

# BMW Forschung u. Technik GmbH.

## 25th Anniversary of a Think Tank.



**Narrow-passage Assistant.**

**BMW Group**



# **Narrow-passage Assistant.**

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# Narrow-passage Assistant. Motivation.

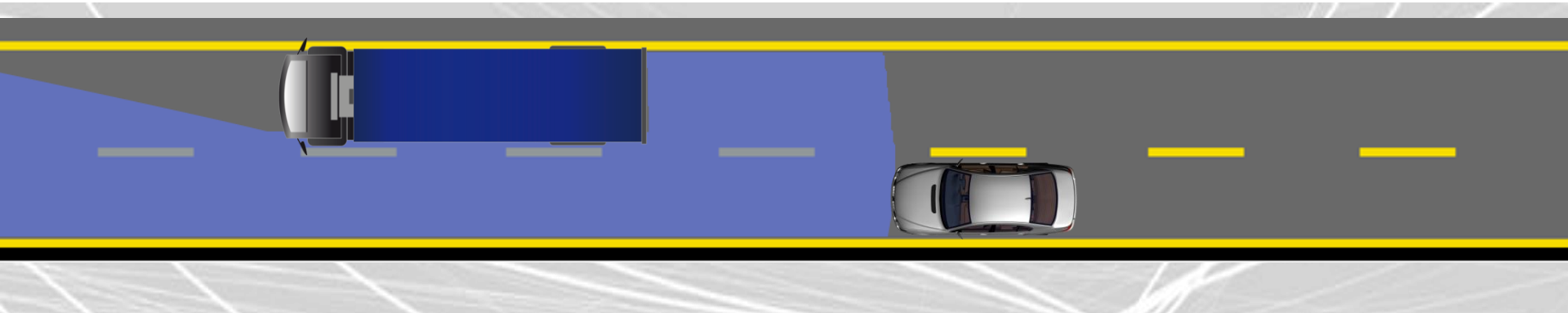


**Competent passage through narrow lanes**

Considering

- yellow road markings
- safety fences and barriers
- vehicles on neighbouring lanes

# Narrow-passage Assistant. Function Overview.



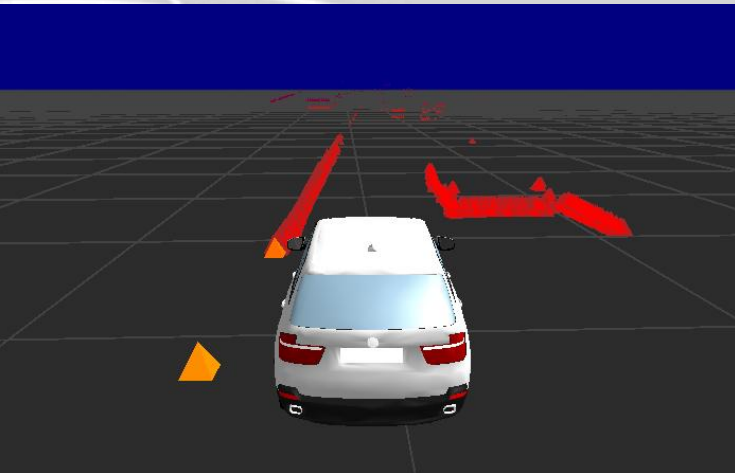
Activation together with lane departure warning

Lane departure warning orients towards yellow road markings

Measures the effectively available width of roadway (preSite)

Measures the clearance to barriers and to other vehicles (inSite)

# Narrow-passage Assistant. Sensor Concept.



## Laser scanner for preSite

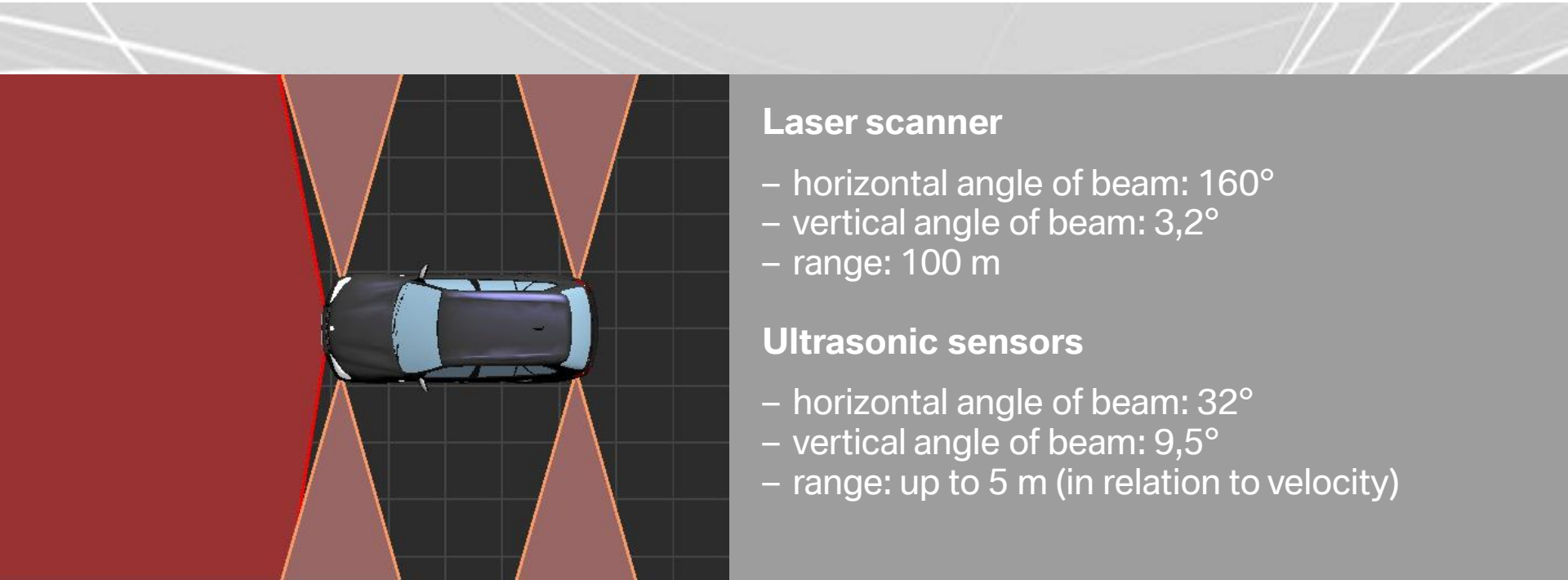
The laser scanner monitors the space in front of your own vehicle for other vehicles, barriers and safety fences (red markings in the picture)

## Ultrasonic parking sensors for inSite

The ultrasonic parking sensors monitor the lateral clearance (yellow markings in the picture)



# Narrow-passage Assistant. Sensor Ranges.



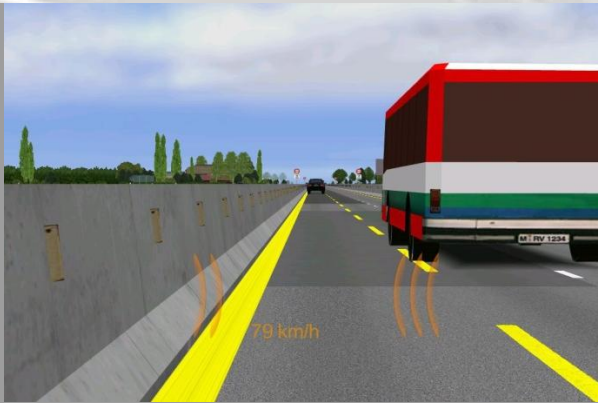
## Laser scanner

- horizontal angle of beam:  $160^{\circ}$
- vertical angle of beam:  $3,2^{\circ}$
- range: 100 m

## Ultrasonic sensors

- horizontal angle of beam:  $32^{\circ}$
- vertical angle of beam:  $9,5^{\circ}$
- range: up to 5 m (in relation to velocity)

# Narrow-passage Assistant. preSite.



Measures the effectively available width of the road  
Displays the lateral clearance on left and right side  
Feedback for the driver on which side there is less clearance to the barrier or vehicle.

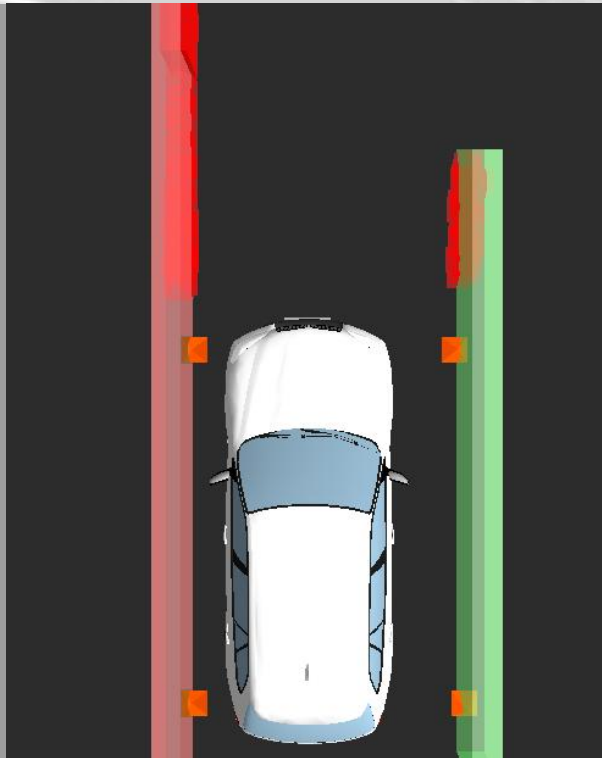
1 circle: much space (0,5 – 1,0 meters)

2 circles: little space (0,2 – 0,5 meters)

3 circles: very little space (< 0,2 meters)

If the distance goes below the safety clearance, there will be an additional warning via Head-Up Display.

# Narrow-passage Assistant. inSite.



Monitors the lateral clearance while passing the constriction

Also uses the laser scanner data

Feedback via the steering wheel  
(directional steering momentum)

additional indication via Head-Up Display  
(like preSite)



# Narrow-passage Assistant.

Thank you for your attention.

