Smart tachograph

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EU legislation on road transport

- Access to the occupation of road transport operator (1071/2009)
- Access to the market (1072 and 1073/2009)
- Social legislation (561/2006)
- Weights and dimensions
- Transport of dangerous goods
- Transport of livestock
Digital tachograph

- Accurate recording of driving and rest times
- Magnet-resistant motion sensor
- Independent source of information

- Still vulnerable to motion sensor tampering
- Non-secured independent source of information
Motion sensor vulnerability

- **Type 1 manipulation**
  - Architecture: the MS is unplugged from the gearbox, placed into an additional device that simulates an electromagnetic field, being this device connected to a 2nd motion screwed to the gear box and controlled by the driver.
  - Evidences left: broken seals, power supply interruption and information in the printouts.

- **Type 2 manipulation**
  - Architecture: a second MS is connected to the original MS, either directly or through an additional device simulating the electromagnetic field.
  - Evidences left: power supply interruption, motion conflict event and information in the printouts.

- **Type 3 manipulation: direct manipulation of the electronic circuit of the MS**
Smart tachograph

- Adopted by Regulation 165/2014
- In all new vehicles registered as from 15 June 2019
- GNSS module
  - Automatic recording of the location of the vehicle (cabotage)
  - Second motion sensor
- DSRC module for communication tachograph - control officers
- New cryptography
- Enhanced seal
GNSS signal as a second motion sensor

- Enclosed in a secure box
- Signal secured between GNSS receiver and VU
- Authentication of the satellite signal
DSRC communication

➢ Transmission of data to enforcers equipment

➢ Data to be transmitted

✓ Latest security breach attempt
✓ Longest power supply interruption
✓ Sensor fault
✓ Motion data error, vehicle motion conflict
✓ Invalid card, card insertion while driving
✓ Time adjustment data
✓ Calibration data
✓ Vehicle registration number
✓ Speed

✓ Weights and dimensions
ITS interface

- Optional
- Bluetooth
- Requires authorization from the driver
- Possible services
  - User-friendly interface with the tachograph
  - Fleet management
  - On-road services
Advantages of smart tachograph

- Enhanced security against tampering
- Targeted checks
- Extended scope
  - Cabotage
  - Weights and dimensions
- Open to additional services
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- Transport of dangerous goods
- Transport of livestock
- Posted workers Directive
Thank you