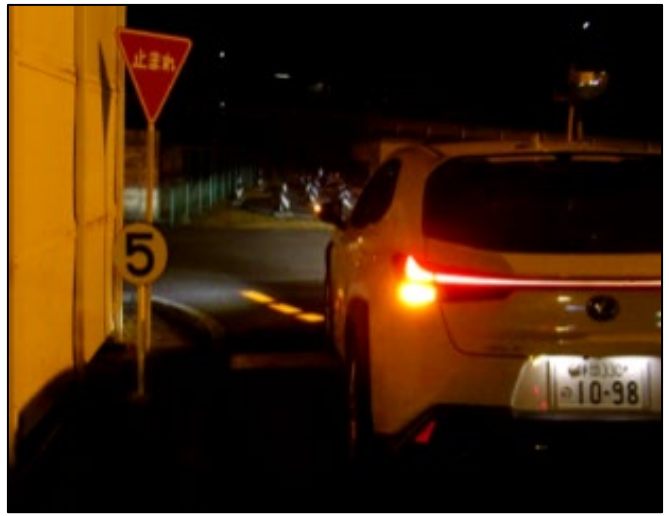
Informal document GRE-87-03
(87th GRE, 25-28 October 2022, agenda item 11)

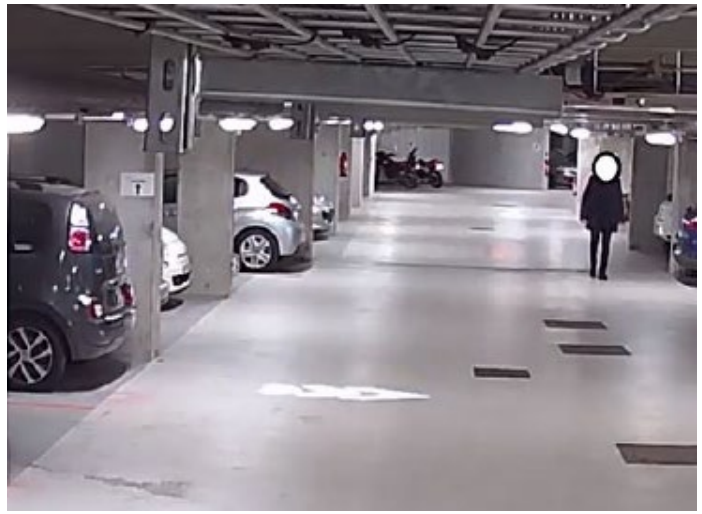
The International Automotive Lighting and Light Signalling Expert Group

“Signalling Road Projection” (SRP) Status report & Request for guidance

87th GRE session

25-28 October 2022





The International Automotive Lighting and Light Signalling Expert Group

Signalling Road Projection
Introduction

- In Fall 2021, GTB initially introduced the idea for Signalling Road Projection (SRP) to GRE and presented informal document GRE-85-38. *Note: the context is limited to projections combined with turn indicators and/or reversing lamps*.

- GTB experts are convinced that SRP is contributing to road safety as it allows also vulnerable road users to recognize driver's intentions on intuitive basis.
  - Scientific evidence has already been proven for reversing projection and further scientific research has been initiated for direction indicator projection.
  - A draft text for Signalling Road Projection is under preparation by the experts.

- <u>GTB is asking for guidance to GRE</u> about how to implement SRP into the existing UN Regulations.

Signalling Road Projection
Content

Introduction

a) Scientific research

I. Direction indicator projection – ongoing studies
- Yeungnam University
- ELS

II. Reversing projection – scientific evidence of benefit for Traffic Safety
- Impact of Advanced Lighting Function based on Road Projection for Departing Indication in Parking Lots, S. Azouigui, ELS, ISAL 2019

b) Guidance needed from GRE

c) Timeline for a draft proposal to amend UN Regulations Nos. 148 and 48

Signalling Road Projection
Scientific research – Direction indicator projection (Yeungnam)

Pre-study: VR-based driver monitoring and scenario evaluation

- Shape of projections
- Different angles and scenarios of projection
- Checked data: behavioural and subjective

Step 1: Virtual Simulator-Based Finding of Benefits and Potential Distraction

Step 2: Validation based on Mock-up Lamp for Critical Situation

Final results expected for last quarter of 2022

Signalling Road Projection
Scientific research – Direction indicator projection (ELS)

Objective of the study:

Safety relevance of DI SRP

- Use-case: Intention of departing from a parallel parking space
- Tests on cyclists and in urban situation
- Three scenarios (no signal, turn indicator only, turn indicator + SRP)

Final results expected for last quarter of 2022

Signalling Road Projection

Scientific research – Evidence for benefit of Reversing projection (ELS)

Impact of Advanced Lighting Function based on Road Projection for Departing Indication in Parking Lots, S. Azouigui et. al., ELS, ISAL 2019

Road Projection

Impact of Advanced Lighting Function based on Road Projection for Departing Indication in Parking Lots

S. Azouigui, B. Barbedette, S. Saudrais, Y. Sortais, 1ELS – ESTACA / Institut d'Optique Graduate School, France, S. Bordel, Cerema, France, C. Neumann, P. Jahn, KIT – Light Technology Institute, Germany

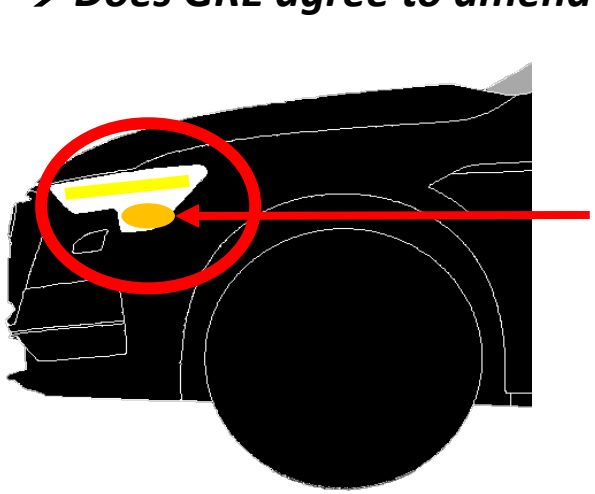
Keywords: road projection, light communication, departing, parking lot, safety

Signalling Road Projection
GRE guidance needed – implementation approach

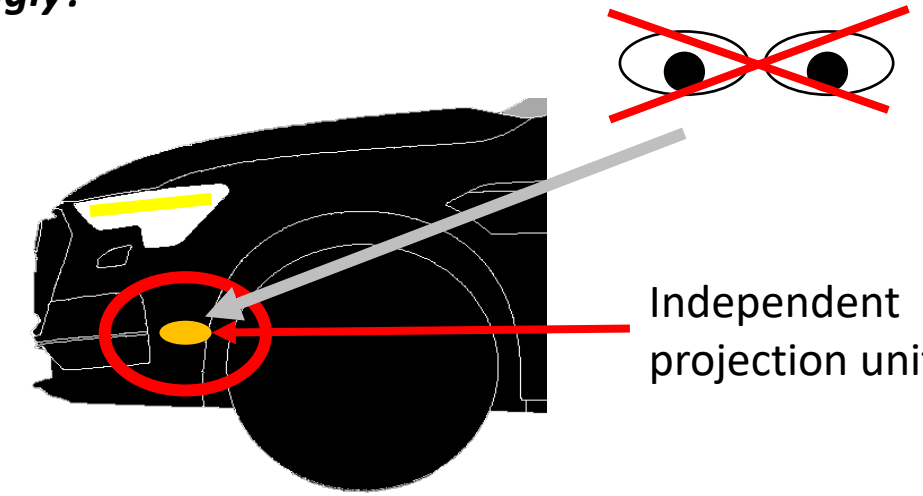
GTB identified a benefit in allowing the Signalling Road Projection being either combined or independent of the signalling function. GTB also sees a benefit for harmonization of the UN and Chinese regulations on signalling projection.

The draft Chinese standard defines “signalling projection units” that may be independent from, **or** combined/reciprocally incorporated with, other light signalling devices.
In case of independent devices, they shall not be visible to other road users*.

→ Does GRE agree to amend the UN Regulation(s) accordingly?



Combined/incorporated projection unit



Independent projection unit

** Note: Non-visibility criterion already exists in R48 for courtesy/manoeuvring lamps and can be applied for projection modules as well*

Signalling Road Projection
Timeline for Signalling Road Projections

Draft proposal for UN Regulations Nos. 148 / 48

- *GRE-87*: Intermediate information and open questions

- *GRE-88*: Informal draft proposal
  If possible, a Live Demonstration of vehicles with Signalling Road Projection will be organised

- *GRE-89*: Formal proposal, taking into account the input received during GRE-87 and GRE-88, including justification and information about the studies