



Federal Ministry
of Transport and
Digital Infrastructure

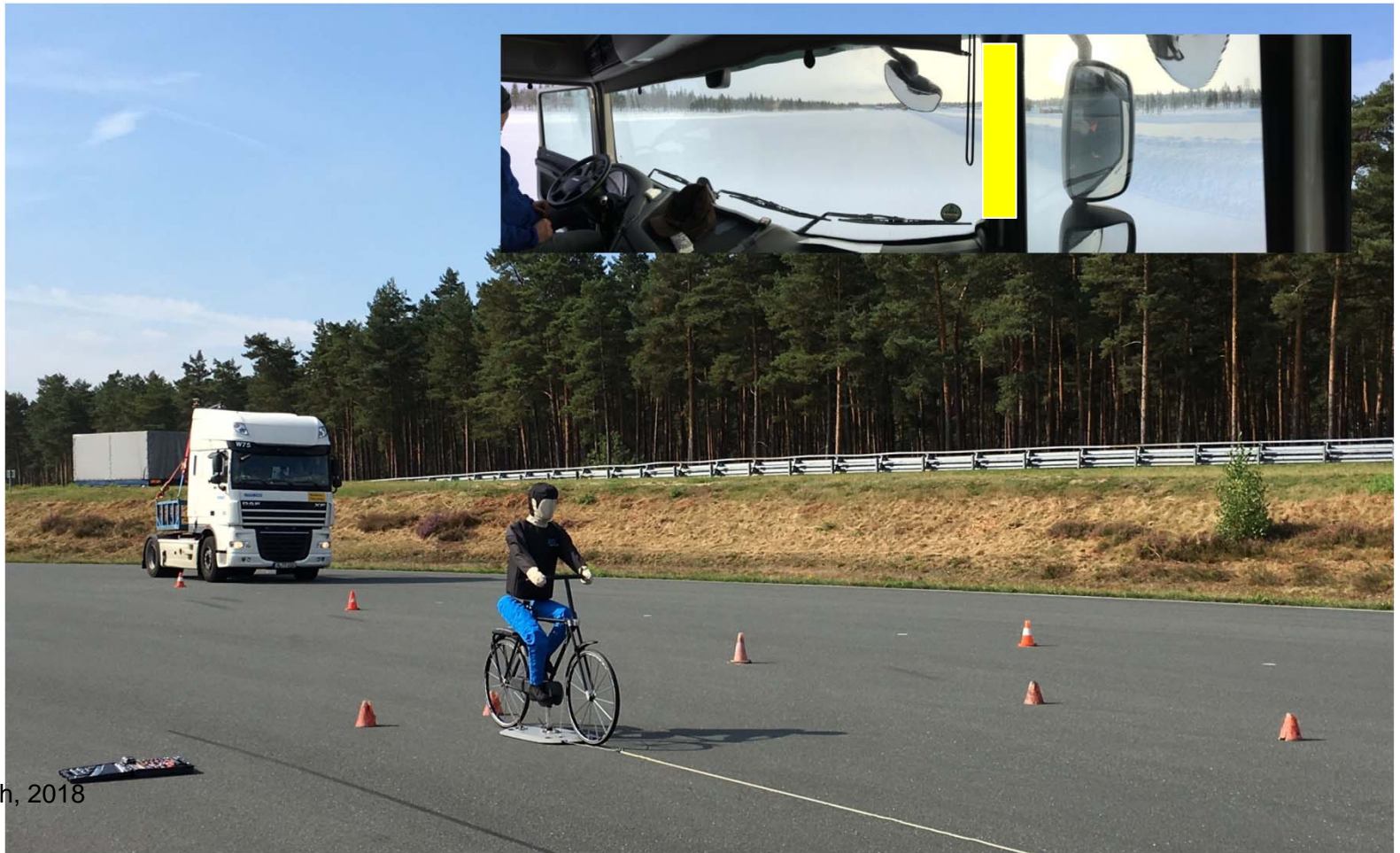
Informal document **GRSG-115-33**
(115th GRSG, 09-12 October 2018,
agenda item 6(b))

Regulation on Blind Spot Information System for the Detection of Bicycles

Introduction and Summary of Changes from IWG VRU-Proxi



Introduction - Concept



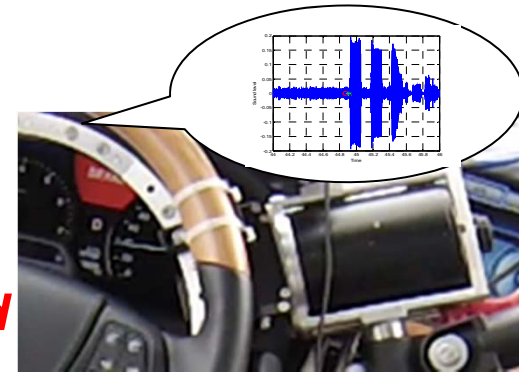


BSIS Concept: Warning and Information

Warning

- High intensity
- If issued right, good effects in steering driver's attention
- High annoyance if issued too often

Required, but activation strategy not limited



Information

- Low intensity
 - Low annoyance if issued too often
- Lesser effect in steering driver's attention

Required with Performance Requirements





Modifications – Function

Optical information signal

- > 30° to the right of the driver
- Only automatic deactivation (ice, snow on sensors, ...)

Additional warning signal

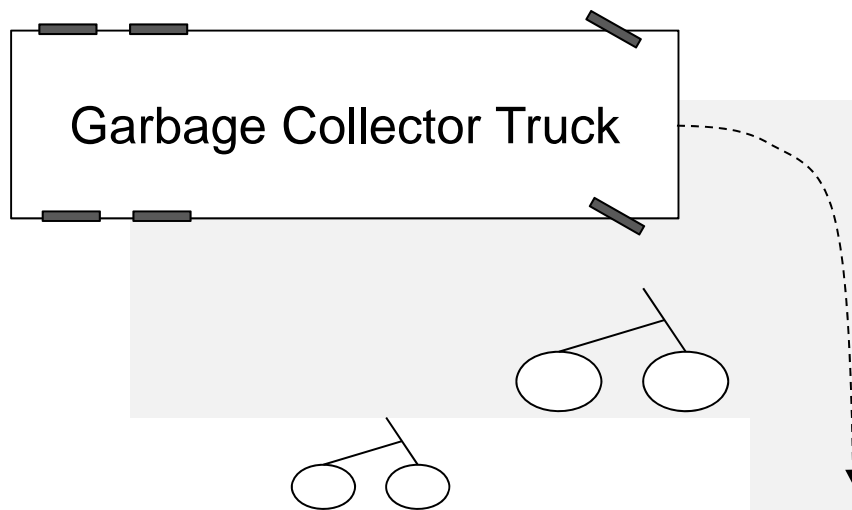
- Different to information signal
- Activation strategy decided by Vehicle Manufacturer
- not before collision becomes imminent

Operation

- Vehicle speeds **0** (original proposal: 1) – 30 km/h
- Lateral separation of **0.9** (1.25) to 4.25 m
- Additional: Information signal for bicycles **from 25 cm** next to the most forward right wheel
- Should detect **children** as well (36% smaller than 50% male)



Motivation for Warning Signal: Multiple Cyclists



Cologne Accident (June 2018)

- Truck driver stops, gives way to adult bicyclist
- **Does not see child on sidewalk**

Blind Spot Information System

- Information signal would have been activated for both cycles
- No differentiation for second bicycle possible

Blind Spot Warning

- Additional Warning would have been triggered when collision becomes imminent
- When truck starts to move!



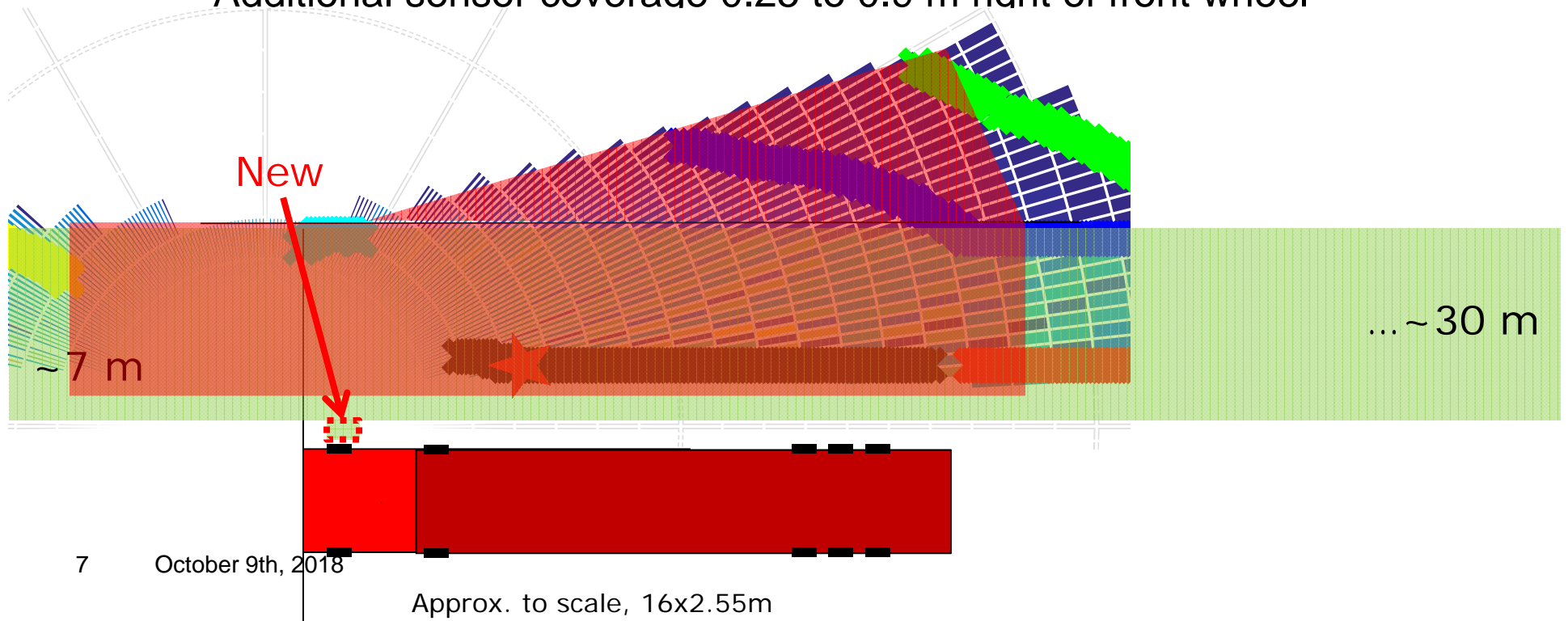
Modifications – Tests

- Dynamic test cases
 - Tests conducted without actual turn manoeuvre
→ *Test conduction simplified: Reduction from 12 to 7*
 - Information signal required 15 m before collision point
(data shows turning manoeuvre starts not before 15 m)
→ *Requirements **NOT** simplified!*
 - Information signal not too early
 - Tests outside of test case table possible
- **New:** Additional static test cases
 - Vehicle stopped before roundabout
 - Vehicle stopped at intersection
- Cyclist Dummy: Reference to ISO [WD] 19206-4
- BSIS System should work with 36% smaller dummy-bicycle-combinations as well



Sensor Coverage Area

- System Operation Requirements
 - Coverage starts at 0.9 m separation
- Tests without turning: Early information
 - Longitudinal coverage area increased to 30 m (rear)
 - Lateral coverage area reduced to 4.25 m (side)
- Additional sensor coverage 0.25 to 0.9 m right of front wheel

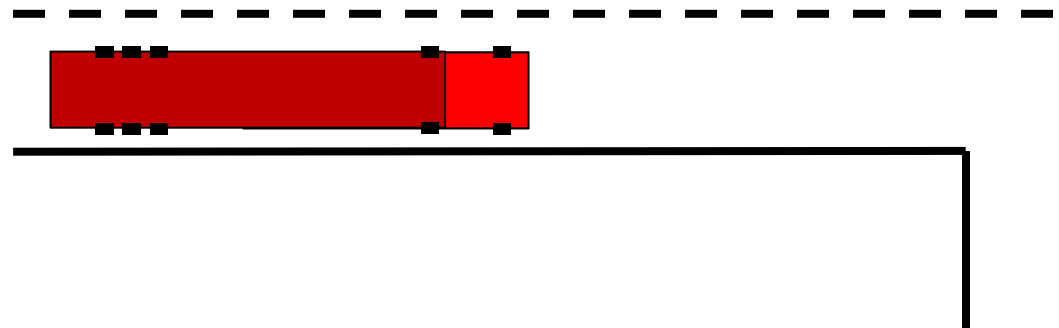
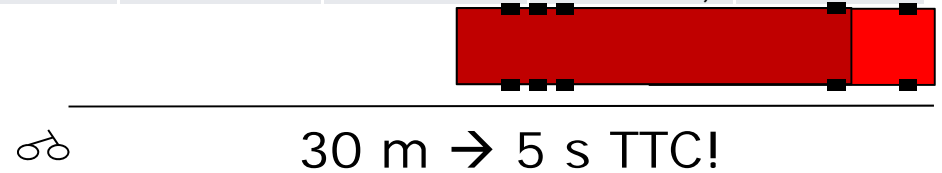




Impressions: Bicycle 30 m @ TTC=5 seconds



Test Case	vx,vut [km/h]	vx,bcy [km/h]	Lateral Offset	Max. Distance [m]
1	10	20	1,5	27,8
2	10	20	1,5	15,4
3	20	20	1,5	6,1
4	20	10	4,5	-7,05
5	10	10	4,5	2,4
6	10	20	4,5	30
7	10	20	4,5	24





Summary

- BSIS proposed regulation ECE/TRANS/WP.29/GRSG/2018/11 has been discussed in IWG VRU PROXI
- Changes:
 - Additional warning required
 - Test cases modified
 - Slight adjustments wrt coverage area, bicyclist size, vehicle speed
- New document ECE/TRANS/WP-29/GRSG/2018/24 and small corrections GRSG-115-10 available, **both agreed** in IWG VRU PROXI



Open Issues

- **Scope:**
This Regulation applies to the blind spot information system of vehicles of categories **[M₂,]** N₂ [(> 8 t permissible maximum mass)] and **[M₃ and]** N₃. Other vehicles may be approved at the request of the manufacturer.
- **Dummy reference:**
ISO **[WD]** 19206-4 → “Working draft” changed to “Committee Draft” [CD]
- **Illumination:**
The BSIS shall at least operate for all forward vehicle speeds from standstill to 30 km/h, for ambient light conditions above **[1,000]** Lux.

Thank you for your attention!

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