

A starting point for ToR

Vehicle has a driver
Driver is able to control



ToR Section 1

Only vehicle systems drive



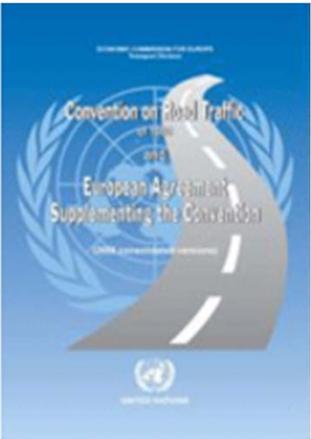
ToR Section 2

Steering from outside

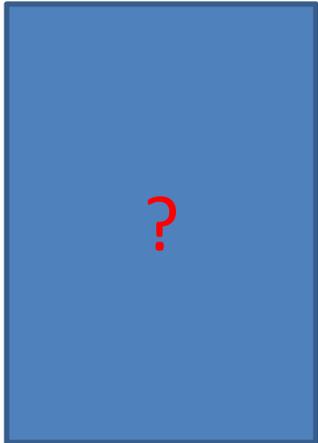
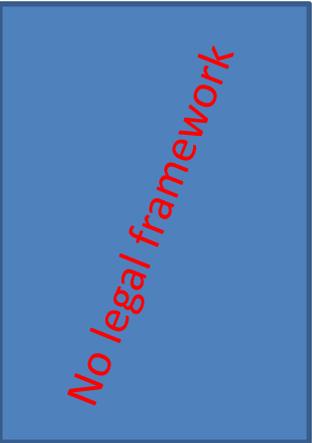


ToR Section 3

Applicable framework?



Applicable framework?



Pictures from <http://www.istockphoto.com>

Section 1, Drivers + ADAS

- Define the activities drivers of highly automated vehicles cannot not engage in when vehicle systems drive the vehicle
- Define those activities as a function of vehicle systems capabilities
- Define the start and end points of driving by the driver and vehicle systems
- Define the requirements for training/re-training for drivers of highly automated vehicles



This is not an exhaustive list, but some issues to start with!

Section 1, Drivers + ADAS

Define the activities drivers of highly automated vehicles cannot not engage in when vehicle systems drive the vehicle

Why?

- Engaging in certain activities can compromise driver's ability to take over when requested to do so by vehicles systems

or

- Engaging in certain activities can compromise the driver's ability to take over in general e.g. to drive 'the last mile'



From informal document no. 4:

Art1. Principles relating to the driver of a vehicle that can operate in driverless mode and can also permit driver operation of the vehicle.

to include : permissible driver activities, alcohol and drug impairment

Section 1, Drivers + ADAS

Define such activities as a function of vehicle systems capabilities

Why?

- Certain activities may compromise the driver's ability to take over when requested to do so by less advanced vehicle systems

while

- The same activities may be recommended to engage in to a driver to be fit for driving at the end of the journey without support of the vehicle systems (e.g. after exiting a motorway)



Section 1, Drivers + ADAS

Define the start and end points of driving by the driver and vehicle systems

Why?

- It should be detectable who was/is driving



Section 1, Drivers + ADAS

Define the requirements for training/re-training for drivers of highly automated vehicles

Why?

- As vehicle systems would be expected to drive most of the time, drivers (required to be in control) might gradually degrade their driving skills
- As a result of the above they might not be able to drive properly when deciding to do so

therefore

- A new driver training and periodical retraining might be necessary to ensure drivers maintain their skills



From informal document no. 4:

Art2. Principles relating to driver licensing and training

to include : Advice on the need for a licensed driver in a vehicle that can operate in driverless mode or by driver control, and advice on licensing requirements and examinations

Section 2, Driverless vehicles

- Define driverless driving
- Define rules for riding
- Define rules for the use of hybrid steer vehicles as driverless vehicles
- Consider infrastructure changes



This is not an exhaustive list, but some issues to start with!

Section 2, Driverless vehicles

Define driverless driving

Why?

- While there are rules for vehicle maneuvering in the Conventions, such rules would need to be observed by driverless vehicles too

however

- Some of those rules may need to be adjusted

and

- Some other/additional rules and regulations may be needed

Art6. Recommendation on the collection and access of data on safe operation of driverless vehicles



From informal document no. 4:

Art3. Principles relating to integration of driverless vehicles in traffic

to include : Advice on vehicle compliance with traffic code

Art.4 Principles relating to the interaction of driverless vehicles and public safety or emergency officials

to include: Advice on passing info...

Section 2, Driverless vehicles

Define rules for riding

Why?

- Today drivers know the rules and instruct passengers on the necessary behaviour; in driverless vehicles either passengers should know the rules or the vehicle systems should be able to instruct passengers in every situation

hence

- Will vehicle systems be able to instruct in every situation?
 - What if due to a collision the vehicle systems would go off UNCLEAR?
 - What about instructing passengers when they are outside of the vehicle?



From informal document no. 4:

Art5. Principles relating to the education of consumers and other road users about the operation of driverless vehicles

to include: Advice on need for training to pedestrians, bicyclists and VRU about safe interaction with driverless vehicles in traffic

Section 2, Driverless vehicles

Define rules for riding (cont.)

Why?

- Today there is always an adult as the driver who is fit to drive, and who knows rules for transporting passengers and cargo; in driverless vehicles anybody could ride

Hence

- Should anybody be able to ride e.g. small children?
- What if cargo is not properly stowed, who will be in breach of the rules?
- What if passenger count is not appropriate (a child on an adult's lap), who will be in breach of the rules?



Section 2, Driverless vehicles

Define rules for use of hybrid steer vehicles as driverless vehicles

Why?

- If a driver can take over driving at any time from vehicle systems, the hybrid steer vehicle will only be used as highly automated vehicle (ref to driver activities)

Hence

- How should the deactivation of driving by driver be addressed?
 - Temporary deactivation? or
 - Geographical deactivation?



Section 2, Driverless vehicles

Consider infrastructure changes

Why?

- Infrastructure changes can help increase safety, e.g. when entering to or exiting from driverless vehicles by passengers
- They can also help improve traffic flows

but

- Any changes should take into account the coexistence of driverless vehicles and conventional road users



From informal document no. 4:

Art7. Other measures and policies to optimize the road safety benefits of driverless vehicles

to include: Advice concerning policies and programs (e.g., incentives or road use rules) to accelerate usage of driverless vehicles and the consequent realization of safety benefits

Section 3, Operating vehicles from the outside by a human

- Prescribe provisions for operating a highly automated vehicle from the outside
- Define when remote driving turns into self driving by a vehicle



Section 3, Operating vehicles from the outside by a human

Prescribe provisions for operating a highly automated vehicle from the outside

Why?

- Clear rules are always better than debating on differences in interpretation



Section 3, Operating vehicles from the outside by a driver

Define when remote driving turns into self driving by a vehicle

Why?

- As technology develops remote driving and driverless driving may not differ much
 - short distance summon (e.g. 6 m at a parking lot – direct vehicle visibility by a driver) vs long-distance summon (e.g. from home to the office – no direct vehicle visibility by a driver) though both initiated by pressing a button on an electronic device



A process to develop a non-binding instrument

WHO?

It is a process to be fully “owned” and led by WP.1 (no change to status quo)

- WP.1 will discuss policy papers as received
- WP.1 will consider and negotiate formulation of statements, recommendations or draft legal provisions of the non-binding ancillary instrument
- WP.1 will take decisions (it is the only body with a mandate to do so)

Support?

The work of WP.1 can surely benefit from expert support in preparing drafts for considerations, negotiations and discussion at WP.1 sessions

Therefore

A proposal to request secretariat working with country experts to prepare policy papers, draft provisions, etc. in between WP.1 sessions

Important! Drafters draft at request of WP.1, they do not agree, negotiate, they are not referred to, they only attempt to prepare as a team sound drafts for WP.1 to work with

A process to develop a non-binding instrument

HOW?

A two-step approach for developing the instrument(s):

Step 1: Elaborate on policy questions and find answers to them

- Hold round tables in search for answers (when necessary and decided by WP.1)

Step 2: Prepare draft legal provisions (or maybe only recommendations/principles/statements) based on step 1

Draft legal provisions vs recommendations/principles

Section 1: Legal framework in place (Conventions) – set of recommendations/guidelines/agreed statements may be sufficient to help address commercialization and use of highly automated vehicles in accordance with the general rules in the Conventions

Section 2: Legal framework missing – creating a (general) legal framework in a medium term can be very helpful – agreeing on statements but drafting them in a form of legal provisions to be included in a non-binding instrument might be an effective way forward (define driverless driving, rules for riding, use of hybrid steer, infrastructural changes.....)