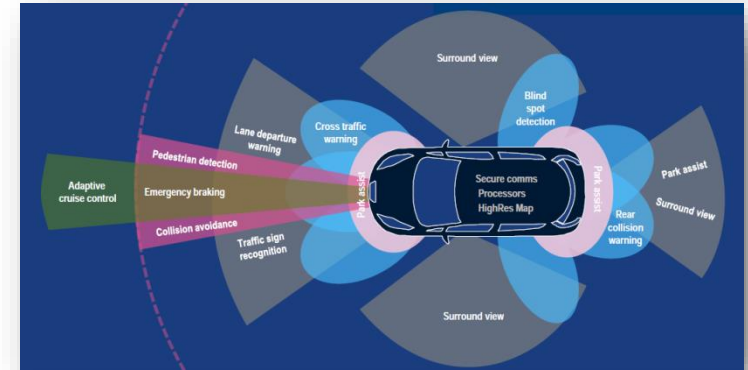**ITU Workshop on Security Aspects of Intelligent Transport System**
**Session 1: Understanding current threats and security requirements**
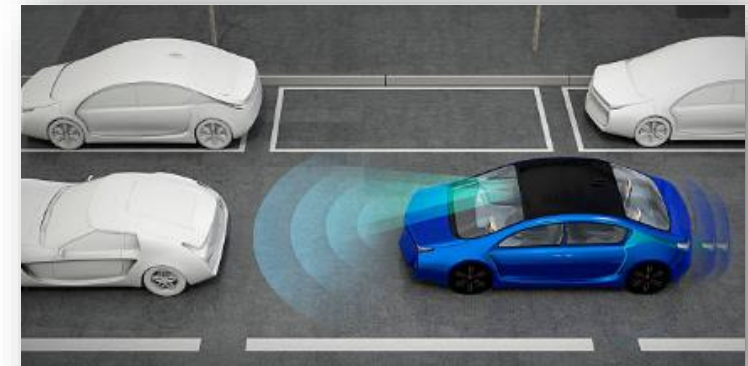
**August 2017, Geneva, CH**

*Security Aspects of Intelligent Vehicle System*



François E. Guichard

Official of the United Nations

Intelligent Transport Systems / Automated Driving Focal Point
UN Secretary of the Vehicle Active Safety Forum (WP.29/GRRF)

# Content

# Content

# UNECE and vehicle regulations

Social Rules
(driving and rest hours)

Road Traffic Rules

Drivers' License

Road Signs and Signals

Vehicle Regulations

Infrastructure (standards and parameters, tunnel safety, all land modes)

E19

Border Crossing Facilitation

Statistics

Dangerous Goods

Incl. their sub-systems and parts

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

- UNECE Transport Division: secretariat to WP.29 for more than 60 years
- Since 2000, WP.29 is:
  - the unique worldwide regulatory forum for the automotive sector
  - administering 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

# UNECE and vehicle regulations



What is WP.29 doing?
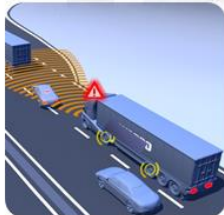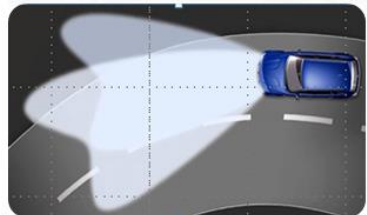
- Emissions of pollutants and $CO_2$
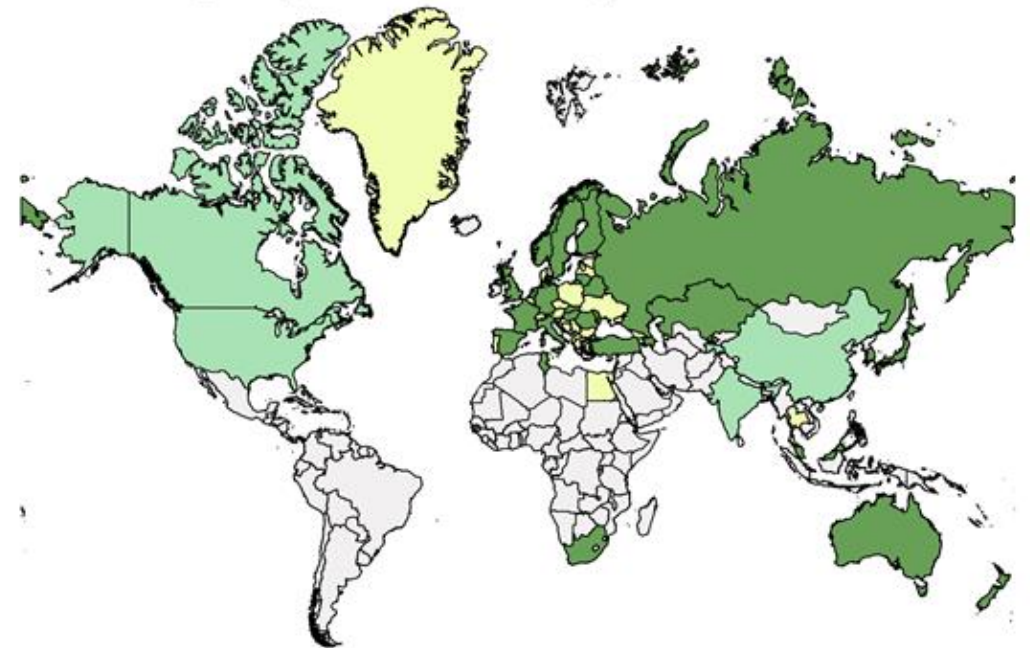- General safety
- Passive safety
- Noise
- Active safety
- Lighting and light signalling

UNECE is the Economic Commission for Europe
Some of its activities are of global nature (e.g. WP.29)
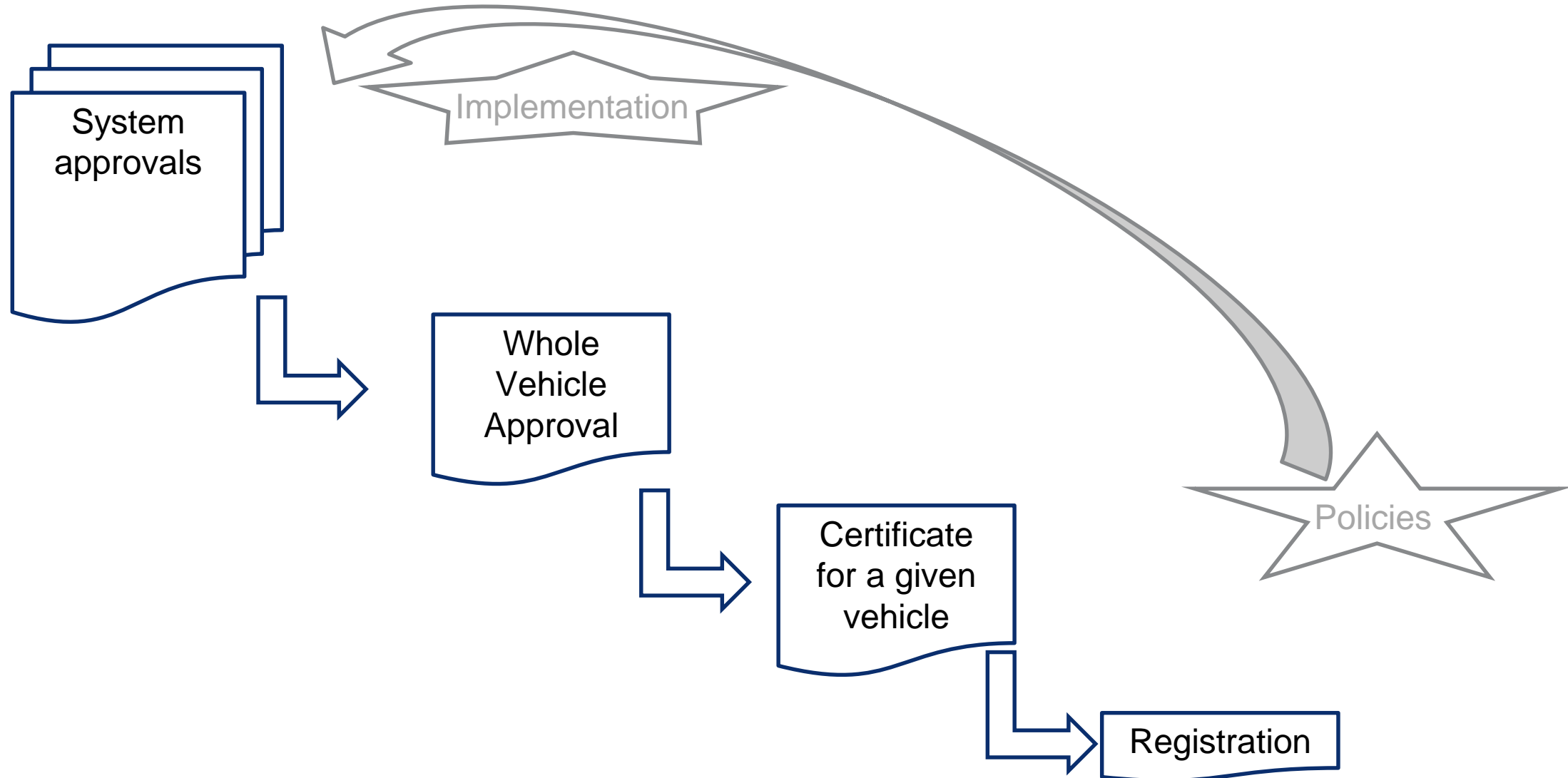Open to all Nations of the United Nations without any limitation or discrimination.



Geographical scope of WP.29

Both agreements | 1998 Agreement | 1958 Agreement | None

PS: this map doesn't show those Countries applying the Regulations unilaterally

# Content

# The purpose of UN type approvals / certificates



System approvals → Whole Vehicle Approval → Certificate for a given vehicle → Registration

Implementation

Policies

# The advantage of a international regulation

For the business sector:

- The "safe harbor"
- Harmonized requirements
- Simpler export (less/no technical barrier to trade)
- Less uncertainty about market acceptance

For Countries and their citizens:

- Safety
- Better trade
- Interoperability
- Facilitated border crossing

*(PS: Standard vs. Regulation*
- *Consensus*
- *Stringency*
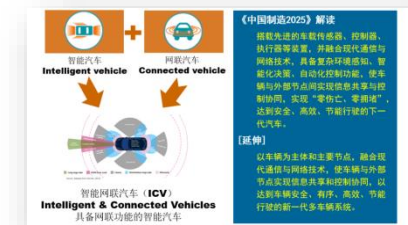- *Voluntary vs. Obligatory nature)*

# Regulation through cooperation with various sectors

- Lighting and Light Signalling sector:
  - IEC standards: IEC 60061, IEC 60809
  - ➔ Specific UN Regulations on light sources

- Tire sector:
  - ISO, ETRTO, JTMA standards
  - ➔ Regulation on tires
  - ➔ Regulation on tire installation

- ICT and Telecom sector:
  - eCall
  - Cyber Security and OTA

# Content

# The vision (e.g. in China, in the EU, in the USA etc.)
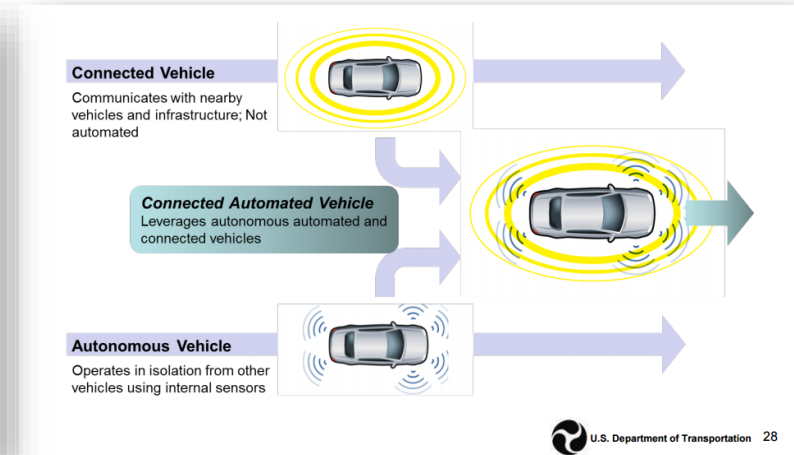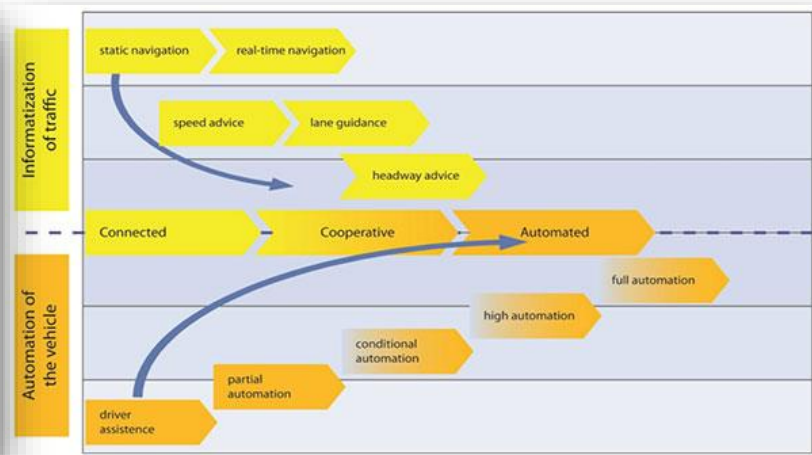
# Progress made on automation

- First regulatory package adopted

  – Remote Control Parking

  – Some Level 2 technologies
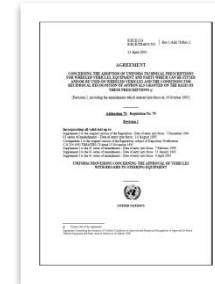


- Second regulatory package (currently being drafted)

  – Automated «Lane Change» systems

- Work on roadmaps and strategies for addressing Level 3 and 4

# The vehicle connectivity keeps everyone busy...

**Various standards on connectivity**

- DSRC
- ITS G5
- LTE / 4G
- 5G

**Various corridors projects**

- ACo-AT



**Various testing centers**

- Shanghai F-zone
- Korea K-city
- US Michigan
- …

**Various activities**

- G7 transport ministers
- US
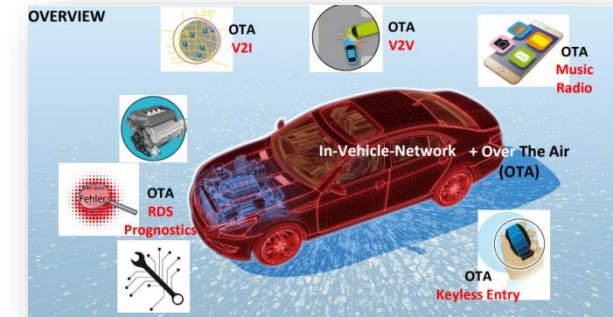- EU: C-ITS
- The Amsterdam declaration

**Various institutions and SDOs**



…

**Task Force on Cyber Security and Over-The-Air software updates**

# Content

# Different risks related to ITS / IVS

When we talk about risks related to connectivity in transport, we often think about:

**Risks related to malicious or fraudulent activities:**
- Cyber security
- Data protection

There are other risks, e.g. risks related to:

- **Absence of information** (when it should actually be available and it is expected)

- **Informal** character / **ephemeral** nature of information from non institutional content providers (while institutions would need to deliver a **sustainable** transport system)

- **Data protection** issues, not related to malicious activities, but impacting:
  - Business confidentiality
  - Trade secrets
  - Intellectual property
  - Privacy

# Cyber Security:
# The immediate regulatory challenge

Let's imagine WannaCry affected the transport system
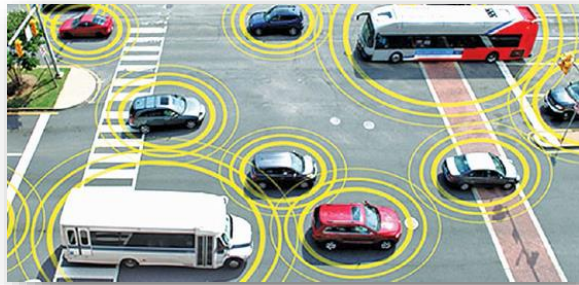




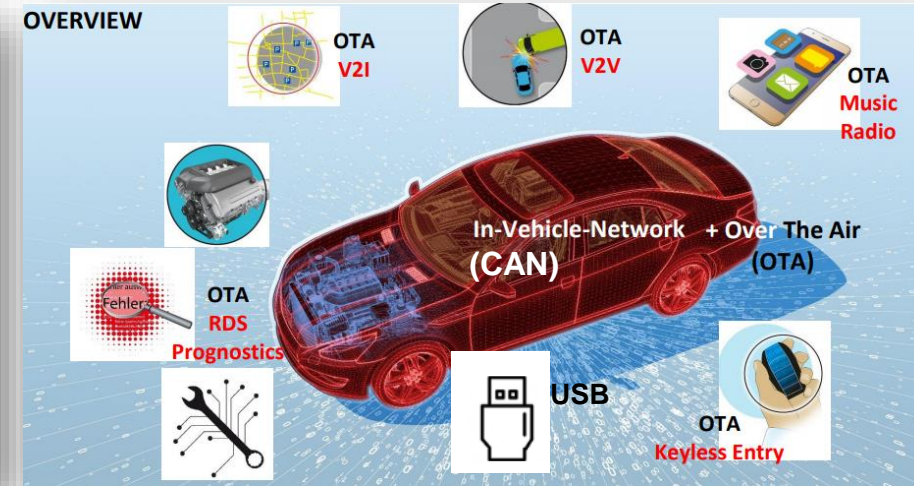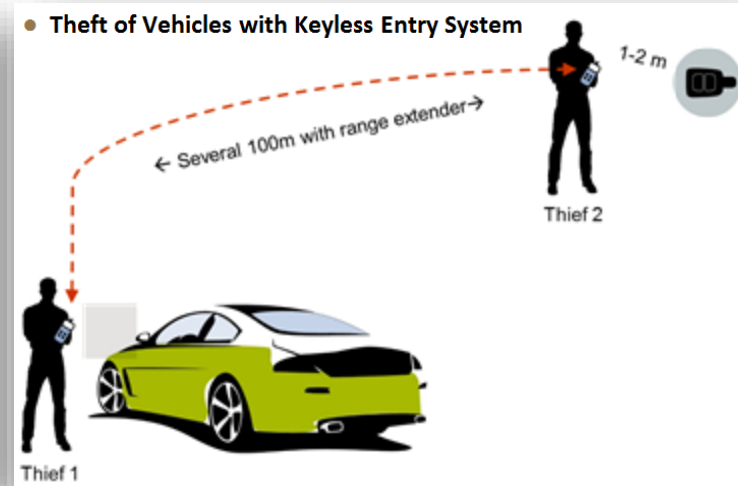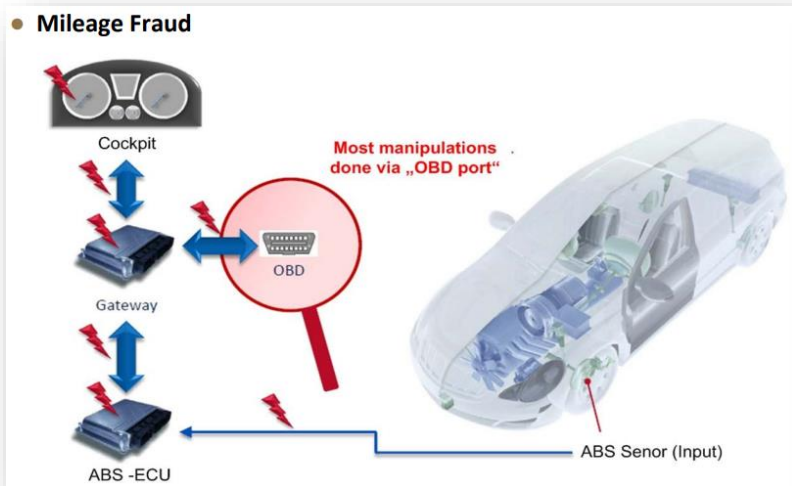What would have been the implications on Transport Systems ?
➘ on security ?
➘ on trade ?

This vision is probably sufficient to justify immediate action on cyber security

# Other risks

Advocacy groups presented the following cases to WP.29



They also raised the concern of data protection
- Malicious or fraudulent activities
- Fully legal activities
- (Related to privacy, which is mentionned in the Universal Declaration of Human Rights)

# First outcome:
# Guideline on Cyber Security and Data Protection

Guideline adopted by WP.29 in March 2017

It contains:

– Definitions

– Data protection requirements, e.g.:

• Everyone's right for privacy and communications shall be respected

• Privacy «by design» and «by default»

– Cyber Security and Safety requirements, e.g.

• Avoid fraudulent manipulation

• Detect fraudulent manipulation by a cyber-attack, inform driver

• Secure software updates

– Verifiable through independent authorized audit.

# Content

# The Task Force on Cyber Security and OTA

- Initiated in November 2016, by WP.29,

- Reporting to the IWG on ITS/AD,

- The group includes trade bodies, industry and governments

- The aims of the group are to:
  - Define requirements for addressing cyber threats
  - Define requirements for software update management with respect to safety type approval
  - Define guidance or measures for how to achieve this
  - Address the effect of OTA on cyber security and the overall Type Approval system (Potential challenge for administration of vehicle "in use")

- Aim to deliver these in 2018 to WP.29
  - The output may then be adopted as a UN Regulation or UN Resolution

- The Chair says: "We recognize the need for agreeing something quickly
  - Standards may be instrumental but we must be agile as this is a rapidly developing area"

# Content

# Intelligent vehicles, smartphones on wheels?



Let compare!

| Purchased in 2012 | Maintenance | Support | Durability |
|---|---|---|---|
|  | ~30 software updates<br>- iOS 5 to iOS 9 -<br><br>("security relevant") | Since Aug. 2016:<br>- No update<br>- No support<br><br>("Hardware outdated") | 1 years guaranty<br>- Battery performance downgraded after 2 years of normal use<br><br>- Hardware obsolescence due to e.g. OS updates |
|  | 1 software update<br><br>Max possible:<br>1 every 30.000 km | In 2017:<br>Fully support<br><br>(Vehicle still under guaranty) | Electronic / IT:<br><br>~15 years / 8000h |

# THANK YOU VERY MUCH
# FOR YOUR ATTENTION

## UNECE Sustainable Transport division

http://www.unece.org/trans

**Francois.Guichard@unece.org**