

Human Factors Challenges of Remote Support and Control

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New group



- **HF-IRADS**

“Human Factors in International Regulations for Automated Driving Systems”

- Operates under the auspices of the International Ergonomics Association (IEA), which has consultative status as an NGO with ECOSOC
- Brings together human factors experts from across the world to support UNECE activities on the safety of automated driving systems
- Members from North America, Europe, Japan and Australia
- All volunteering their time

Aim

- To provide expert human factors support to the UNECE in the areas of vehicle regulations and road safety
- The group has members who already participate in the meetings of WP.1, IGEAD, FRAV and VMAD

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Convention on Road Traffic (1968):
Automated driving
Vehicles with automated driving systems:
The concept of activities other than driving

Convention on Road Traffic (1968)

Automated driving

Submitted by HF-IRADS

This document contains a position paper from Human Factors in International Regulations for Automated Driving Systems (HF-IRADS) group which operates under the auspices of the International Ergonomics Association. The document is intended to provide guidance on the major human factors challenges to be considered when providing remote support and control to assist vehicle operation under automation.

Covers:

- Categories of remote support and control
- Management of the remote environment
- Training and personnel
- Controls and displays
- Communication channels
- Needs of passengers in the vehicle
- Service design, including definition of the ODD for a service

Categories of remote support and control

We distinguish:

- 1. *Remote assistance***, e.g. by a service provider to provide support and breakdown assistance
- 2. *Remote management***, analogous to air traffic control, to allow a remote controller to assist when a vehicle requires authority to move or deviate from a prescribed path
- 3. *Remote control***, which could extend from limited path guidance (e.g. around road works) to full remote driving at low speed or even high speed

Conclusions

- Remote control and operation is complex. It should not be assumed that remote handling constitutes a viable backup for problems encountered by vehicles under the control of an ADS
- Thorough investigation of different use cases is needed. A **safety case** should be prepared for each specific application of remote support and control. Currently, there is a lack of evidence that remote vehicle operation on public roads can be performed safely.
- The proper design of the work environment for remote control and operation is vital.

Implications for UNECE WP.1 and WP.29

- WP.1

- The *WP.1 Resolution on the Deployment of Highly and Fully Automated Vehicles in Road Traffic* states that an Automated Driving System “refers to a vehicle system that uses both hardware and software to exercise dynamic control of a vehicle on a sustained basis.”
- No mention is made of any possible assistance from or fallback to a remote centre. In any new version of this text, there should be consideration of the possibility of remote support, and thus the definition of an Automated Driving System may need to be expanded so as to encompass any required remote support.

- WP.29

- The *WP.29 Revised Framework document on automated/autonomous vehicles* states that “an automated/autonomous vehicle shall not cause any non-tolerable risk”. A definition of an “automated/autonomous vehicle” is not provided, but there is no mention of remote support as means of assistance, and remote support is not listed in the priority items.
- It is therefore suggested that a whole system approach be adopted in GRVA and its sub-groups and that remote support be added to the list of priority issues to be addressed.

Thank you for your attention!