ACSF-C2
2-actions system

Industry input to ACSF IG
14th meeting
August 2017, Köln

v4

Summary

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- Proposal
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Philosophy

➢ Level-2 system, i.e. the driver drives, the system assists:

- the driver monitors the vehicle environment
- the driver may not perform secondary tasks

➢ The driver is aware of the vehicle environment thanks to direct FOV and R46 mirrors

> The system must only monitor the zones out of mirrors coverage
> - M1/N1: Class I and III FOV
> - N3: Class II, IV and V FOV

Ultra-sonic sensor capabilities

➢ Range: 0-5 m

➢ Sensor-to-target relative speed: < 10 km/h

➢ Angle of detection: ~ 120°

➢ Target movement: stationary and moving

➢ Target nature: any solid, no distinction

➢ HMI: ON/OFF detection

➢ Sensitivity to wheather conditions: low

Radar sensor capabilities

➢ Range: < 100m

➢ Sensor-to-target relative speed: 0-max speed

➢ Angle of detection: 150°

➢ Target movement: stationary and moving

➢ Target nature: any solid, no distinction

➢ HMI: can transmit distance and speed

➢ Sensitivity to weather conditions: low

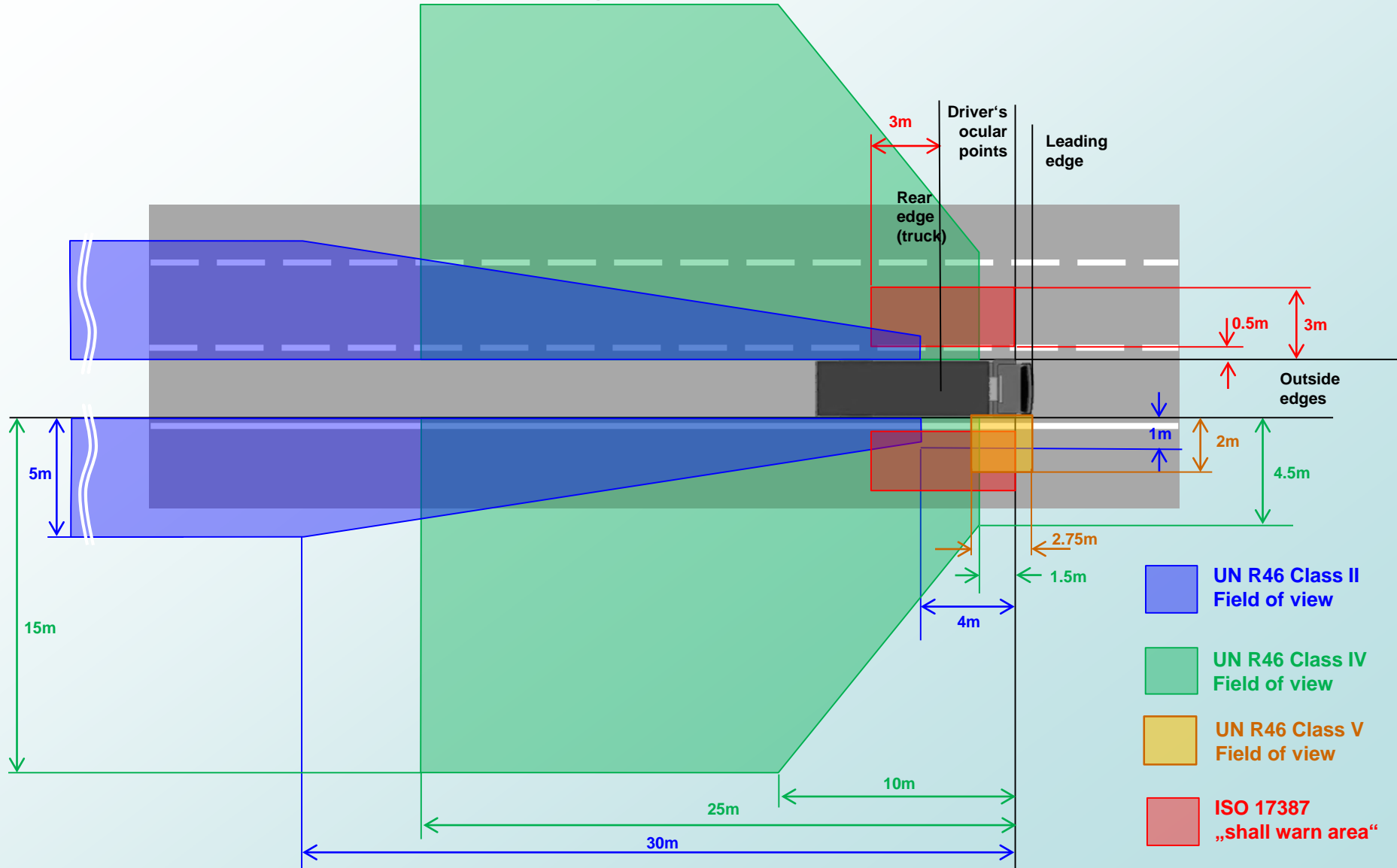# Proposed blind zone detection M1/N1

Rear edge

Ocular points 95%ile

Leading edge

3m

3m

0.5m

Outside edge

4m

1m

4m

20m
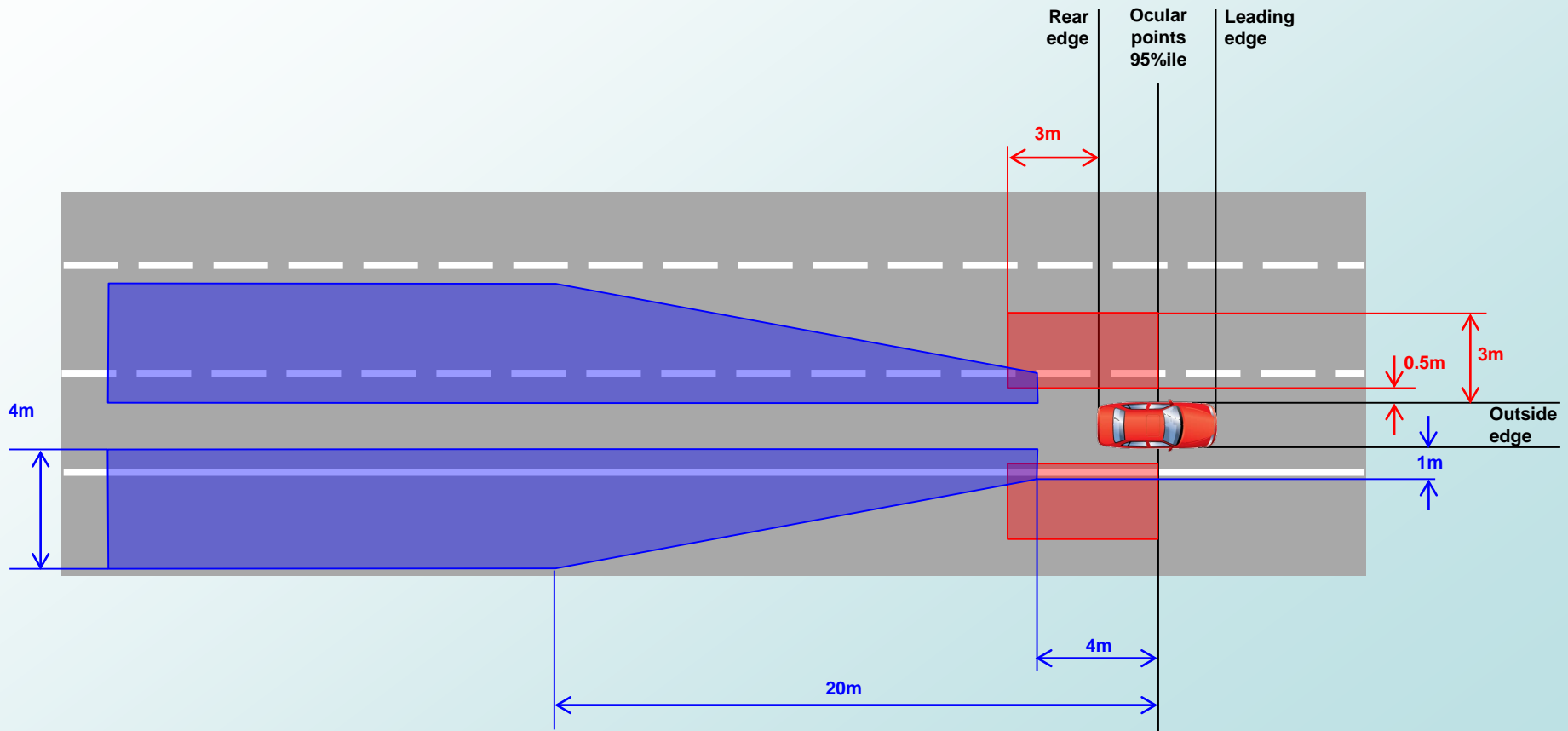
UN R46 Class III Field of view

ISO 17387 „shall warn" area

Proposed blind zone detection N3 vehicles

UN R46 Class II Field of view

UN R46 Class IV Field of view

UN R46 Class V Field of view

ISO 17387 „shall warn area"

Proposal

➤ "3X3m" blind spot detection area (ISO17387 – see sketches) for M1/N1

➤ "3X3m" blind spot detection area *inspired* from ISO17387 – see sketches) for M2M3/N2N3

➤ If target detected in blind spot, then
  - o Warn the driver
  - o Ignore 1st and 2nd actions
  - o Abort lane change support

Mode confusion issue

What happens if the driver have wrong perception of the system installed in the car

The driver thinks to have

		C1	C2
The car is equipped with	C1	OK	B
	C2	A	OK

Mode confusion issue

A situation : The driver think to be in C1 in a <u>C2 equiped car</u>.

The driver will use the command to launch the procedure without monitoring environment and nothing happen (the car expect a second action)

→ *<u>Not a safety issue</u>*

B situation : The driver think to be in C2 in a <u>C1 equiped car</u>.

The driver will use the direction indicator to start the procedure and

: the car start a manoeuver if it is a safe situation

→ *<u>Not a safety issue</u>*

Justifications

	Manual driving LC manoeuvre	2-action ACSF Category-C LC manoeuvre
1st action	Activating the direction indicator to inform the other users	Activating the direction indicator to inform the other users
2nd action	Action on the steering control to change lane	Action on the steering control to change lane

➢ The driver expects an HMI similar to that of the manual driving

➢ The driver can manage the time between the 2 actions

➢ Unintentional activation prevented thanks to

      o ON/OFF switch

      o 2-action activation

➢ Low overriding force (< 50 N)