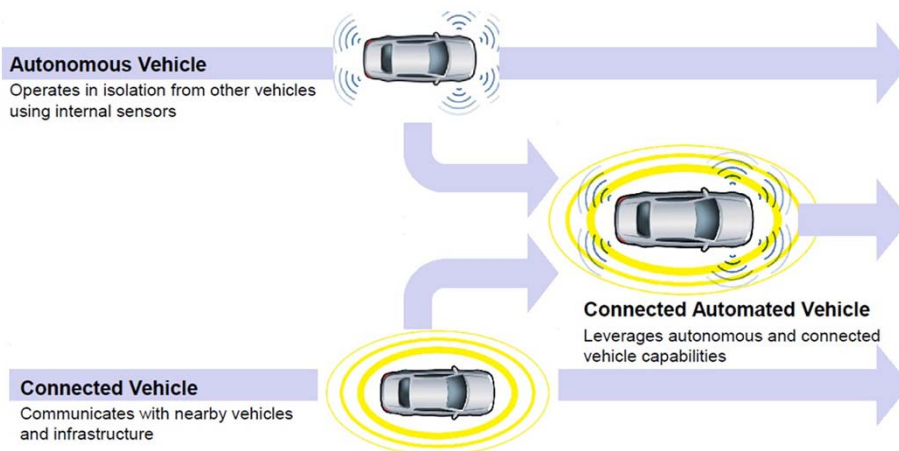# Automated Driving – UNECE International Harmonization

Bernie Frost, Chairman of UNECE/WP29/GRRF
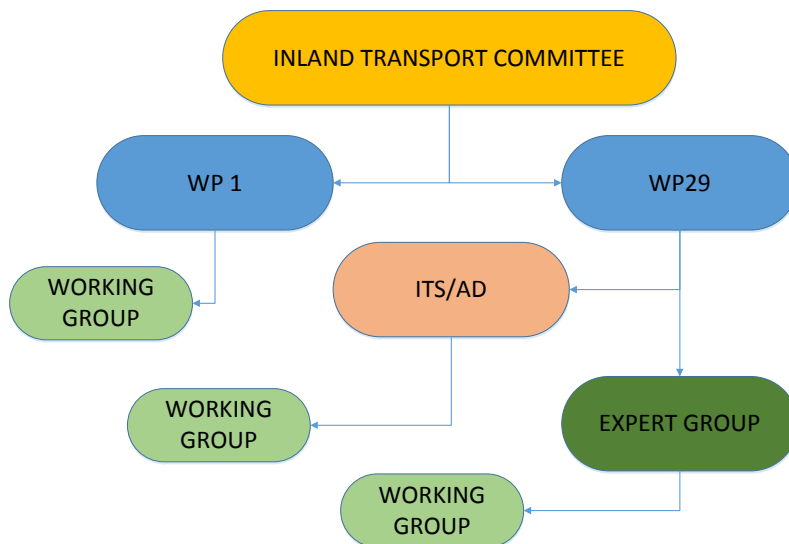

Connectivity & Automation

[Source: US D.O.T.]

UN ECE Responsibilities For Vehicle Automation

INLAND TRANSPORT COMMITTEE

WP 1

WP29

WORKING GROUP

ITS/AD

WORKING GROUP

EXPERT GROUP

WORKING GROUP

3

Working Party 1 - International Road Traffic Conventions

WP1 has responsibility for the Vienna and Geneva Road Traffic Conventions

- A review of how the international road traffic conventions support the use of Advanced Driver Assistance Systems (ADAS) and Automated Driving Functions (ADF).

- The Vienna Convention has been amended to allow for vehicle systems which influence the way that vehicles are driven; the use of ADAS systems is recognised by this wording.

- The Geneva convention has not been modified but synchronisation is still the goal.

- There is a consensus that testing is 'allowed' by both conventions, as long as a driver (or operator) is ready, willing and able to retake vehicle control if necessary.

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World Forum for Harmonization (WP29)

Two principle operating groups:

1. WP29 Informal Group to provide strategic direction for automated technology.
   (Intelligent Transport Systems/Automated Driving Group(ITS/AD))

2. Developing the UN Regulation concerning vehicle steering systems to permit certain levels of autonomy.
   (GRRF and the GRRF Informal Working Group)

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SAE Levels of Automation

| SAE Levels of Automation				
Level	Name	Steering, Acceleration & Deceleration	Monitoring of Driving Environment	Fallback Performance of Dynamic Driving Task
Zero	No automation	Human	Human	Human
One	Driver Assistance	Human & System	Human	Human
Two	Partial Automation	System	Human	Human
Three	Conditional Automation	System	System	Human
Four	High Automation	System	System	System
Five	Full Automation	System	System	System

SAE International and J3016

WP29 Categories of Automated Function

WP29 Classifications Automated Functions	
Category A	Operates at a speed no greater than 10 km/h to assist the driver, on demand, in low speed or parking manoeuvring.
Category B1	Assists the driver in keeping the vehicle within the chosen lane, by influencing the lateral movement of the vehicle."
Category B2	Initiated/activated by the driver and which keeps the vehicle within its lane by influencing the lateral movement of the vehicle for extended periods without further driver command/confirmation
Category C	Initiated/activated by the driver and which can perform a single lateral manoeuver (e.g. lane change) when commanded by the driver.
Category D	Initiated/activated by the driver and which can indicate the possibility of a single lateral manoeuvre (e.g. lane change) but performs that function only following a confirmation by the driver.
Category E	Initiated/activated by the driver and which can continuously determine the possibility of a manoeuvre (e.g. lane change) and complete these manoeuvers for extended periods without further driver command/confirmation."

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Themes of Activity: Regulatory & non Regulatory

8

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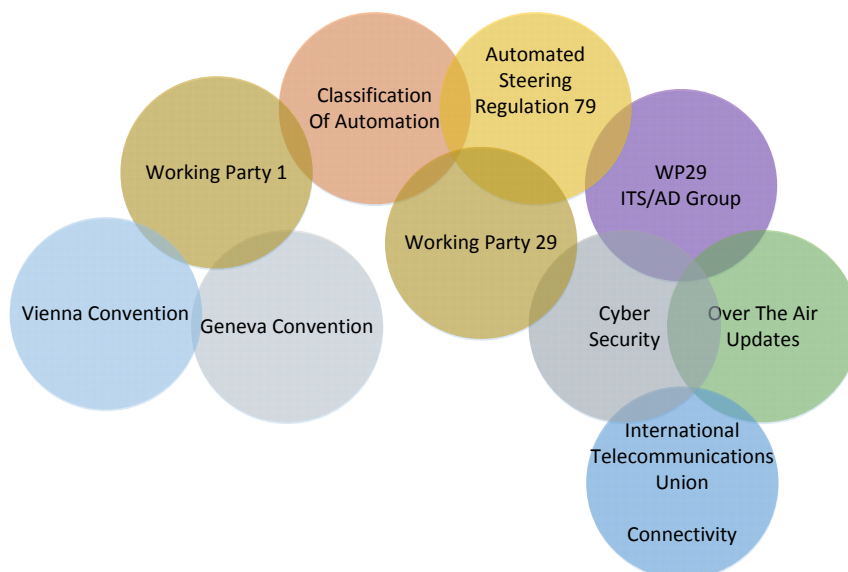
Automatically Commanded Steering Function

Terms of Reference

1. The informal group shall review the requirements and limitations associated with Automatically Commanded Steering Function technology (ACSF) as defined in Regulation No. 79. It shall prepare a draft regulatory proposal regarding advances in control system technology and the transport opportunities provided by the Vienna and Geneva Conventions.

2. The informal group shall address the following issues:
   a. Review the current speed limitation (10 km/h) with the purpose of permitting ACSF functionality during interurban journeys.
   b. Define Human Machine Interface (HMI) requirements for communicating between ACSF-system and the driver (e.g. system status, malfunction, transition).
   c. Define requirements to enable the evaluation of ACSF during periodic technical inspection.

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Items of Immediate Discussion (1)

- Category A and Category B1 – proposals being presented to WP29 next month for application from April 2018.

- Categories B2, C, D & E to be discussed
  - Does Category C introduce risk of misuse?
    - Should traffic sensors be mandated or should they be prohibited?
  - Can transition to driver control with a Category E system be managed in a timely and safe manner?

- Extend activity to systems of SAE level 3 and 4 capability.
- Vehicle and system-status data:
  - What should be stored?
  - Who should have access to it?

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Items of Immediate Discussion (2)

WP29
ITS/AD Group

Cyber
Security

Over The Air
Updates
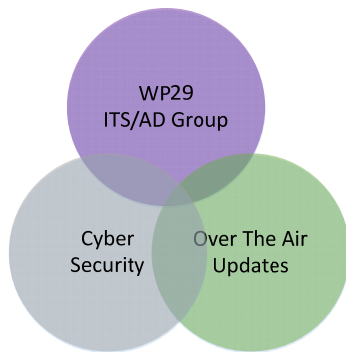
- **Cyber Security:**
  - **Personal Privacy**
  - **Data Security**
  - **Vehicle Theft**
  - **Vehicle as a Weapon**

- **Over the Air Software Updates:**
  - **Maintain Highest Level of Safety**
  - **Safety / Compliance Assessment**
  - **Cyber Attack Surface**

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Thank You

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Department
for Transport