS) for N3, M3 but only long distance (delay necessary for AEBS)
  - Step 2: In-depth cost/benefit analysis for M3 city bus, M2, N2
- EC: reminded that the IG is not mandated to consider cost/benefit and legal issues and that therefore the process for exempting some vehicles and classes of vehicles from the installation requirements should be separated from the IG's task to develop draft UNECE Regulations on AEBS and LDWS.
- Debate within the IG about the suggested advancement of the deadlines:
  - In order not to exclude the option that new Regulations on AEBS and LDWS may need to be developed (instead of amending existing Regulations), and despite the difficulties this may create for the EU implementing measures, it was agreed that the original deadlines should be kept to allow sufficient time for such a process.

### 5.3 Conclusions on TOR and ROP:

- Terminology adopted in line with EU GSR
- Existing vs. new regulations:
  - Decision to be taken at GRRF/WP29 level
  - Chair to report back the different positions to GRRF
- No decision yet about installation requirements (GRRF guidance requested on “if fitted” vs. “shall be fitted” approach), participants invited to consider whether the approach proposed by Japan in AEBS/LDW-01-05 could serve as a basis for possible consensus.
- Scope agreed as follows:
  - Priority for M2, N2, M3, N3
  - M1, N1, M3 Classes B, II and III: still pending subject to further guidance by GRRF
- Target dates confirmed:
  - Draft regulatory texts to be submitted to the sixty-ninth session in February 2011.
  - The target completion date for the work of the informal group shall be the seventieth session of GRRF in September 2011
  - Review of target dates in February 2010 (GRRF-67)
- TOR amended accordingly as reflected in annex 3
- ROP adopted with agreement on a deadline of 10 working days for submission of documents prior to meetings of the IG.

## 6.- AEBS (Advanced Emergency Braking Systems)

### 6.1 Consideration of existing standards

Documents:        GRRF-S08-12 (J)  
                      GRRF-S08-13 (J)  
                      GRRF-S08-08 (ISO)  
                      GRRF-S08-09 (ISO)

### 6.2 Overview of the existing technologies

Documents:        AEBS-LDW-01-03 (Daimler)  
                      AEBS-LDW-01-05 (J)  
                      AEBS-LDW-01-06 (J)  
                      GRRF-S08-04 (CLEPA)  
                      AEBS-LDW-01-08 (Continental)

Discussions:

- AEBS-LDW-01-03 (Daimler):
  - Main features:
    1. warning when ACC cannot handle the distance anymore
    2. further acoustic signal
    3. haptic signal as a braking of 3 m/s<sup>2</sup>
    4. harder braking, with the target of avoiding the collision. Keeps the possibility for the driver to make action
    5. message to the driver that this was an emergency braking. Possibility to override at any step.
    6. feedback: the system can be annoying in certain traffic conditions.
  - Moving object means an object that has been identified by the system as moving. If it was never seen moving, the system does not react, because difficulty in differentiating e.g. a parked vehicle from a standstill one
  - With HCV, the masses are such that a small difference in collision speed makes huge difference in collision energy and impact.
  - Main target was highway driving because the system may not work reliably e.g. on curves
  - For steel suspension, not impossible, but very difficult. (see also Continental presentation below: self-levelling sensors available)
  - Q & A:
    - Minimum/maximum distance range: need for 110 m detection range. Braking starts at about 40m. Permits warnings and driver overriding
    - 1,6 billion km experience corresponds to about 10.000 vehicles equipped
    - Influencing adverse weather conditions is only the humid snow that can cover the sensor. Fog makes no problem.
    - Air suspension: problem of sensor aiming; in addition, truck business faces a big number of variants
    - Target deceleration: depends on e.g. surface adhesion. Collision mitigation is only a fall-back solution. Target deceleration is 5 m/s<sup>2</sup> because it is a regulatory figure
    - One safety goal: the truck should never be stopped unintentionally. Of course possible to detect “false alerts”
    - AEBS can be fitted on both ABS and EBS equipped vehicles. However need for at least an electronic interface.

- The system takes into account the driver's actions, if it detects an attempt to avoid the obstacle, the system de-activates. Two conditions for de-activation: HMI input (brake pedal, indicator control), OR no danger anymore (change of direction, etc.)
  - If the driver releases the brake, this shows he does not want to brake. In case of emergency: only acceptable driver action for de-activation is the “kick-down”. But not when full push on the brake pedal.
  - Daimler and the German Government paid a lot attention to the regulatory procedure. Fruitful cooperation that took 7 years developing, just for a few trucks.
  - Daimler experience is unique in Europe: statistical data are limited to the Daimler case, in a certain market, for a certain accident scenario and a certain type of vehicles
  - Limited negative feedback: in certain traffic conditions, too many warnings, but this is accepted by the user
  - Daimler system is not sold in the USA
- AEBS-LDW-01-05 & 06 (Japan)
- Main features:
    - Mandatory AEBS in the future
    - Detection of stationary vehicle to be optional at UNECE level.
    - Accurate technical provisions
  - Q & A
    - The two criteria: **collision judgment line** - timing of the braking control because the collision is not avoidable - and **collision risk judgment line** - lowest limit of drivers' normal avoiding manoeuvre
    - Those criteria are assessed in three tests performed at three different speeds: 20, 40, 80 km/h
    - Proposed value of 3,3 m/s<sup>2</sup> deceleration based on experience
    - Proposed value of 0,8 sec deceleration based on experience of Japanese average drivers
    - Corner deflector is required as a target; well accepted by the Japanese manufacturers.
    - Scenario limited to stationary objects: concerns that some real world scenarios are missed. However, Japan is confident that detecting stationary objects implies easy detection of moving/stopping objects.
  - Exchange of views:
    - Distinction ACC = 2 m/s<sup>2</sup> vs. AEBS = 5 m/s<sup>2</sup>
    - Curve scenario: upcoming traffic is used by the system to evaluate the proper track, however upcoming traffic does not provoke any braking action
    - USA: currently studying different scenarios: stopped vehicle, target vehicle slower than vehicle, decelerating vehicle.
    - Japanese proposal based on different philosophy than Daimler system: collision mitigation vs. collision avoidance
    - EC has no preferred philosophy (GSR definition of AEBS refers to "with the purpose of avoiding or mitigating a collision"): EC relies on the expertise of Informal Group members to develop technically robust and safe criteria for AEBS

- GRRF-S08-04 (CLEPA):
  - Main features:
    - New Annex 22 to UNECE R13
    - Provisions for failure/de-activation
    - Target must represent a vehicle
    - Proposal for 6 tests: 3 tests where the system must not react, 2 tests where the system should warn, 1 test where the system should warn and brake.
    - In the latest test, the proposed deceleration values are in [ ].
    - Proposal shows that system is easy to implement
    - No need for detailed specifications
  - Q & A:
    - Definition of AEBS: "...and may take other corrective action(s) to avoid or mitigate the severity of the collision" refers e.g. at possibility of airbag activation
    - Two warnings are proposed: system availability and collision imminence
    - Paragraph 2.2.5. , driver override: criteria must be defined by the manufacturer, in respect to the Vienna Convention
    - No provisions for braking rate in laden condition because the test must assess the AEBS capabilities (target detection, warning, braking activation etc.) not the braking performance of the vehicle.
    - Paragraph 2.3.7. , "slowing to a stop" test: duration of mandatory deceleration should be specified in order to influence the energy at the time of impact
    - Only the last test does really assess the AEBS performance
    - This is the first time a regulation would contain so many requirements against false alerts. There however must be a balance between the system credibility and its benefits
    - Soft target: concerns about detection. However, already used by some NCAP organizations
    - Brake as a warning: could be of some danger to coach occupants. However, the manufacturer should be free to manage the Human/Machine Interface
    - Paragraph 2.3.4. , "road exit" test: performance requirements very difficult to achieve
    - Paragraph 2.3.5. , "closing gap" test: need for too long test track, does not exist (above 1500 m straight)
  
- AEBS-LDW-01-08 (Continental)
  - Main features:
    - Overview of existing sensor technologies (levelling adjustment, target detection, clogging detection, etc)
    - Short range radars, long range radars, camera
    - Technology is mature if a certain performance level is required
  - Q & A:
    - Frequency allocation: no problem for the AEBS long range radar (77 GHz)
    - Infra-Red sensors need to be located behind the wiped surface of the windscreen: disadvantage because of its height.
    - Detection is claimed robust even when the long range radar only is used.
    - Concerns about maturity of the software interpreting the detected signals



### 6.3 Draft outline definition of the scope and field of application

Document: AEBS-LDW-01-09 (Chair)

#### 6.3.1 Definition

Discussions:

- D: supports the proposal from EC to align with GSR definition
- OICA: supports simple definition with no requirement; example of ESC containing a simple definition, to which “functional requirements” are added (see annex 9 to UNECE R13H)
- CLEPA: considers EC proposal too vague, questions the meaning of "emergency situation", keen to get a reference to the warning to the driver. Could accept "functional requirements" in the case the provisions are introduced in an existing regulation, but favours a restrictive definition in the case the provisions are introduced into a new regulation.
- J: AEBS in Japan aims collision mitigation rather than avoidance. Need for internal consultation before agreeing on a definition aiming collision avoidance

Conclusion:

- Guidance to be requested to GRRF, based on the following proposal:  
*"Advanced Emergency Braking System" means a system which can automatically detect [a potentially forward collision / an emergency situation] and activate the vehicle braking system to decelerate the vehicle with the purpose of avoiding or mitigating a collision."*

#### 6.3.2 Scope of application

Discussions:

- No need to package with EVSC, as EVSC will be mandatory anyway
- Suggestion to copy the exemptions on those of EVSC
- EC: GSR requirements on AEBS and LDWS applicable to a wide scope of vehicle categories (M<sub>2</sub>, M<sub>3</sub>, N<sub>2</sub> and N<sub>3</sub>), with possibility for exempting some vehicles or vehicle classes, if this can be justified by cost/benefits analysis and safety considerations.
- J:
  - in J, at least ABS is mandatory.
  - J favours wide scope, with freedom for the Contracting Parties to mandate the classes of vehicles
  - favours a separate regulation. If integration in UNECE R13, better to have clear exemptions.

Conclusion:

- No decision on scope
- IG members to consider for next meeting an approach that leaves discretion to Contracting Parties as in J proposal
- Possible influence on the AEBS definition to be considered as well.

6.4 Draft outline definition of an operation scenario and functional requirements  
(accident scenarios to be covered, detection capabilities, conditions for activation, speed range and road geometry boundaries, HMI issues (driver control and warnings), failure modes and in-use assessment)

6.4.1 Accident scenarios

Discussions:

Main issue is whether collision with stationary vehicle should be included

- Japan:
  - Have experience and social demand for stationary targets to be included. This is why J proposes this. But other CPs could chose not to apply this option.
  - Favours moving target as mandatory, stationary target as optional to the discretion of the Contracting Party.
- CLEPA:
  - One criterion: identifying a decelerating target. Difficulty in identifying the target if the vehicle never saw it moving. Regulating the stationary target would make the performances that low that there would be no benefit.
  - Supports Japan that stationary target should be optional, and only the moving targets should be regulated
  - Reluctant to provisions for an optional system, because it could become mandatory while Industry is not yet ready
- USA: recommended to regulate only available technology (i.e. moving target)
- OICA: questioned the benefits of addressing the stationary targets, referring to AEBS-LDW-01-05 & 06: it is possible to detect them, but not possible to brake in time to avoid collision.

Conclusion:

- No consensus yet on which accident scenarios to be included
- Action: IG to look at statistics to be submitted by J and Daimler, with a view to come to a reasoned agreement on the accident scenarios to be covered.

6.4.2 Conditions for activation

Discussions:

- Confirmation of divergence in philosophy between Japan/CLEPA (see also point 6.4.1 above).

Conclusion: decision aimed at for next meeting (in function of decision on accident scenarios to be covered)

6.4.3 Speed range

Discussions:

- ISO: mini: 15 km/h and max: 100km/h for subject vehicle. Need for a minimum speed
- J: maximum speed: 90 km/h for trucks, no requirements for busses. Minimum speed: need for a certain specification because detection difficult below a certain speed

Conclusion:

- Need for further debate
- Decision aimed at for next meeting

#### 6.4.4 Road geometry boundaries

Discussions:

- Suggestion to inspire from ACC definition of road boundaries in the relevant ISO standard.
- Need to be able to do the test on normal test tracks, with straight lines, some well defined curvatures

Conclusion:

- ISO definitions to be considered at next meeting
- “Normal” test tracks to be considered.

#### 6.4.5 HMI issues (driver control and warnings)

Discussions:

- J: proposes a hidden switch-off button for the case there is damage to the front of the vehicle impairing or misaligning the sensor. The sensor can be misaimed and hence provide false alerts and start wrong actions
- CLEPA:
  - Reluctant to driver override, as the system can cope with all the situations
  - Rejects a hidden switch-off button
  - The system can recognize this situation of a misaimed sensor
- OICA:
  - Supports similar approach as for LDWS, possibility of driver’s override
  - Vienna Convention recommends the possibility to override the system
  - Driver cannot be considered reliable for detecting sensor failure
  - Legal consequences: in case of accident, the manufacturer and the legislator are liable in case of accident due to a system that cannot be de-activated
  - A radar reflective object on the road may activate the system, but this does not justify the switch-off button, but rather the override capabilities
- As a matter of comparison: UNECE R13H permits ESC switch-off button for M1 vehicles under certain conditions

Conclusion:

- Weakness of the system is no good reason for a switch-off control
- Legal and liability questions must be considered
- Need for override capabilities
- Agreement for a switch-off button
- J to clarify their position (para. 5.10 of J proposal – provisions for driver override)

#### 6.4.6 Failure modes and in-use assessment

Discussions:

- “in-use assessment”: aim of addressing this issue is unclear
- NL: Need for PTI provisions
- CLEPA: and EVSC: in service checks are only visual up to know because the system is considered being capable of recording the failures

Conclusion: IG members invited to submit relevant proposals/ideas on this issue for further consideration at next IG meeting

## 6.5 Draft outline definition of a test method

Documents: GRRF-S08-03 & GRRF-S08-04 (CLEPA)

Discussions:

- OICA: questions the CLEPA different approach for AEBS compared to LDWS: CLEPA supports testing LDWS only when the system must act, while AEBS should be tested for conditions in which it may not act as well.
- J: points out the practicability of the CLEPA test proposal: Japanese proposal can be performed on any normal proving ground.

Conclusion: No decision; debate to continue at the next meeting

## 6.6 Conclusions and action points on AEBS:

- **Definition:** guidance from GRFF required on whether GSR definition would be sufficient, or whether further details (on the type of emergency situation) should be included.
- **Scope:** IG members invited to consider the feasibility of an approach based on a wide scope for the UNECE Regulation, leaving it to the discretion of CP to decide to which types of vehicles they will mandate the installation of the system (cf. proposal by Japan).
- **Accident scenario & conditions for activation:** substantive divergences in philosophy (moving vs. stationary vehicles and collision avoidance vs. mitigation) to be further clarified and resolved based on assessment of accident statistics to be provided by Daimler & Japan. (Guidance from GRRF may be further needed).
- **Speed range and road geometry boundaries:** principles to be further considered and resolved at next meeting
- **HMI issues (driver control and warnings):** main principles agreed (need for override function and switch-off button). Further details to be clarified and elaborated at next meeting.
- **Failure modes, in-use assessment and test methods:** further clarification and elaboration required at next meeting.
- Secretariat to prepare a **skeleton paper** reflecting the above outstanding issues in a structured manner for further consideration at a preparatory meeting to be held prior to the 2<sup>nd</sup> meeting of the IG in September 2009.

## 7.- LDWS (Lane Departure Warning Systems)

### 7.1 Consideration of existing standards

Documents: GRRF-S08-09 (ISO)  
AEBS-LDWS-01-10 (D)

AEBS-LDWS-01-10 presented by Dr. Gail

## 7.2 Overview of the existing technologies

Documents:        AEBS-LDWS-01-11 (ACEA)  
                      WP29-135-22 (PSA)  
                      GRRF-S08-02 (D)

Discussions:

- ACEA presented AEBS-LDWS-01-11
  - Sensing technology: most equipments are based on video systems, others are infra-red systems
  - Limit is the lane marking
  - Warning: usually acoustic and visual. Sometimes haptic (steering wheel or seat vibration)
  - After-sale: usually exists for trucks, in USA
  - The driver can always switch the system off and on
- Feedback from the field:
  - Daimler: lot of feedback, usually the user switches off the system when too many alarms. LDWS is useful on highways only. This is the reason for a minimal speed (60 km/h)
  - MAN: bad feedback in Italy because of the joints on the street
  - IVECO: raised the minimum speed from 60km/h to 65km/h. The users claim for 70km/h
  - Scania: same input as IVECO
  - JAMA:
    - 2 manufacturers out of 4 have a similar experience as Daimler, MAN and IVECO
    - the driver can adjust the warning delay with a dial
    - Minimum speed is 60 km/h
  - PSA: presented document WP29-135-22
    - Sensor technology: Infra-red is cheaper and more robust (bad weather) than video sensors
    - HMI: acoustic warning followed by vibrations in the seat
    - Minimum speed on passenger car in current production: 80km/h
    - Automatic reset at each ignition
- GRRF-S08-02 presented by Dr. Gail
  - Japan:
    - appropriate to consider content of ISO. However challenges a direct reference to the standard in the regulation
    - Minimum speed and latest distance for warning: need to consider carefully the appropriate figures
    - As for AEBS: supports introduction into a new regulation, as for any new technology. Would keep the freedom for the Contracting Parties
- Exchange of views:
  - Reference to ISO 17361:2007:
    - Simple reference to the standard (supported by D)
    - Copy/paste of the standard
    - Copy/paste of the interesting parts of the standard (supported by J and OICA)

- Latest warning:
  - the existence of a technology does not force us to mandate it, need to take the reality into account
  - distance vs. time
  - need for some hysteresis in activation/de-activation
  - mandatory value vs. choice of the manufacturer.
- Hierarchy of systems (AEBS/LDWS/others):
  - currently under the responsibility of the vehicle manufacturer.
  - ISO 17361:2007 foresees suppression of warning (see item 4.4.(i))

Conclusion: Informal group to take this information into account when making decisions

### 7.3 Draft outline definition of the scope and field of application

Documents: AEBS-LDWS-01-12 (Chair)

Discussions:

- Option to the Contracting Party vs. option to the manufacturer.
- Main efficiency on highways
- Attention to legal concerns if the scope is extended at the request of the manufacturer. However solution is quite acceptable to the Industry

Conclusion:

- Definition as proposed by D (in GRRF-65-20) agreed: "**Lane Departure Warning System (LDWS)**" means a system to warn the driver of an unintentional drift of the vehicle out of its travel lane.
- There is a window to accommodate the various positions on scope.
- Possible approach for the scope as reflected in J proposal for AEBS to be taken into consideration
- Scope to be decided at next meeting.

### 7.4 Draft outline definition of an operation scenario and functional requirements

(lane departure scenarios to be covered, detection capabilities, conditions for activation, speed range and road geometry boundaries, HMI issues (driver control and warnings), failure modes and in-use assessment)

#### 7.4.1 Lane departure scenarios

Conclusion: General consensus that Lane Keeping Systems must not be regulated for the time being

#### 7.4.2 Detection capabilities

Discussions:

- Possible approach for vehicle reference point:
  - Outside front tyre
  - Centre front tyre
  - Body shape influence
  - Tolerance in the shape of the tyre
- Possible approach for lane reference point
  - Centre of lane marking
  - Outside of lane marking
  - Other

#### 7.4.3 Conditions for activation

- Departure speed:
  - later warning line as in D proposal (i.e. 30cm outside of the lane boundary) should not preclude other criteria (such as earliest warning line)
  - if no requirement, these criteria to be left to the OEM
  - 1<sup>st</sup> warning line should indeed be left to the manufacturer

#### 7.4.4 Speed range

Minimum speed for activation

- D: supports 60 km/h
- 60 km/h would exclude Class I systems from ISO 17361
- No automatic re-activation after the system was switched-off by the driver

#### 7.4.5 Road geometry boundaries

- Related to Class I / Class II definitions from ISO 17361. Hence related to minimum speed

#### 7.4.6 HMI issues

- Chair: suggest ISO text to be the base
- UK: keen to introduce a kind of standardisation of the warnings, and possibility for well differentiating from other alarms (e.g. a low fuel warning). Keen to get two different warnings (haptic + other)
- OICA:
  - Aim is to fight drowsiness.
  - Failure warning: ok to have a requirement.
  - De-activation: need to warn.
  - Defining a haptic means is very restrictive, there are lots of possibilities. Item is not mature enough to define the best haptic warning
- CLEPA: audible warning can be standardized in the short term
- Japan: possibility to refer to ITS informal group of WP29
- Distinction between failure mode and system not capable of detecting the lane boundary

### 7.5 Draft outline definition of a test method

Documents: GRRF-65-20 (D) (identical to GRRF-S08-02)  
GRRF-S08-03 (CLEPA)

#### 7.5.1 Discussions

- OICA: no warning when no lane markings
- CLEPA: test method must focus on the lane marking. However, in real world, let's permit the most capable systems
- UK: suggests a test against false warnings in order to avoid them
- Chair: only the latest warning line should be taken into account
- CLEPA:
  - Continental: commits to provide particular input on this issue at next meeting
  - Need for testing at other speeds than 60km/h

### 7.5.2 Conclusion

- In-depth discussions on this issue at next meeting.

### 7.6 Conclusions and action points on LDWS:

- **Definition:** agreed as proposed by D in GRRF-65-20
- **Scope:**
  - Lane Departure Warning only, no lane change assist or active lane keeping
  - IG members invited to consider the feasibility of an approach based on a wide scope for the UNECE Regulation, leaving it to the discretion of CP to decide to which types of vehicles they will mandate the installation of the system (cf. AEBS proposal by Japan).
- **Departure scenario & conditions for activation:**
  - agreement on the basic principle of the proposal by D to limit the system requirements to the "latest warning line" principles of ISO 17361:2007
  - reference points for measuring the lateral distance: from outside of the tyre of the front wheel to the outside of the visible lane marking.
  - maximum value of lateral distance of departure across the lane boundary for activation of warning as proposed by D [30cm]: still to be agreed
  - wording of ISO 17361:2007 provisions to be adapted accordingly
- **Speed range:**
  - Minimum speed: [60 km/h], to be confirmed at next meeting.
  - No requirement for a maximum speed.
- **Road geometry boundaries:** to be further considered and resolved at next meeting
- **HMI issues (driver control and warnings):**
  - main principles agreed (in line with HMI provisions of ISO 17361):
    - need for system failure warning and for system incapable of detecting the lane boundary,
    - departure warning to be haptic and/or audible, without need to specify standards for these warning signals.
  - further details to be clarified and elaborated at next meeting.
- **Failure modes, in-use assessment and test methods:** further clarification and elaboration at next meeting.
- Secretariat to prepare a **skeleton paper** reflecting the above agreed principles and outstanding issues in a structured manner for further consideration at a preparatory meeting to be held prior to the 2<sup>nd</sup> meeting of the IG in September 2009.

## 8.- Other business

None.



## 9.- List of action items

### 9.1 Administrative

- Chair to report back to GRRF-66
- GRRF to confirm timescales and deadlines
- GRRF to provide guidance about
  - regulatory approach (existing vs. new regulations and “if fitted” vs. “mandatory”)
  - scope of focus (inclusion of certain sub-categories)
- EC to manage exemption process in a parallel forum
- Secretary to produce skeleton texts about both AEBS and LDWS for preparatory discussions of 10-11 September
- Secretary to produce nomenclature document to clarify the reference and content of each document presented to the informal group

### 9.2 AEBS

- GRRF to provide guidance about definition of AEBS (item 6.3. above)
- J and Daimler to provide statistical data about accident scenarios (item 6.4.1. above) – Daimler cannot have data before October 09
- J to clarify position toward provisions for driver’s override (paragraph 5.10. of J proposal) (item 6.4.5. above)
- Failure mode and in-use assessment: interested parties to provide proposals as necessary

### 9.3 LDWS

- Detection capabilities: CLEPA (Mr. Brearley) to provide a robust wording (item 7.4.3. above)
- CLEPA to provide particular input on LDWS latest warning line

## 10.- Date and place of next meetings

AEBS-LDWS-preparatory	10-11 September 2009	Bonn
AEBS-LDWS-02 (plenary)	14 September 2009	Geneva
GRRF-66	15-17 September 2009	Geneva
AEBS-LDWS-03	3-4 December 2009	Paris (to be confirmed)
GRRF-67	1-5 February 2010	Geneva

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**1<sup>st</sup> GRRF INFORMAL GROUP MEETING ON AEBS/LDWS**  
**(Advanced Emergency Braking and Lane Departure Warning Systems)**

Paris, 25-26 June 2009

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