London, 7 January 2016

Adaptive Approaches to Regulation
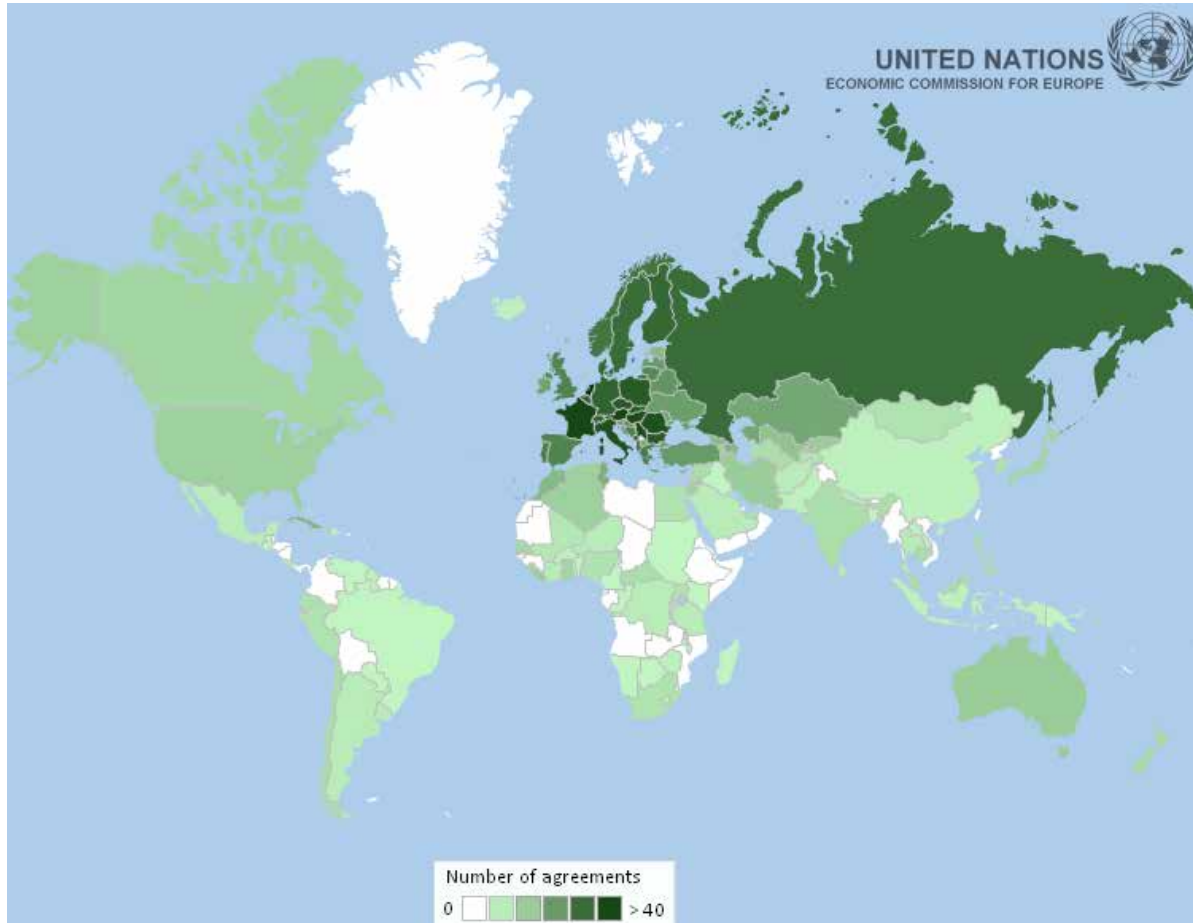
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UNECE Sustainable Transport Division Centre of UN Transport Conventions

The World Forum for Harmonization of Vehicle Regulations (WP.29)

- UNECE Transport Division: secretariat to WP.29 for more than 50 years

- WP.29 is:
  - the unique worldwide regulatory forum for the automotive sector
  - administrating three multilateral UN Agreements

Construction regulations
1958 Agreement – Type Approval Regulations with mutual recognition of the type approvals
1998 Agreement – Global Technical Regulations

In Use PTI regulations
1997 Agreement – Adoption of uniform conditions for Periodical Technical Inspections of Wheeled Vehicles and the reciprocal recognition of such inspection

What is WP.29 doing?
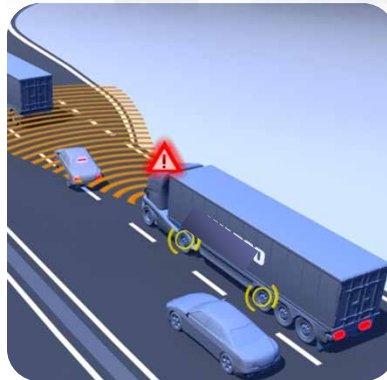

Emissions of pollutants and CO_2
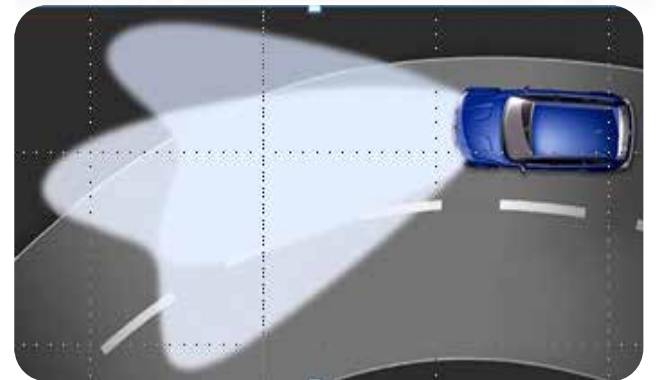

General safety

Passive safety

Noise

Active safety


Lighting and light signalling

Regulatory principles

- UN Vehicle Regulations are performance oriented

- UN Vehicle Regulations avoid as much as possible design restrictions
  - e.g.: UN Regulation No. 94 on Frontal Collision: criteria are maximum acceleration for head and injury of neck and different parts of the body for driver and passengers; Fitting of air-bags is not a requirement, however once fitted markings and warning lables are required

- Amendments to UN Vehicle Regulations to follow technical/scientific progress
  - e.g.: Ageing of population ⟶ average body capable to cope with lower accelerations ⟶ amendment of criteria to lower accelerations
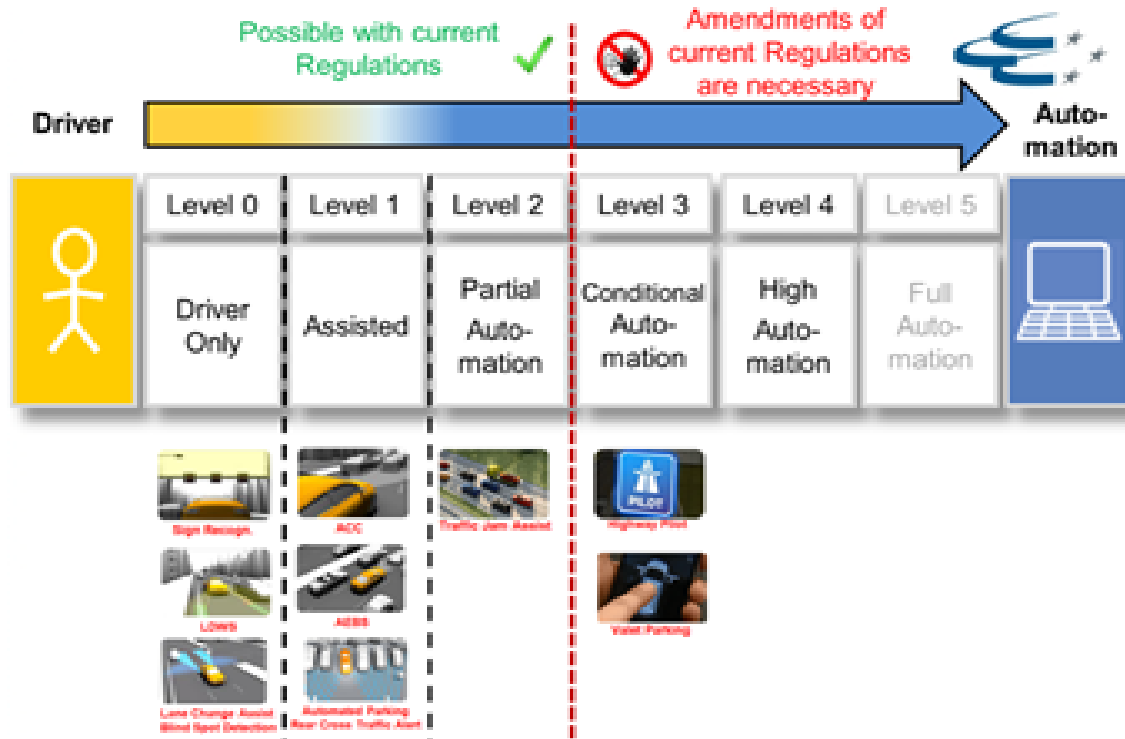
Safety improvement:

- ABS, ESC
- LDWS
- LKAS, ACC

- Traffic jam assist
- Highway autopilot

- Platooning
- Automated driving

Challenges

| Vehicle approval/certification regulation challenges	Other challenges

• Adapt existing vehicle construction regulations (WP.29)
    • Update existing Regulations
    • Define proper HMI concepts
    • Identify side effects and address them
    • Design new safety concepts
    • Address interoperability issues
 	
• Integrate new technologies & standardization work (e.g. from ITU, ISO, IEC, IEEE)
 	
• Not only hardware but also software to be covered (modeling of decision making processes at conflict situations)
 	
• Software updates (updates over the air, limitations, need for new or extension of existing approval)
 	
• Address data security / cyber-security
 	
• Don't neglect traditional vehicle safety issues
	• Mixed traffic versus separation
	
	• Adapt traffic rules? (e.g. safety distances?)
	
	• Adapt infrastructure?
	
	• Address security questions
	
	• Revise responsibility / product liability concepts
	    • Define expectations of the product / its Manufacturer
	    • Implement customer protection updates
	    • Adapt the role of the insurance companies and Define balanced relationship between «driver (owner)» / «Manufacturer» / «insurance»

Latest Developments in Vehicle Regulations

Requirements for automated driving functions currently under discussion

– **Low speed manouvers (valet parking)**

– **Autopilot for highway/express-way**
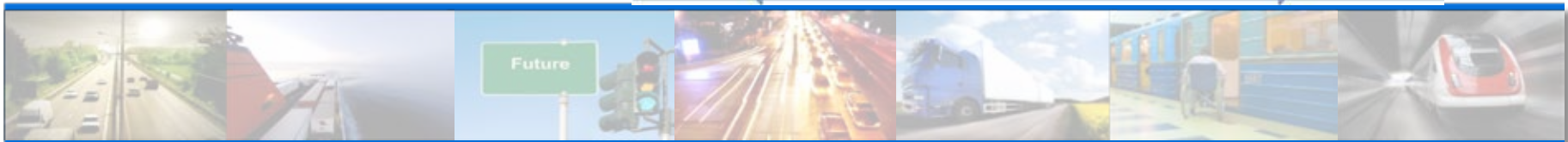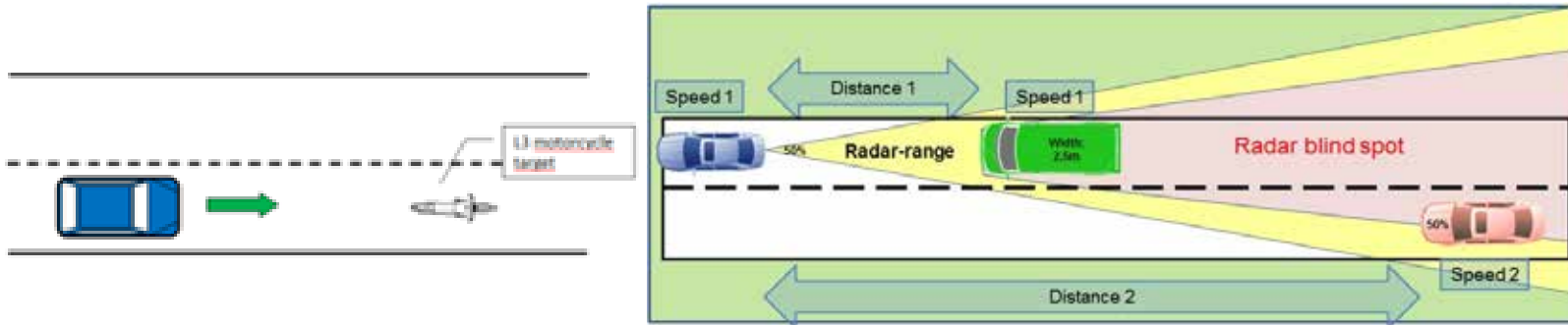
Recent changes in international traffic legislation

- **Amendment of 1968 Vienna Convention on road traffic enters into force 23 March 2016**
  - **Need for a driver**

  Automated driving functions if

    - **approved to UN Vehicle Regulations or**

    - **'master-switch' allowing driver to take over control**

Main objectives
Still open questions

Objectives:

enhancement of safety for road users

avoidance of unfair competition for industry

harmonization as basis for global market

Open Questions:

What needs to be regulated?

When is regulation needed?

How deep should these regulation go?

THANK YOU
FOR YOUR ATTENTION

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