



Upcoming Regulation “Forward Field of Vision Assistant (FVA)”

Industry statement based on
the current state of research

GRSG IWG FVA 12th
meeting

Ingolstadt, 18.-19.09.2023

Empirical studies show that HUDs have major benefits for the vehicle safety and road safety

■ Eyes kept on the road

“Also, the participants **did not glance away from the road scenery** while driving with the head-up displays.”

Nwakacha, Crabtree and Burnett (2013)

■ Shorter time to change focus

“[...] participants had **faster glances to a HUD** when drivers were asked to read driving information; however, drivers were **more likely to glance at the HUD** than other displays [...]”

Russell, Radlbeck, Atwood, Schaudt and McLaughlin (2023)

■ Shorter time to view information

“HUDs may improve safety by **reducing the time required to view driving-related information** relative to a traditional head-down display (HDD).”

Russell, Radlbeck, Atwood, Schaudt and McLaughlin (2023)

■ Better and faster information processing

“For the **navigation performance**, the participants took all the correct turns with the virtual car and arrow head-up displays which indicated an **average success rate of 100%**.”

Nwakacha, Crabtree and Burnett (2013)

→ Drivers keep looking on the road; the displayed information supports the driving task.

Empirical studies show that HUDs have major benefits for the vehicle safety and road safety

Shorter reaction time

“[...] drivers paying attention to the HUD, under both low and high driving load conditions, **reacted faster to speed limit sign changes** than when paying attention to the road.”

Liu (2003)

Decreased probability of collisions

“The preliminary results from a rear collision simulation scenario indicate a **reduction in collision occurrences of 45%** with the use of HUD.”

Lagoo, Charissis and Harrison (2019)

Decreased probability of collisions

“The **collisions that occurred with the HUDs were significantly less** than without [...].”

Charissis, Lagoo, Bram-Larbi, Wang (2021)

Most positive perception for drivers

“The virtual car head-up display was rated as the **easiest to use and most preferred interface** followed by the arrow head-up display and sat nav.”

Nwakacha, Crabtree and Burnett (2013)

→ Improvement of road safety by shorter reaction time and lower probability of collisions.

The HUD is a beneficial and integral part of the overall vehicle safety

Empirical evidence

HUDs have major benefits compared to the already high industry standards of other display types, among others, regarding distraction, perception and reaction.

Driver's behavior

Drivers will not give up an action if the action cannot be done through the HUD, e.g. drivers will not skip a phone call if the possibility is not given in the HUD.

Drivers will find a way to do the desired action, e.g. install aftermarket device, use mobile phone or browse through device's sub-menus.

Industry statement

OEMs are responsible for the continuous improvement of the **overall vehicle safety**. In case of safe HMI concept, this includes the careful decision about **where information is displayed best**.

The HUD further raises the already high industry standards regarding distraction, perception and reaction.

Strictly limiting the HUD's scope to "driving related information" will **be counterproductive** to further improve the overall vehicle safety.

This is neither in the public interest nor in the OEM's interest.

The new FVA regulation should enable a broad, well-balanced application scope of the HUD

Premises

Regulating projected information should be seen in the light of **the overall vehicle safety**.

Increase overall vehicle safety is in all parties' interest, not only relying on new FVA regulation.

OEMs have **no interest in complex and distracting HUDs**, risk of product liability cases etc.

Drivers will find a way to do the desired action → **OEMs are responsible to offer best solution**.

UN Regulation No. [XXX] FVA



General comment: Due to **agile technical development** regulate the “How” (conditions) rather than the “What” (content).

New regulation should consider existing vehicles as well.

Suggestion to **change paragraph 5.1.1.** to

“[...] shall be focused on driving-related information [...]”

because display of non-driving related information should be possible under defined conditions (further discussion needed).

Define **conditions that enable the display of non-driving related information**, e.g. ISO 26262, ISO 21448, other ...?

Include **categories for non-driving related information** in table of Annex 4 – Appendix 2.

Revise table in paragraph 5.1.4. based on **technical criteria**.



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