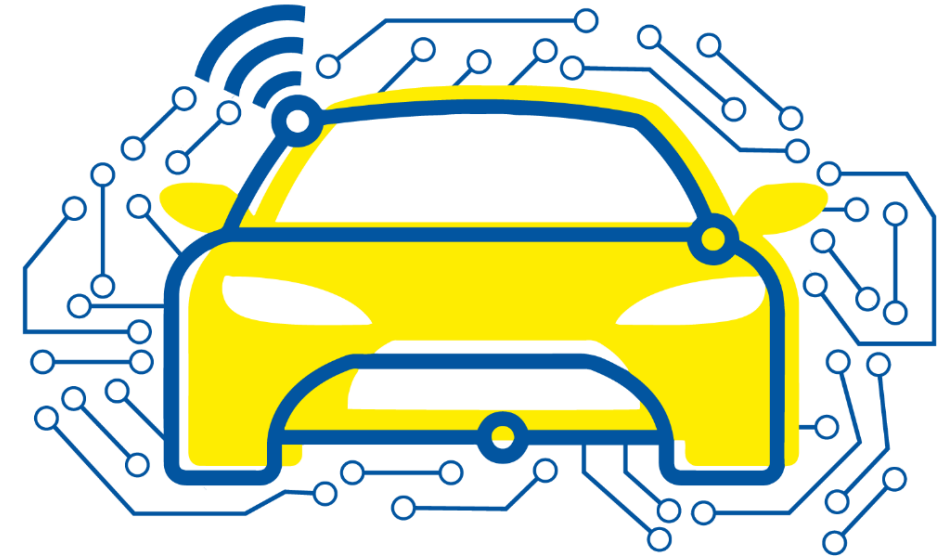# Automated and Connected Driving Challenges

Section 5 – Connected Driving

## Introduction

## Challenges

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# Introduction – Challenges

## *Challenges*

### All functions

- **Establishment** of **standardized protocols** for the exchange of data
- **Availability** of **technologies** that allow **reliable, secure, low-latency, high-throughput communication**
- **Robustness** of **automated agents** to **unavailable** or **impaired connections** and **incorrect external data**
- **Handling** of **agents** that are **not connected** or **not automated**
- **Compliance** with **privacy protection** and **anti-discrimination** legislation
- **Attribution** of **responsibility** in connected systems in case of failures

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### Cooperative functions

- Ability of network to **handle** the **number of connections**.
  - Increase of the number of unique possible pair connections by $n(n-1)/2$ in a network of $n$ nodes → Metcalfe's law

- Availability of concepts for vehicle **functions capable of cooperating** with other connected agents

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### Collective functions

- **Availability** of **collective infrastructure**
  - (Edge) cloud servers

- **Architecture** of collective infrastructure
  - Central cloud servers
    → higher latency
  - Decentral edge cloud servers
    → more infrastructure to maintain

*Challenges*

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## Supportive functions

- **Availability** of **supportive infrastructure**
  - Automatic traffic control systems
  - (Edge) cloud servers
  - Infrastructure sensor stations
  - Traffic Control Centers

- **Architecture** of supportive server infrastructure (see collective functions)