

# How to define automated vehicles in UN-ECE regulations

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## The current situation

$M_1$  = a passenger car



- It's safe, clean and quiet.
- It meets numerous ECE regulations and others worldwide
- It's tested before placing the market, and
- It has a driver



## The current situation

$M_1$  = a passenger car



- It's safe, clean and quiet.
- It meets numerous ECE regulations and others worldwide.
- It's tested before placing the market, and
- It has a driver for some of the time.



## The current situation

$M_1$  = a passenger car



- It's safe, clean and quiet.
- It meets numerous ECE regulations and others worldwide.
- It's tested before placing the market, and
- It might have/doesn't have a driver.





## The current situation

$M_1$  = a passenger car

This vehicle has the same number of seats but is it a passenger car?



- How do we define it?
- It's clean and quiet.
- How do we assess it for safety?
- Should it comply with the same regulations as a passenger car?
- It's not designed for a driver.
- It could be designed for a remote operator.



## The current situation

$N_1$  = light duty/goods vehicle



This “vehicle” fulfils a delivery function but is a goods/duty vehicle?



- It's clean and quiet.
- It travels at low speeds - 6km/h.
- Does it meet any regulatory requirements
- (EMC, Safety, etc)?
- It doesn't have a driver.
- It probably has a remote operator.
- Does it use the highway/  
interact with other road users?



## The current situation

$N_{1-3}$  = duty/goods vehicle

- As individual vehicles, they are;
- safe, clean and quiet.
- They meet numerous ECE regulations and others worldwide.
- They're tested before placing the market, and
- It does have a driver.



$N_{1-3}$  = duty/goods vehicle

- As a platoon/or a system – the system must be;
- **Safe**
- Might have/ doesn't have a driver.



## The near future situation

$M_1$  = a passenger car

and/or

$L_6/L_7$  = a quadricycle



- It's clean and quiet.
- How do we assess it for safety?
- Should it comply with the same regulations as a passenger car or  $L_6/L_7$ ?
- It's tested before placing on the market, and
- It might have/doesn't have a driver.





## The near future situation?

$M_1$  = a passenger car

and/or

$L_6/L_7$  = a quadricycle



- It's clean and quiet.
- How do we assess it for safety?
- Should it comply with the same regulations as a passenger car or  $L_6/L_7$ ?
- It's tested before placing on the market, and
- It might have/doesn't have a driver.



## The issues for WP29

How do we define these new vehicles/mobility concepts?

We could re-categorise them as a separate class within RE3/SR1 - say category 'A' (for automated vehicle e.g.  $A_1$ ,  $A_2$ ,  $A_3$ , etc).

We could create sub-categories of the current system – say category  $M_{1A}$ ,  $M_{2A}, \dots$ ;  $N_{1A}$ ,  $N_{2A}, \dots$ ;  $L_{6A}$ ,  $L_{7A}$ , etc).



$M_1$ ,  $M_{1A}$  or  $A_1$ ?



$N_3$ ,  $N_{3A}$  or  $A_3$ ?



$M_1$ ,  $M_{1A}$  or  $A_1$ ?



## The issues for WP29

**Whichever system of defining these vehicles we choose, there must be clarity on;**

- **the technical requirements – especially for safety,**
- **the driver/user interaction and interface design,**
- **defining the level of technology/autonomous capability.**

**Solving these issues will be crucial for manufacturers, for governments and for users.**