



# Key human roles in the context of automated driving - some basis for discussion

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# Discussions in IGEAD/majority views

- There should only be division between Driver Assistance Systems ADAS and Automated Driving Systems ADS
  - No further division between various stages of ADS (e.g. partial/conditional automation), even though there might be some differences in the capabilities of ADS
- The requirements for ADS include (at least) the following:
  - ADS must be able to comply with traffic rules (as already stated in the 2018 Resolution),
  - ADS should issue a transition demand when appropriate, in an effective manner with sufficient lead time for the driver to safely assume dynamic control (as already stated by the draft resolution on activities other than driving, but it could be added that the ADS must issue only this kind of transition demands),
  - There is no need for (constant) human monitoring either of the traffic environment or the system's performance, while the ADS is engaged,
  - ADS must be able to cope with all kinds of traffic situations without the need for the human to intervene (if necessary e.g. by turning to minimal risk maneuver).



# Human role when using ADAS: The driver

- General description of the human role: Human individual has the full control, assisted control or supervisory control at the tactical and/or operational level of the driving task.
  - Full control =>"traditional" driver / Assisted control =>Assisted driver / (Continuous) supervisory control =>Fall-back ready driver(?).
- Description of driving automation technologies role while engaged:  
"I am assisted in driving or my vehicle is performing longitudinal and/or lateral control for me, but I am responsible to monitor continuously and ensure the safety of the driving task at all times."
- Responsibilities of the human: Full driver responsibilities ranging from full control of all the dynamic driving tasks to the need to monitor the traffic environment and the functioning of the systems.
  - Also many non-driving related responsibilities.
- Allowed NDRA: Non-driving related activities are restricted by law, basically wider than thus far.

# Human role when using ADS: "The User in Charge"

- General description of the human role:
  - Human individual in the vehicle with access to the controls of the vehicle, as he/she may become "the driver" along the journey.
  - Has obligations to be qualified and fit to drive, but has no control of the dynamic driving tasks while the ADS is engaged.
- Description of driving automation technologies role while engaged: "My vehicle is driving for me, and while the ADS is engaged I don't need to monitor either the traffic environment or the functioning of the systems (and so I can engage in NDRA)."
- Responsibilities of the human: Needs to be receptive to a transition demand for systems that issue them.
  - Need to take care of duties of drivers that do not arise from dynamic control
- Allowed NDRA: Allowed Non-driving related activities are/may be restricted by law, but may/should be wider than for the driver.

# Other identified human roles => not considered further

- Owners of private vehicles
  - E.g. maintenance, insurances?
- Passengers of fully automated private vehicles
  - "Passenger in charge"? => e.g. fastening the seat-belts of the minors, loading?
- Passengers of fully automated vehicles used for public passenger transport
  - Passenger role basically the same as thus far?
- Employees of remote operators (working e.g. in remote control centers)
  - Extent of responsibilities may vary according to the implementation of remote operations

# Company roles

**=> require consideration in other contexts**

- Operators of vehicles used for transport services
  - Implementation of remote operations, may vary case by case
  - Responsibilities?
- Vehicle manufacturers/software developers
  - Responsibilities?
  - Including product liability issues?