V2X Communication in Highway Scenarios
Cooperative Merging Service
This situation is hard to solve for an automated vehicle (state of the art)
Automation in highway scenarios: Merging Maneuvers

Solution: Communication between vehicles
V2X Communication in AdaptIVe Evolution and Benefit

Onboard Perception Sensors

Red host-vehicle knows about objects detected by its local perception sensors
V2X Communication in AdaptIVe Evolution and Benefit

V2X communication protocols base on ETSI-ITS-G5 (IEEE 802.11p/pWLAN) standard
- USA market introduction GM in March 2017; law underway
- VW market introduction 2019 (Golf 8 as standard equipment)

Local Perception Sensors

V2X Communication

Red host-vehicle gains knowledge about other V2X vehicles within the communication range

V2X vehicles broadcast Cooperative Awareness Messages (CAMs)

Additional eventbased V2X messages:
- Decentralized Environmental Notification Messages (DENMs)
- Signal Phase and Timing (SPaT)
V2X Communication in AdaptIVe Evolution and Benefit

V2X vehicles with local perception sensors broadcast their locally perceived objects. V2X vehicles broadcast Collective Perception Messages (CPMs).

Local Perception Sensors

V2X Communication

Collective Perception

V2X vehicles with local perception sensors broadcast their locally perceived objects.

V2X vehicles broadcast Collective Perception Messages (CPMs).

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Thank you.