Predictive QoS

An Innovative Mechanism to Provide In-advance QoS Notifications from the Network to the V2X Application
Automotive industry is evolving towards autonomous driving
A key enabler for this evolution is the 5G mobile network
Today’s mobile networks may not be able to always guarantee the required Quality of Service (e.g., latency and data rate).
Therefore, network quality degradations need to be communicated to the vehicle in-advance
To resolve this issue, 5GAA is investigating mechanisms and solutions for in-advance QoS change notification (Predictive QoS) in (e)NESQO WI

1. Connected vehicle is driving
2. Vehicle receives in-advance notification of network quality degradation
3. V2X Application takes appropriate action/countermeasure (e.g. decreases speed)
4. Network QoS degradation takes effect. Necessary action has already been taken.

"QoS is estimated to drop in 20 seconds"
C-V2X SUPPORTED BY PREDICTIVE QoS

1. Collect Prediction-supporting Data
2. Make Prediction (using ML)
3. Deliver Prediction

Data collected from multiple sources:
- Vehicle data (location, planned route, speed)
- Vehicle sensor data (hazardous road conditions, situational awareness)
- Road infrastructure data (road topology, traffic signs)
- Network data (network coverage, load, resources)
- Weather data (rainfall, visibility due to fog, wind speed)
- Large events data (sports, concerts, festivals)
- Analytics data (handover failure rate, statistics)

Examples of application reactions/countermeasures in typical use cases:
- **High Density Platooning**: change inter-vehicle distance, handover to driver
- **Tele Operated Driving**: change route, park vehicle, handover to nearby driver
- **Lane Merge**: change speed of merging attempt
- **Infotainment**: change video quality
- **Software Update**: stop or resume download
Thank you