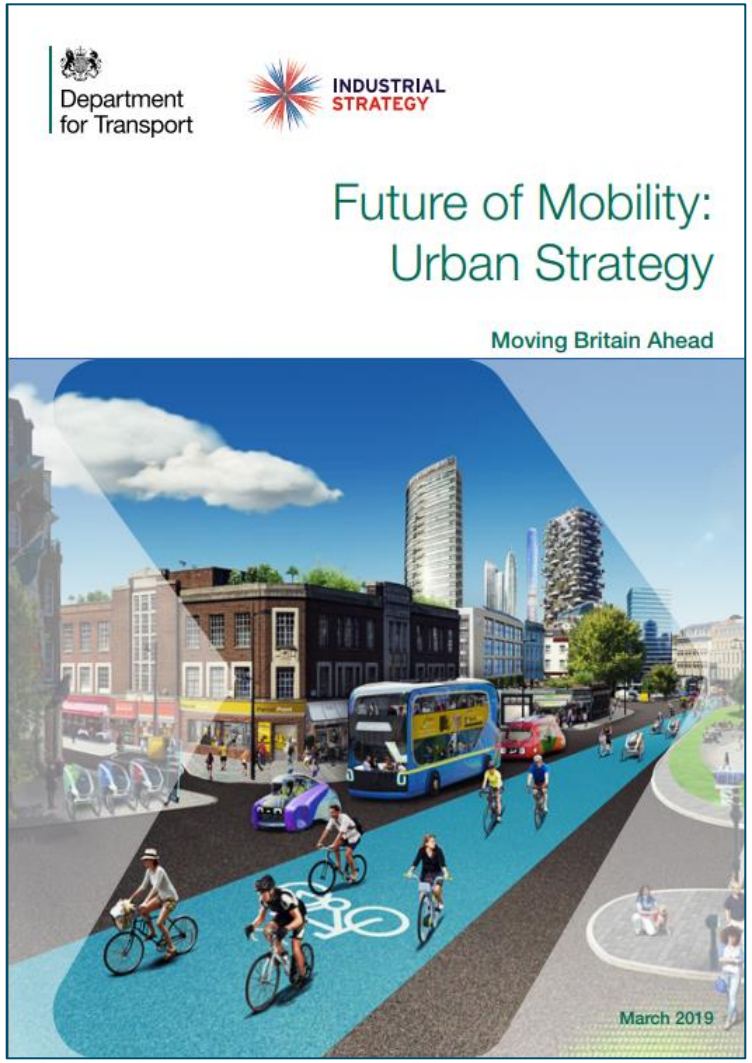
Department for Transport

UK AV Activity and related UN trends.

Bernie Frost

UK principles

1. New modes of transport and new mobility services must be safe and secure by design.
2. The benefits of innovation in mobility must be available to all parts of the UK and segments of society.
3. Walking, cycling and active travel must remain the best options for short urban journeys.
4. Mass transit must remain fundamental to an efficient transport system.
5. New mobility services must lead the transition to zero emissions.
6. Mobility innovation must help to reduce congestion through more efficient use of limited road space.
7. The marketplace for mobility must be open to stimulate innovation and give the best deal to consumers.
8. New mobility services must be designed to operate as part of an integrated transport system combining public, private and multiple modes for transport users.
9. Data from new mobility services must be shared where appropriate to improve choice and the operation of the transport system.



A clear plan

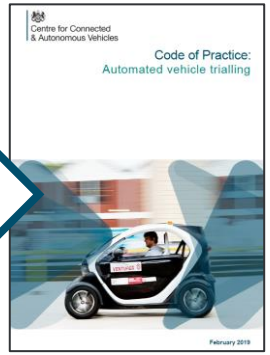
A clear regulatory pathway

Joint investment in R&D

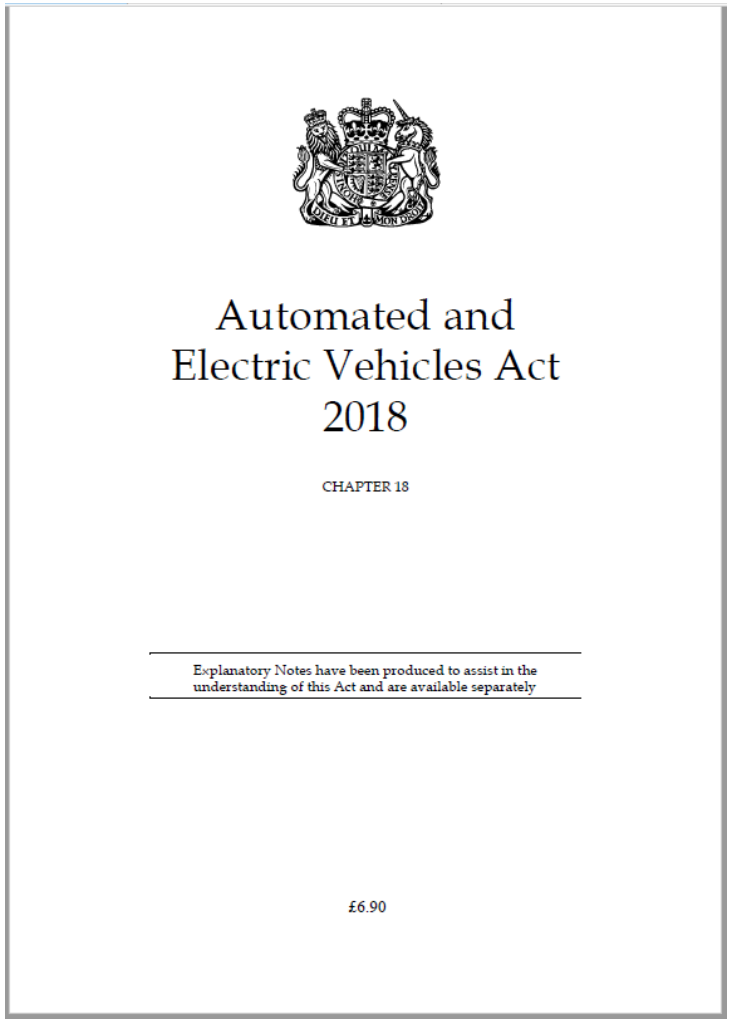
An integrated testbed ecosystem

A clear regulatory pathway

	Current situation	Short term	Long term
Trialling	**Code of Practice** for trials on public roads with human safety operator	New procedure for trials with no human safety operator	Integrating real world and simulated trialling
Vehicles	Prototype approvals	**CAV PASS**: A safety and security assurance process	International standards for fully self-driving vehicles
Use	Motor insurance framework for self-driving vehicles	**Law Commission** review (2018-21) to establish long term framework	New regulatory framework in place



Automated & Electric Vehicles Act



Automated and
Electric Vehicles Act
2018

CHAPTER 18

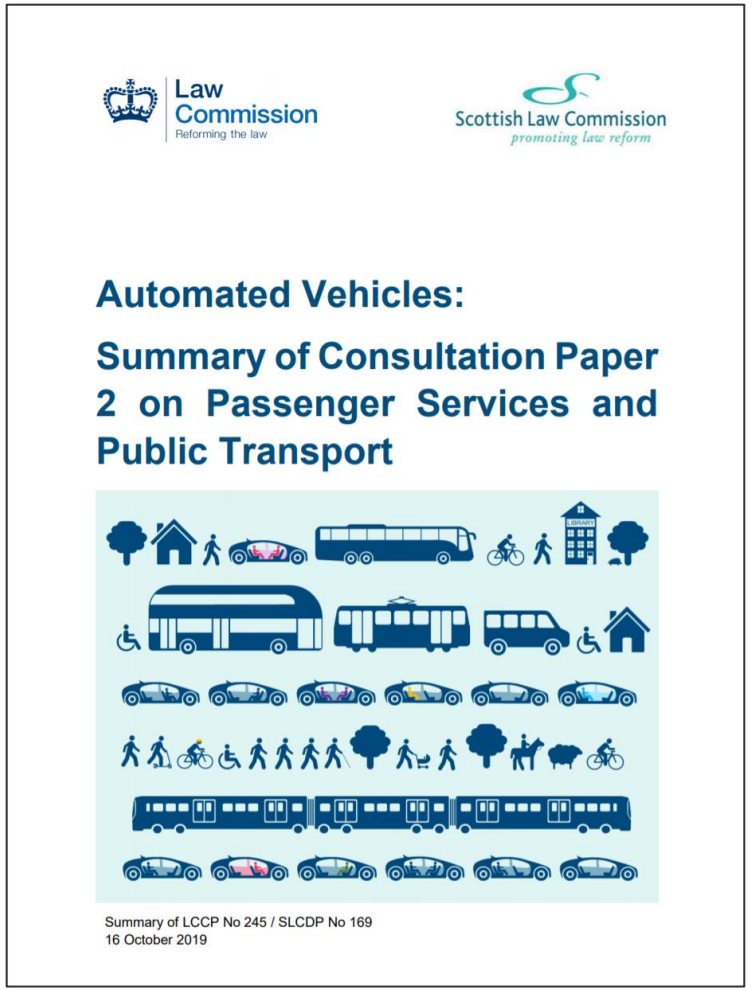
Explanatory Notes have been produced to assist in the understanding of this Act and are available separately

£6.90

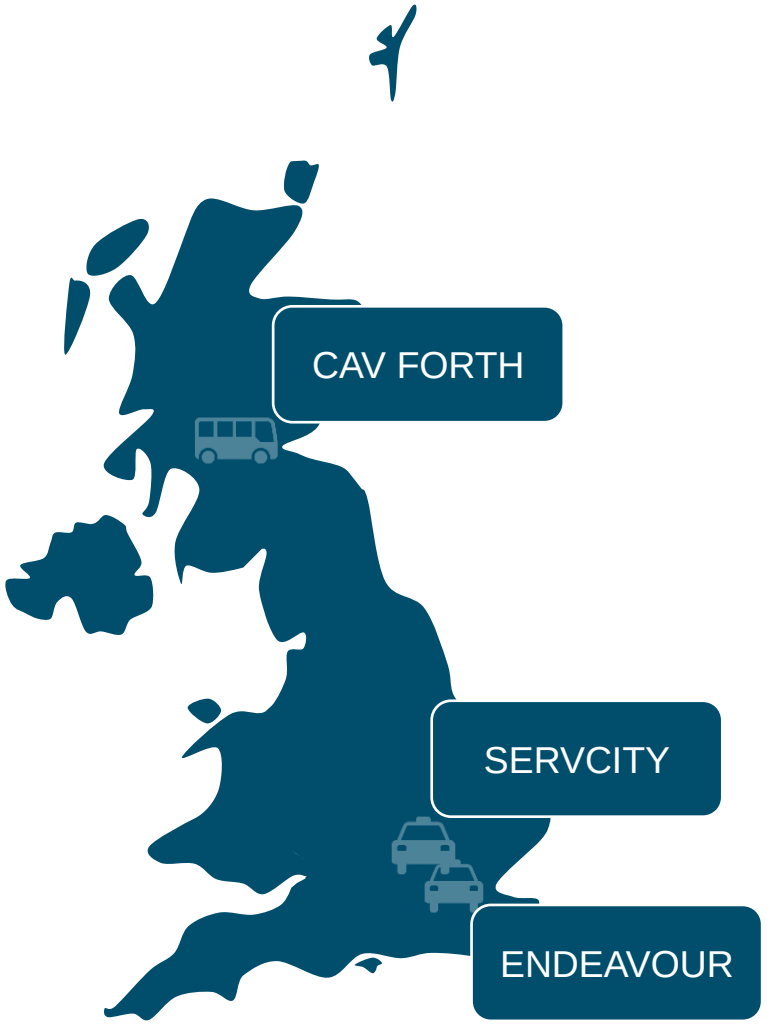
- Establishes a mechanism for a “Secretary of State’s List” of vehicles that have automated driving capability.
- Provides assurance to the public that, in the event of a collision, insurance protection will not be delayed while responsibility is established.

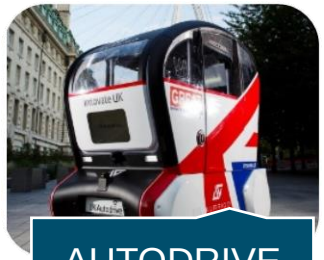
Law Commission Automated Vehicle Regulatory Review

- Automated vehicles which rely on handovers to human drivers require a **“user-in-charge”**.
- Automated vehicles should only be allowed if an **“Automated Driving System Entity” (ADSE)** successfully receives authorisation from the relevant authority.
- An agency should regulate the safety of automated driving systems before they are put on the road, and have power to sanction ADSEs.
- Automated services which operate without drivers should be regulated nationally as **“Highly Automated Passenger Services” (HARPS)**.
- The licensing of HARPs should consider their impact on the transport system of the areas where they operate – congestion, integration with public transport etc.



Joint investment in R&D



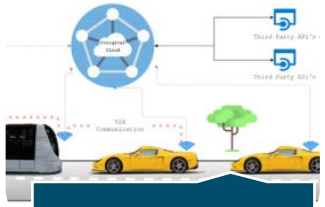

AUTODRIVE


GATEWAY


VENTURER

SHIFT


MULTICAV


SYNERGY


FLOURISH


INSIGHT


CAPRI

T-CABs

ROBOPILOT


STREETWISE


HUMANDRIVE

DRIVEN

An integrated testbed ecosystem

Testbed UK

A CAVWAY
LEICESTERSHIRE
High-speed junctions
Raised junctions

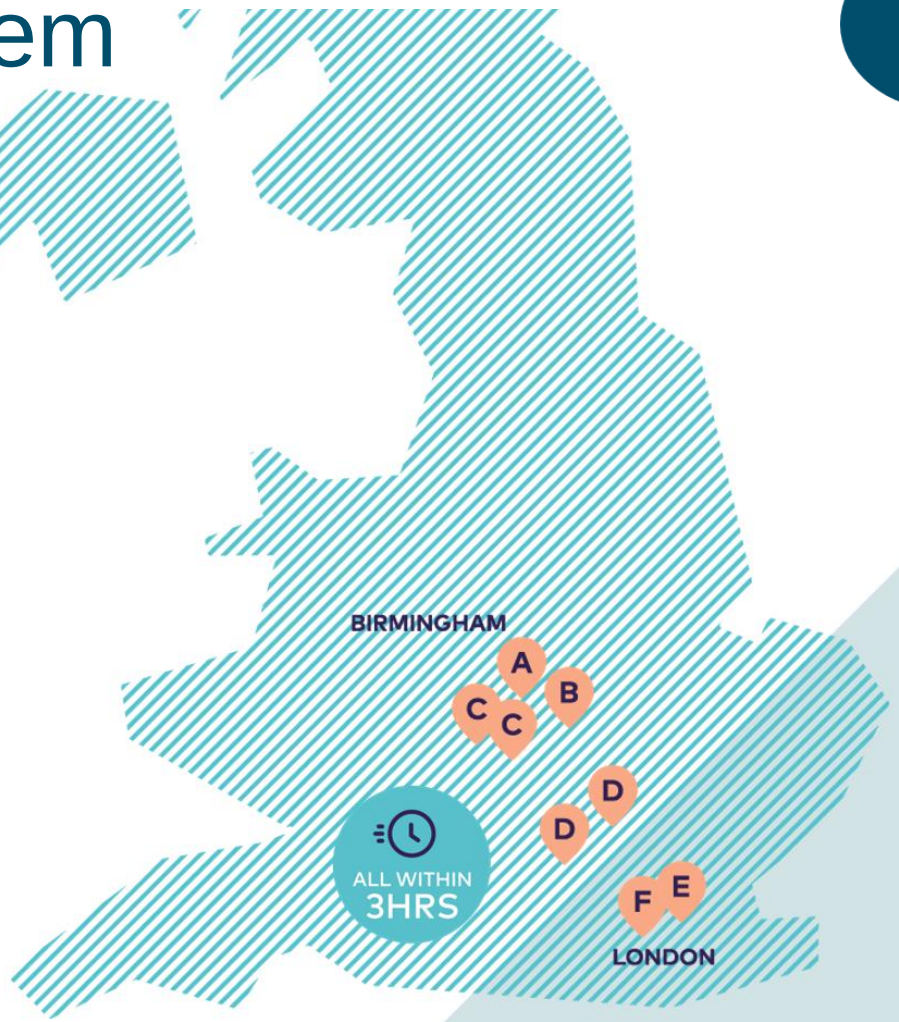
B TIC-IT and PARK-IT
WARWICKSHIRE
Limit of controllability
Connected & configurable
Parking

C Midlands Future Mobility
COVENTRY AND BIRMINGHAM
Highly connected and monitored
Real-world environments

D Millbrook-Culham Urban Testbed
BEDFORDSHIRE AND OXFORDSHIRE
Secure site
Controlled and semi-controlled

E Smart Mobility Living Lab
LONDON
Public and private
London locations
Digital twin capabilities

F ConVEx Project
LONDON
Data
Virtual



ZENZIC

Some future areas of focus

- **Ethics**
  - Risk of moral responsibility gap
  - Due diligence of the design process
  - What data are necessary?
- **Accessibility**
  - Ensuring accessibility by design
  - Engaging a wide range of users
  - Implications for regulations
- **Enabling infrastructure**
  - Data management
  - Road infrastructure
  - Urban design

UNECE – High Level Instruments

Road Traffic Convention on Traffic 1949

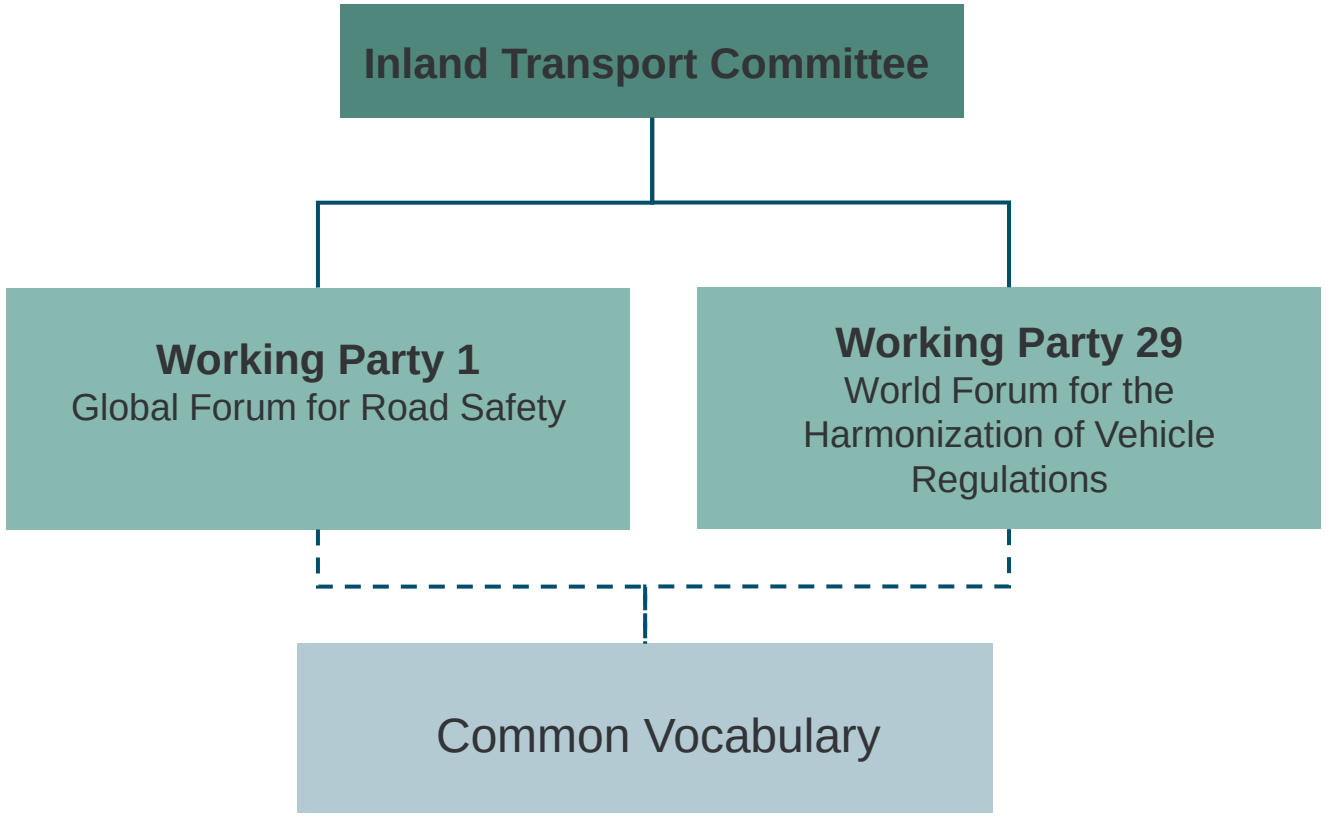
“Vienna Convention” on Road Traffic 1968

“1958 Agreement” - Conditions for Reciprocal Recognition of Approvals

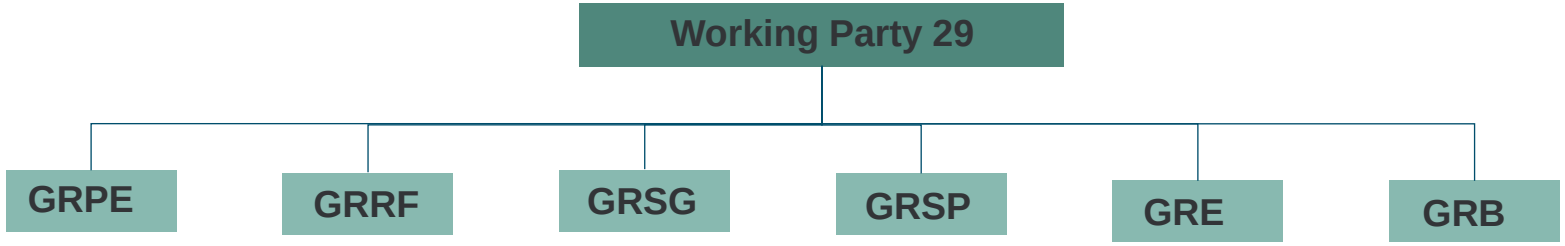
“1998 Agreement” - Establishing of Global Technical Regulations

“1997 Agreement” - Uniform Conditions for Periodical Technical Inspections

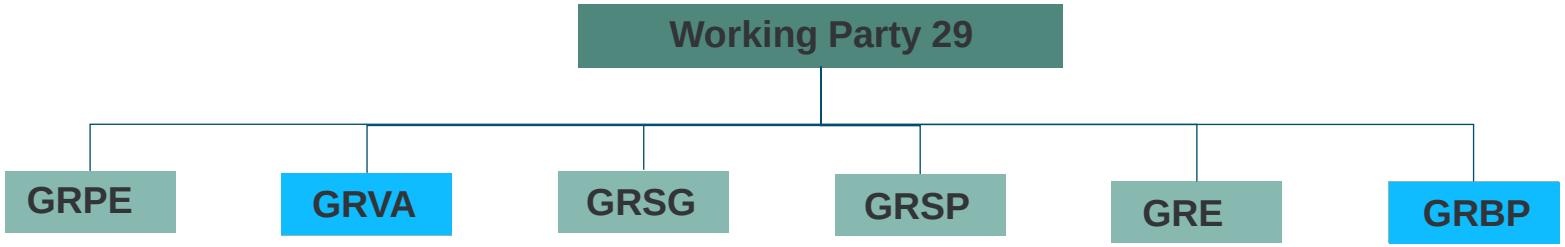
UNECE – Inland Transport Committee



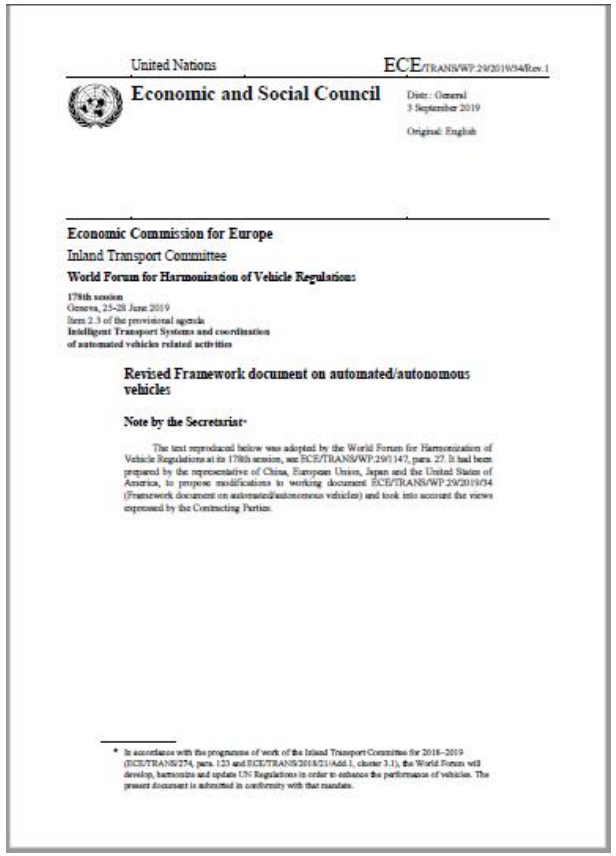
UNECE WP.29



2018 – Expert Groups restructured to provide specific focus on Automated Driving



GRVA: Priority of Work



United Nations ECE/TRANS/WP.29/2019/34/Rev.1

Economic and Social Council

Distr.: General
3 September 2019

Original: English

Economic Commission for Europe

Inland Transport Committee

World Forum for Harmonization of Vehicle Regulations

178th session
Geneva, 25-28 June 2019
Item 2.3 of the provisional agenda
Intelligent Transport Systems and coordination of automated vehicles related activities

Revised Framework document on automated/autonomous vehicles

Note by the Secretariat*

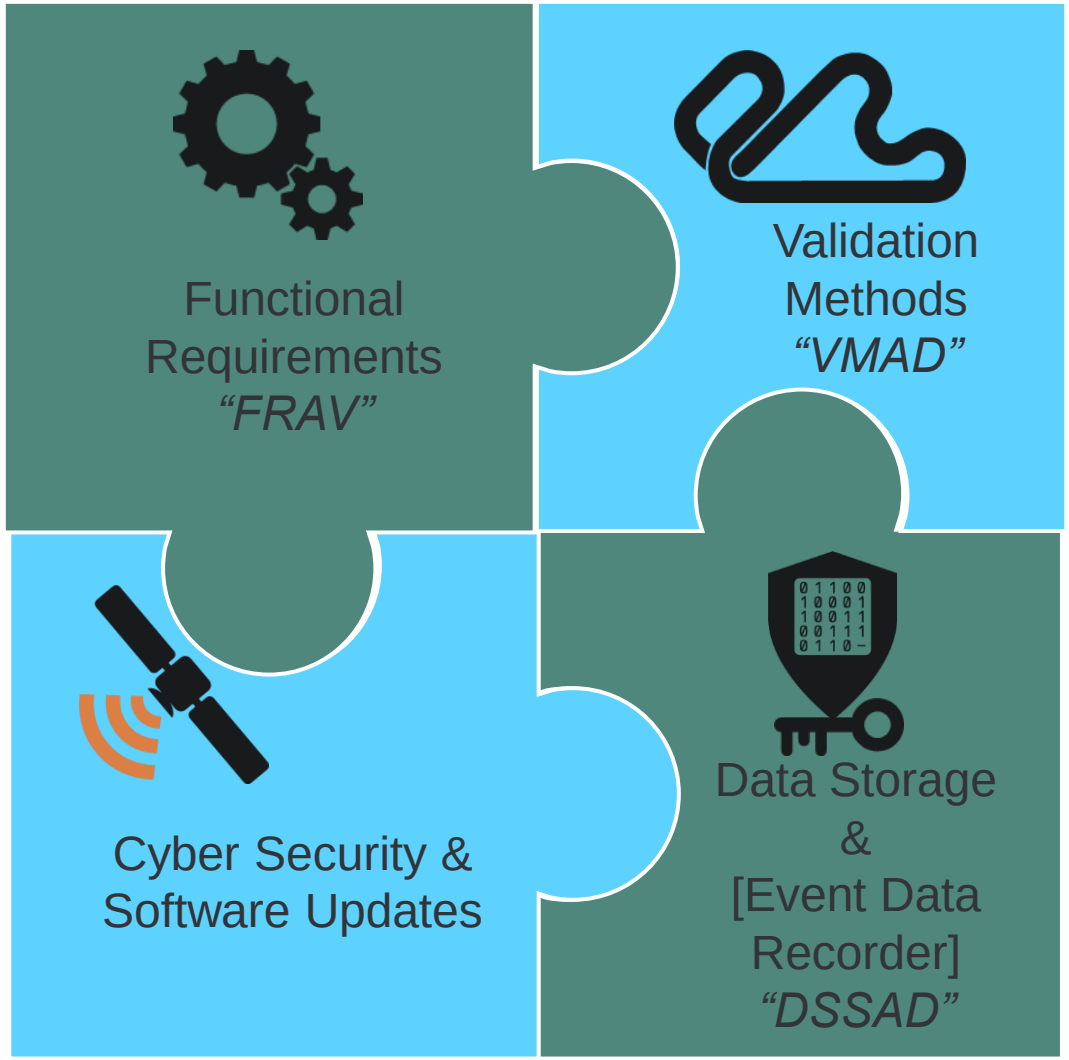
The text reproduced below was adopted by the World Forum for Harmonization of Vehicle Regulations at its 178th session, see ECE/TRANS/WP.29/1147, para. 27. It had been prepared by the representative of China, European Union, Japan and the United States of America, to propose modifications to working document ECE/TRANS/WP.29/2019/34 (Framework document on automated/autonomous vehicles) and took into account the views expressed by the Contracting Parties.

* In accordance with the programme of work of the Inland Transport Committee for 2018–2019 (ECE/TRANS/274, para. 123 and ECE/TRANS/2018/21/Add.1, cluster 3.1), the World Forum will develop, harmonize and update UN Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

WP.29 Framework Document

- Functional Requirements
  Longitudinal control, lateral control, environment monitoring, minimum risk manoeuvre, transition demand, HMI and driver monitoring.
- Validation and Test Methods
  Multi-pillar concept: Audit, simulation, electronic system compliance, digital identity, test track, real world driving evaluation.
- Cyber Security & Software Management
  Responsive to emerging/changing threat.
- Data Storage System for Automated Driving
  Secure and accessible

Technical Groups



Technical Group Objectives (1)

Functional Requirements: *"FRAV"*
Co-Chairs: China, Germany & USA

The combination of control functions for safe deployment:

Longitudinal control (e.g. acceleration, braking and road speed),

Lateral control (e.g. lane discipline),

Environment monitoring (e.g. headway, side & rear separation),

HMI (internal and external)

Driver monitoring

Transition demand,

Minimum risk manoeuvre.

.

Validation Methods: "VMAD"
Co-Chairs: Canada, Japan & Netherlands

Contemporary approach to validate the safety of automated systems.

Based on a "multi pillar" approach, including:

Auditing of system design,

Simulation of functionality,

Virtual testing (modelling),

Proving Ground (Test track) testing,

Real world testing.

Technical Group Objectives (2)

Cyber Security & Software Updates
Co-Chairs: Japan & United Kingdom

Agree common terms and definitions,

Identify and consider key risks and threats,

Address the key risks and threats and measures to assure vehicle safety in case of cyber-attacks,

Define guidance & what assessments or evidence may be required to demonstrate compliance,

Prepare a draft UN Regulation & non-regulatory text for use by administrations.

Data Storage & [Event Data Recorder]*"DSSAD"*
Co-Chairs: Japan & Netherlands

Define the scope and specific objectives of and differences between EDR and DSSAD,

Define EDR and DSSAD requirements;

the categories of data recorded,

the events triggering data recording,

the performance specification such systems, e.g.

- endurance, accessibility, storage capacity
- the required privacy and data protection.

Working Practice

Basic Principle:

Open and transparent development

Delivery of draft text that is suitable for application according to national / international preference, e.g.

- Guidelines
- Resolution
- Type Approval
- Self Certification

Guiding Principles:

a. System Safety

b. Failsafe Response

c. Human Machine Interface (HMI)

d. Object Event Detection and Response (OEDR)

e. Operational [Design] Domain [(ODD/OD)]

f. Validation for System Safety

Department for Transport

Thank You

Bernie Frost

bernie.frost@dft.gov.uk