

Remote management of automated vehicles

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Scope and disclaimers

- Paper aims to launch the discussions!
- Developing terminology would be very helpful
- Relation with the remote driving paper
 - Only concerns ADS vehicles
- Concerns vehicles with no responsible humans inside, only passengers and/or cargo

Concept of “remote management”

- Remote management? refers to the activities that aim to manage one or more automated vehicles which do not have a responsible human inside.
- Remote management could be considered as a top level term that may cover various forms of remote human intervention in the operation of automated vehicles in traffic.
 - Remote support => surveillance of the systems, interaction with passengers
 - Remote assistance => adding possibility to change strategic element
 - Remote operation => adding possibility to give instructions concerning manoeuvres
 - (Remote driving => Remote dynamic control)
- Need to make clear separation between a) the entity organising remote management operations (usually a company), i.e. “remote management provider”?, and b) the individual human being acting on behalf of the entity, i.e. “remote management agent”?

Safety considerations

- A. Remote management as a safety increasing feature relating to the provision of transport services
- B. Minimum risk manoeuvre
- C. Issues relating to the carriage of passengers and freight
- D. Remote management from another jurisdiction and enforcement
- E. Requirements for remote management providers and their licencing
- F. Requirements for the remote management agents, licencing and permits
- G. Requirements for organising remote management operations (connections, latency, work stations, shifts, breaks)

Issues relating to the carriage of passengers and freight

- Necessity to arrange methods for two-way communication between the remote management agent and the humans inside the vehicle
- Possibility for the remote management agent to monitor appropriately both the passengers and the freight
- In the case of possible emergencies inside the vehicle or traffic incidents or accidents the remote management agent must be able to provide immediately necessary help and assistance
- Enforcement officers and first responders must also be able to identify remote management provider and contact the remote management agents acting on behalf of it

Requirements for the remote management providers

- Licensing schemes or other prior approval?
- Key requirements:
 - have necessary economic and other resources to run the operations
 - ensure that the remote management operations are adequately staffed at all times
 - ensure that the personnel hold necessary licenses required from them and have adequate skills for the operations
- One of the major aspects for all the modes of remote management is the quality of network connections.
- Organising the ways of working have a major effect on the safety of the operations, and it is the responsibility of the remote management provider
 - For example: work stations, shifts, breaks, etc.

Requirements for the remote management agents, their licensing and permits

- Key requirements:
 - to hold necessary licences and permits
 - take necessary training
 - maintain their physical and mental capabilities at all times
 - controlling the tiredness and monotony
 - possible suffering from motion sickness or change blindness