

# Autonomous Driving

Level 0 - Level 5 according SAE J3016

# Autonomous Driving

## Level 0 - No Driving Automation (German: „Keine Fahrautomatisierung“)

- Driver acts complete independent
- Support by ABS, EBS, ESP systems

# Autonomous Driving

## Level 1 - Driver Assistance (German: „Assistiertes Fahren“)

- Driver controls Lateral or Longitudinal movement of the vehicle
- If the driver controls Lateral movement (e.g. Steering), the vehicle system controls Longitudinal movement (e.g. cruise control)
- If the driver controls Longitudinal movement (e.g. acceleration), the vehicle system controls Lateral movement (e.g. steering assistance, lane keeping assistance)
- The driver is fully responsible for driving

# Autonomous Driving

## Level 2 - Partial Driving Automation (German: „Teilautomatisiertes Fahren“)

- Vehicle system controls Lateral or Longitudinal movement of the vehicle for a short defined timeframe or in specific situations
- Under defined conditions the vehicle system can autonomously drive without human interaction (e.g. overtaking assistant on motorways, park assistant)
- The driver is fully responsible to supervise the system and environment and must ensure to take over driving at any time

# Autonomous Driving

## Level 3 -Conditional Driving Automation (German: „Hochautomatisiertes Fahren“)

- The vehicle system fully controls driving for a limited time and in specific situations.
- An example is the traffic jam assist. The vehicle system can fully control the car up to a defined speed (e.g. 60km/h) without human interaction.
- The driver can withdraw from driving (e.g. reading newspaper), but must be able to take control within a defined time

# Autonomous Driving

## Level 4 -High Driving Automation (German: „Vollautomatisiertes Fahren“)

- The vehicle system fully controls driving.
- The vehicle system can fully control the car during drive routes.
- The car can be moved with passengers or without.
- Passengers can sleep or use smartphones etc.
- The car has to detect abnormal situations and reach autonomously a safe state (e.g. parking, road side)

# Autonomous Driving

## Level 5 -Full Driving Automation (German: „Autonomes Fahren“)

- The vehicle system fully controls driving without any driver.
- Only passengers on board
- Complex situations (e.g. junctions) can be handled fully autonomously.
- Passengers of the vehicle not liable for driving