AUTOMOTIVE SUMMIT 2019
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Panel Discussion

Connected Autonomous Vehicle(CAV)

Solution for global road safety ?

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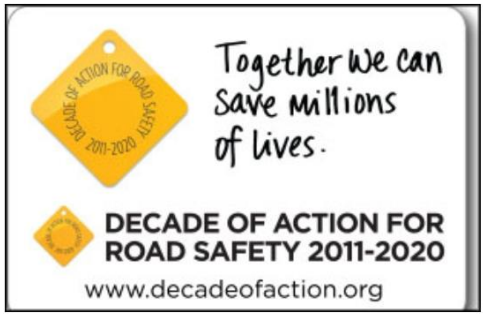
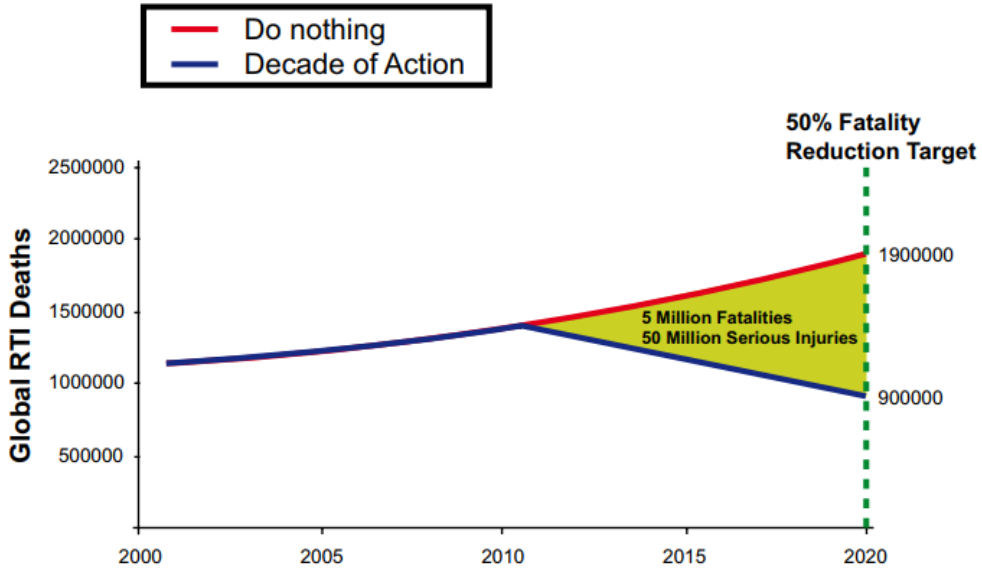
Decade of Action for Road Safety 2011-2020

- **Seeks to save 5 million lives during the Decade of Action**
  - Officially proclaimed by the UN General Assembly in March 2010 as a **Global Plan**

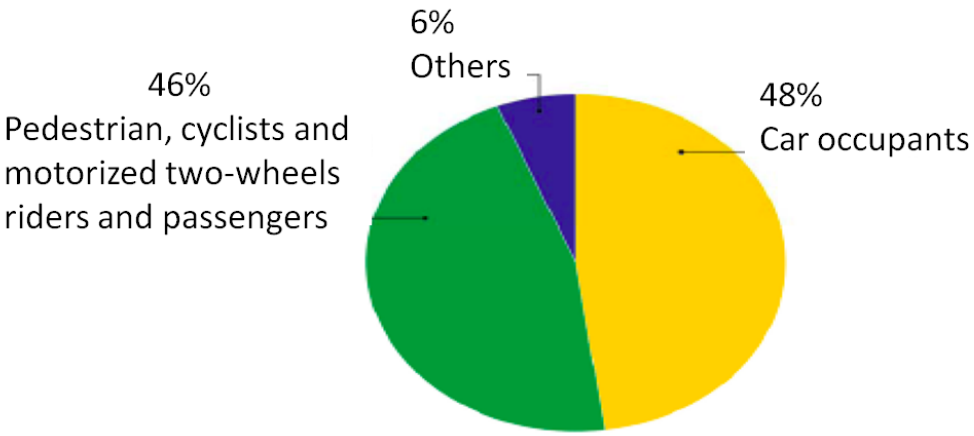
"Now we need to move this campaign into high gear and steer our world to safer roads ahead. Together, we can save millions of lives."
UN Secretary-General Ban Ki-moon



- **Final Goal : Reduction of about 50% on the predicted global death toll by 2020**



- **Global road traffic deaths by type of road user analyzed by WHO**



- **5 Pillars of the global action plan**

National Activities

Pillar 1	Pillar 2	Pillar 3	Pillar 4	Pillar 5
Road safety management	Safer road and mobility	Safer vehicles	Safer road users	Post-crash response

International Coordination of Activities

- **Pillar 3 : Safer vehicles**

Encourage universal deployment of improved vehicle safety through the harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies

Activity 1: Encourage Member States to **apply and promulgate motor vehicle safety Regulations as developed by WP.29***

* World Forum for the Harmonization of Vehicle Regulations

Activity 2: Encourage **implementation of new car assessment programmes in all regions** in order to increase the availability of consumer information about the Safety performance of motor vehicles

Activity 3: Encourage **agreement to ensure that all new motor vehicles are equipped with seat-belts** and **anchorages that meet regulatory requirements** and **pass applicable Crash test standards**

Activity 4 : Encourage **universal deployment of crash avoidance technologies with Proven effectiveness** such as Electronic Stability Control and Anti-Lock Braking Systems in motorcycles.

Decade of Action for Road Safety 2011-2020

Activity 5 : Encourage the use of fiscal and other incentives for motor vehicles that provide high levels of road user protection and discourage import and export of new or used cars that have reduced safety standards

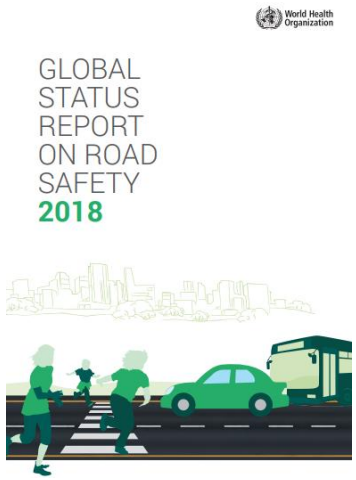
Activity 6 : Encourage **application of pedestrian protection regulations** and **increased research into safety technologies designed to reduce risks to vulnerable road users**

Activity 7 : Encourage managers of governments and private sector fleets **to purchase, operate and maintain vehicles that offer advanced safety technologies and high levels of occupant protection**

However, The number of deaths on the world's roads remain unacceptably high with 1.35 million people dying each year* !!

➧ **Goal of Decade of Action of UN to halves road deaths and injuries by 2020 will not be met without drastic action**

- **Source : Global status report on Road safety 2018 by WHO,**
- ISBN 978-92-4-1-156568-4



Connected / Autonomous Vehicle

- **Connected / Autonomous Vehicles will be one of the solutions !!**







● The expected advantages

✓To remove human factors of traffic accidents

To reduce traffic accidents

- (USA) Annual cost of traffic accidents reduced by $488 bn. (Morgan Stanly, 2013)
- (Korea) To reduce mortality ratio of expressway traffic accidents by 50% in 2025 → Annual cost reduced by KRW 500 bn. (Ministry of Industry, Trade, and Energy, 2014)

✓To use driving time for leisure

To improve quality of life & productivity

- (USA) 50 minutes/driver, day of leisure time created → Creation of annual economic effects of $159 bn. (McKinsey 2015)
- (USA) Annual $507 bn. (Morgan Stanly, 2013)

✓A new concept of traffic means

To realize general welfare

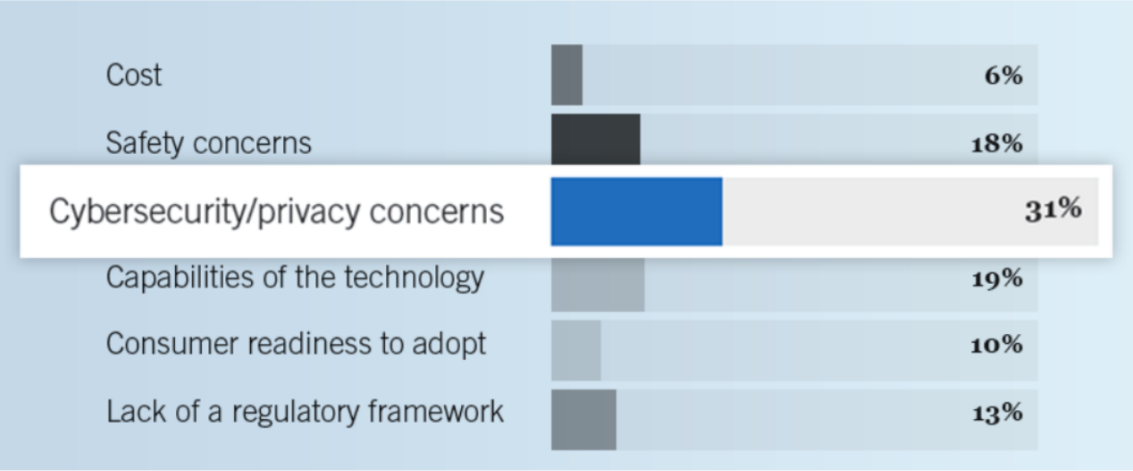
- Improve movement means of traffic-vulnerable persons
- Adoption of new concepts of traffic means such as car-sharing, and car-pooling (McKinsey 2015)

✓To reduce traffic congestion

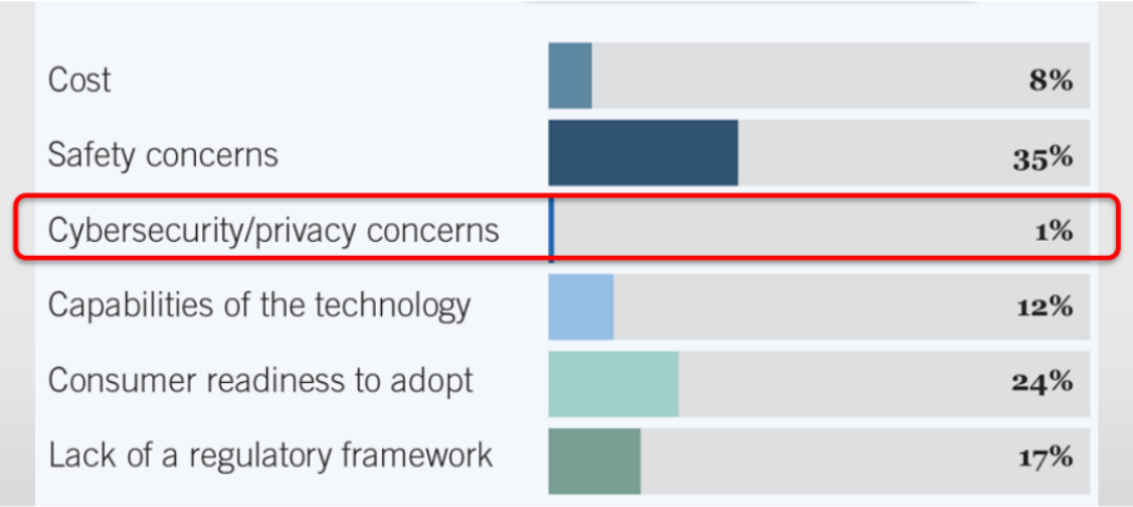
To reduce exhaust gas & energy consumption

- (USA) Annual fuel cost reduced by 30% (approximately $158 bn.) (Morgan Stanly, 2013)
- CO_2 reduce by 60% due to optimal driving (McKinsey, 2015)

- **The biggest obstacle to the growth of Connected & Autonomous Vehicles**
  - **Connected Vehicles**

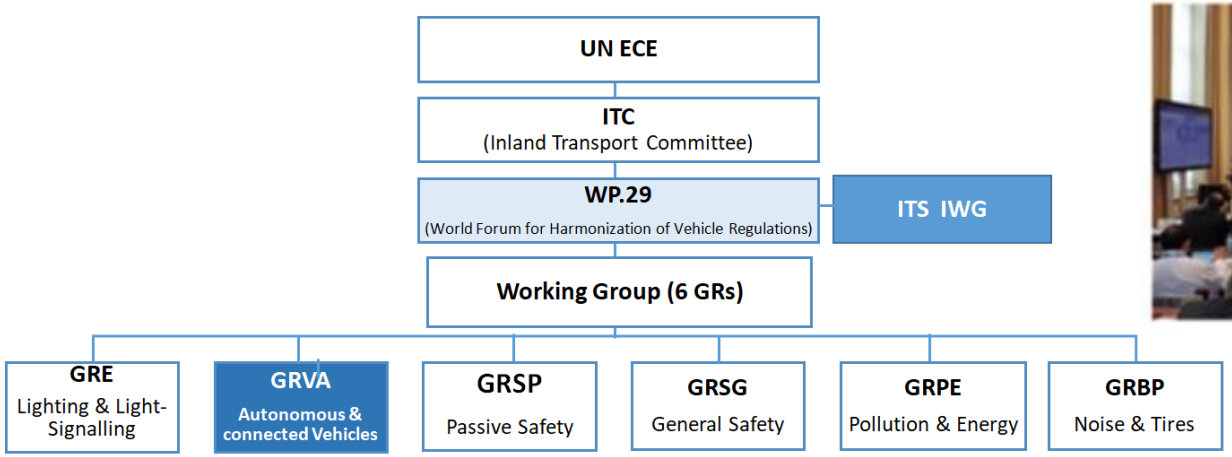


  - **Autonomous Vehicles**

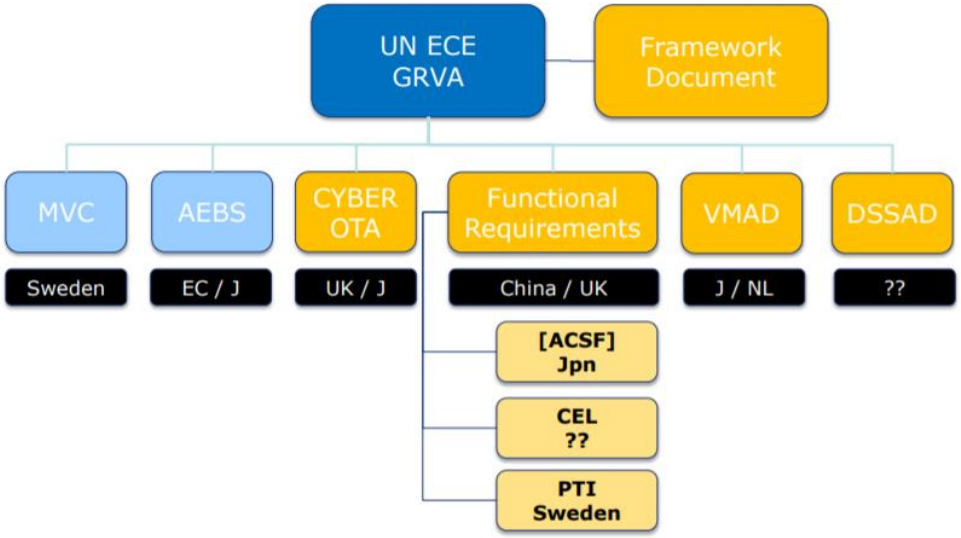


Source : Foley, 2017 connected Cars & Autonomous Vehicles Survey

Organization of WP.29 & GRVA



- **GRVA :** Working Party on Automated/Autonomous and Connected Vehicles



- F.W : Framework document for AV
- FRVA : Functional Requirement for AV
- VMAD : Validation Method for AD
- DSSAD : Data Storage System for AD
- ALKS : Automatic Lane Keeping System
- CEL : Complex Electronic Vehicle Control System

WP.29 's Activities on Autonomous Vehicles

Priority of WP.29

- **IWG on ITS-AD under WP.29** started in 2014
  - Guidelines on Cyber security and data protection
  - Reference document with definitions of Automated Driving under WP.29 and the General Principles
  - Establishment of the TF on Cyber Security and OTA
  - Establishment of the AutoVeh Task Force
  - Brainstorming sessions
  - ...

- **GRRF** (Brakes & Running Gear) since 2014
  - Automatically Commanded Steering Functions
  - Removal of the 10 km/h limit in some cases
  - Lane keeping system (ACSF of category B)
  - Lane change assist (ACSF of category C)
  - Remote Control Parking (ACSF of Category A)
  - Corrective Steering Function (clarifications)
  - Emergency Steering Function

WP.29 's Activities on Autonomous Vehicles

- **Work of GRVA : Automated/Autonomous & connected vehicles**
  - **Created in June 2018**
  - **First session in September 2018**
  - **Built on GRRF:**
    - Focus on Automation and connectivity, while continuing to develop ADAS & safety systems
    - Taking forward subgroups on:
      AutoVeh (now called VMAD)
      Cyber security and OTA
  - **First delivery:**
    - New UN Regulation on Advanced Emergency Braking Systems (AEB systems) for M1/N1

- **Detailed WP.29 work priorities** related to automated/autonomous vehicles

  - Functional Requirements for automated / autonomous vehicles
  - New assessment / Test method
  - Cyber security and (Over-the-Air) Software updates
  - Data Storage System for Automated Driving vehicles (DSSAD)

Title	*Allocation to*	*Main targets*	*Comments*	*Deliverable/ Deadline*
Functional Requirements for automated / autonomous vehicles	GRVA	Automated / Autonomous vehicles	This work item should cover the functional requirements for the combination of the different functions for driving: longitudinal control (acceleration, braking and road speed), lateral control (lane discipline), environment monitoring (headway, side, rear), minimum risk maneuver, transition demand, HMI (internal and external) and driver monitoring. This work item should also cover the requirements for Functional Safety.	[March 2020: Common principles based on existing national/regional guidelines and other relevant reference documents] [March 2020: Functional requirements Lane Keeping systems of SAE levels 3/4 (New UN Regulation for contracting parties to the 1958 Agreement)
New assessment / Test method	GRVA	Automated / Autonomous vehicles	Multi-pillar concept: Audit, simulation, electronic system compliance, digital identity, test track, real world driving evaluation. This work item should also cover the assessment of Functional Safety.	[March 2020: review of the existing and upcoming methods and a proposed way forward for the assessment of automated/ autonomous vehicles] [March 2020: The test and assessment method for Lane Keeping systems of SAE levels 3/4 as New UN Regulation for contracting parties to the 1958 Agreement]
Cyber security and (Over-the-Air) Software updates	GRVA	Conventional and Automated / Autonomous vehicles	Work of Task Force on Cyber Security and (OTA) software updates (TF CS/OTA) ongoing. Draft recommendations on the approach (based on draft technical requirements).	[March 2020: Review of the test phase on the draft requirements]
Data Storage System for Automated Driving vehicles (DSSAD)	First: GRVA Later: GRSG (in coordination with GRVA)	Automated / Autonomous vehicles	DSSAD are for autonomous vehicles (e.g. accident recoding). This work item should take into consideration of the discussion at GRVA and its Informal Working Group on Automatically Commended Steering Function (IWG on ACSF). Clear objectives, deadline and the identification of differences with EDR to be determined first before discussion on detailed data information.	[March 2020: DSSAD requirements for Lane Keeping systems of SAE levels 3/4 as New UN Regulation for contracting parties to the 1958 Agreement]

http://www.unece.org/fileadmin/DAM/trans/doc/2019/wp29/ECE-TRANS-WP29-2019-34e.pdf

Informal Group on ITS

The Inland Transport Committee (ITC) recognizes that ITS is a key area for the future of an integrated transport system.

The informal group is WP.29’s “eyes and ears” on ITS issues

- The group will keep the Forum updated with the broader vehicle context
- The group will handle the Working Party’s outreach on ICT, Telecommunication and Infrastructure issues that are potentially impacting its work

Let’s join WP.29 for developing CAV technologies and making harmonized regulations !

Thank you for your attention

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