

# **Proposal of discussion for making new regulation**

**FVA-IWG #5**

**22.9.21**

**JAPAN**

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# TOR of FVA-IWG

*Copied from GRSG-121-04e-Rev.2*

The task of this Informal Working Group (IWG) is:

- To further review the impact of Forward Field of Vision Assistants to the driver.
- To investigate the possibilities to objectify and update the provisions for the type-approval process.
- To develop a proposal for GRSG on a new Regulation and/or alternatively a further amendment of the existing UN Regulation 125.
- The IWG shall consider during its work existing standardisation, existing or ongoing research activities on FVA Systems.

**FVA-TF started from the discussion in GRSG R125 amendment proposal by OICA.  
FVA requirements in R125 are subjective.  
New regulation requested to include **objective criteria for safety.****

December 2022    Finish the work of the IWG-FVA

April 2023        Submit proposal for a new Regulation (and/or an amendment of the existing UN Regulation 125) to GRSG.

**We don't have enough time for proposal. Need to speed up making regulation.**

# What is the concept of basic requirements?

**Field of View Assistant** provide beneficial information for driving.

- Warnings
- Vehicle status
- Turn by turn etc.

Benefit:

Get information without moving from front sight.

Technology trends:

Big area, High position, Precise and various useful information.

To secure safety with FVA,

**Driver needs to aware front situation at anytime (front awareness).**

# Three layers of requirements

**Ease of understanding requirements for minimize glance time**

HMI requirements - Colors, Icons, Amounts etc.

\* FVA defined as secondary display.

Minimum requirements for Mandatory information contents to be the same as meter cluster (R121) or ISO etc.

Other information to be defined as HMI design by manufacturer.

Many research literature about HUD display exist.

But most of them shows effectiveness of information provision, not contributions to safety quantitative requirements.

**Display image requirements for keeping front awareness**

***Discussion missing.***

**System requirements for proper functioning.**

System ON/OFF,  
Malfunctions etc.

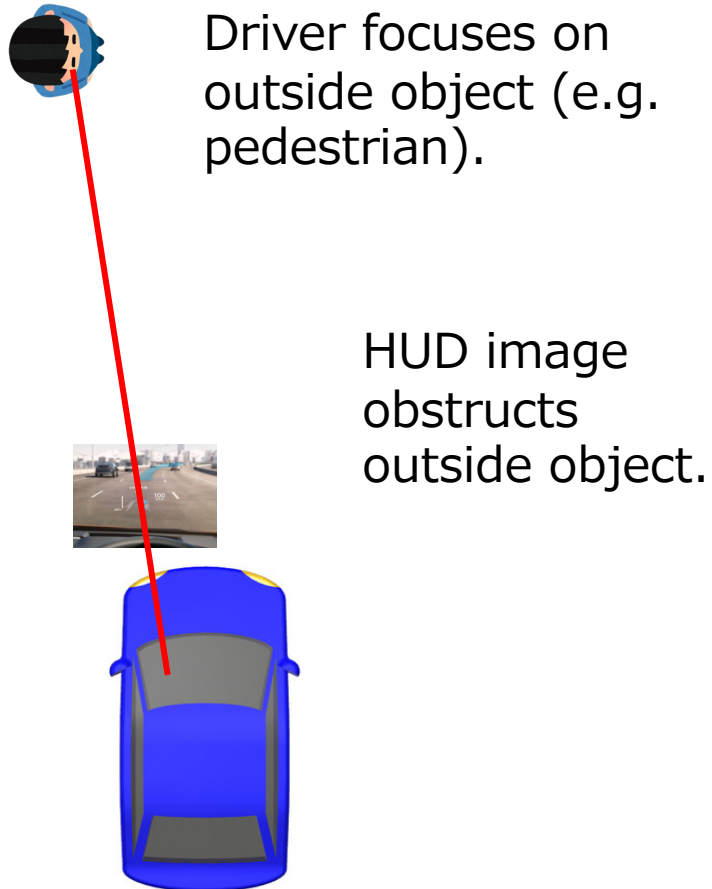
***Discussion on-going in EG2.***

# For keeping front awareness

Two aspects need to be considered.

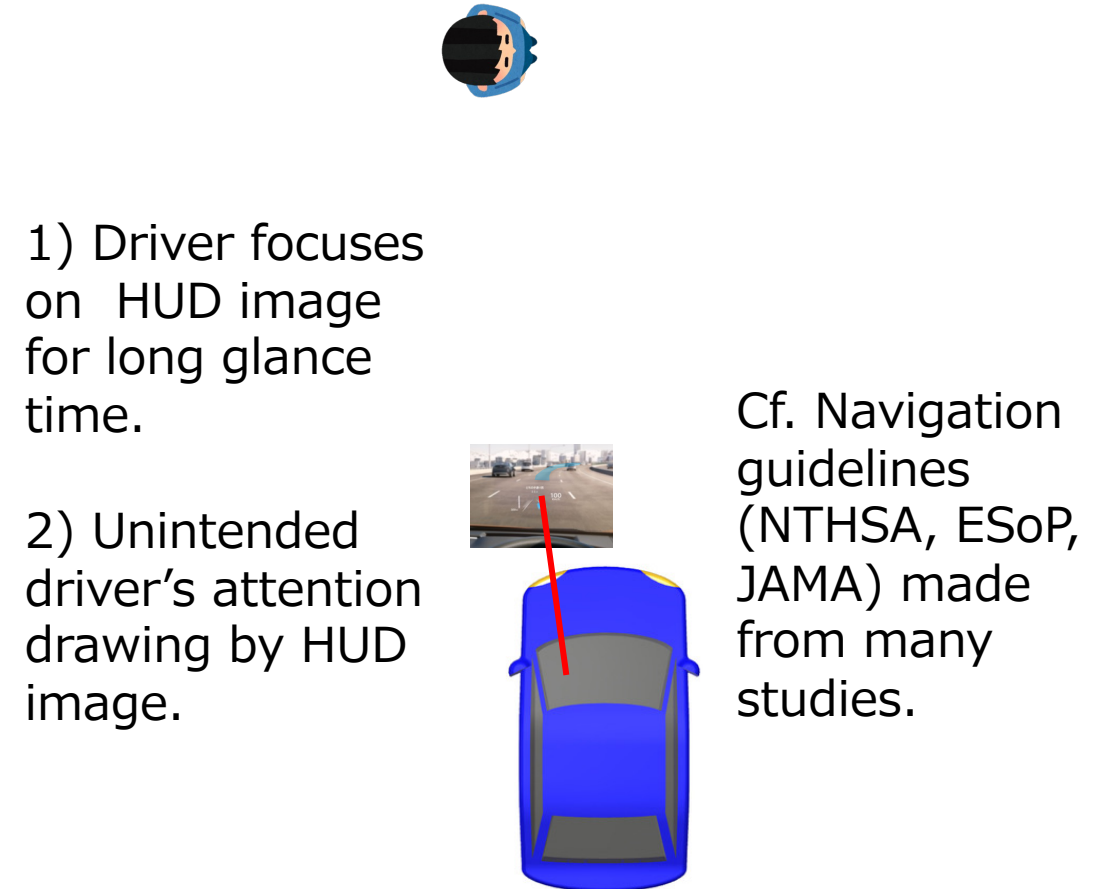
## 1) Obstruction

Miss awareness caused by image



## 2) Distraction

Prolonged gaze restraint or unwanted gaze attraction



# For keeping front awareness

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## 1) Obstruction

Miss awareness caused by image

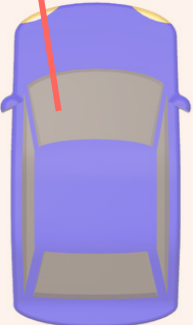


Driver focuses on outside object (e.g. pedestrian)

**JAMA Guideline focuses the conditions for front awareness under displayed image (any content acceptable)**



HUD image obstructed outside object.



## 2) Distraction

Prolonged gaze restraint or unwanted gaze attraction



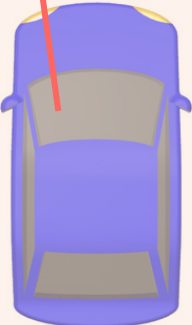
**Lack of knowledge for HUD. Study needed (need time)**

1) Driver focuses on HUD image for long time.



Cf. Navigation guidelines (NTHSA, ESoP, JAMA) made from many studies.

2) Unintended driver's attention drawing by HUD image.



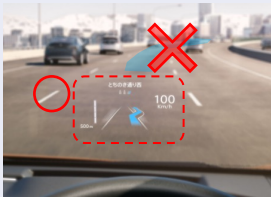

# Outline of JAMA guideline

Assumed background scene: Highway (preceding cars, overtaking bikes), City roads (Pedestrian incl. kids)

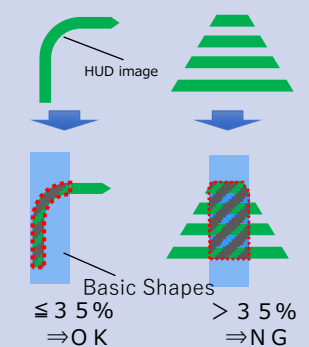
Application field of view: V1+3deg ~ V2-1deg (almost above S area)

## Ver.4

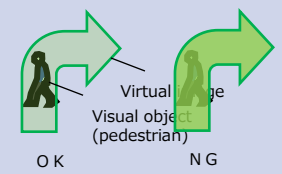
	<b>Ver.3</b>	<b>Additional requirement for Ver.4</b>
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For	<p><b>Small display is fine, but Display items that need to be clearly visible (drawing image)</b> e.g. : Speed, Street name</p> 	<p><b>Display items that do not need to be clearly visible but need to be displayed in a large size. (painted image)</b> e.g. : Overlaid route guidance</p> 
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requirement	<p>&lt;Size&gt; Region which is surrounded by the HUD image of the envelope (Indicated Area) to be 35% or less to hide basic figure assumed pedestrian (1m × 0.3m cylinder).</p>	<p>&lt;HUD luminance&gt; HUD luminance adjustment maximum value must be in below values.</p>
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Environment luminance	Below 500[lx]	500[lx] < <math>< 60,000\text{[lx]}</math>	Over 60,000[lx]
Maximum luminance	130 [cd/m <sup>2</sup> ]	$2.4 \times 10^{-6} \times (\text{Environment luminance})^2 + 0.26 \times \text{Environment luminance}$ [cd/m <sup>2</sup> ]	$0.40 \times \text{Environment luminance}$ [cd/m <sup>2</sup> ]



# Proposal

**In order to speed up quantitative requirements definition,**

- **System requirements**

Continue discussion.

- **Display image requirements**

**Obstruction:** **Starting discussion from JAMA guideline.**

Currently, the only debatable candidate.

Other alternatives welcomed.

**Distraction:** Proposal welcomed.

If no idea raised, postpone to next step.

- **Ease of understanding requirements**

To be minimized for the space of manufacturers' HMI design.

Refer meter regulation, ISO.



**Thank you for your attentions.**