



5G for Connected and Automated Driving

Presentation Abstract

While predominantly the evolution of mobile networks in the past was driven by the innovation of the radio access, 5G's essential innovations will be capabilities in the network itself. In particular for IOT applications, 5G network capabilities will significantly support the connected vehicle on the way to autonomous driving. Already today, more than 50% of all produced vehicles are equipped with cellular-based connectivity, premium car manufacturers equip their vehicles by nearly 100%. Also driven by legal requirements such as the eCall, it can be predicted that cellular based connectivity will be available in each vehicle. In addition to the possibility of establishing connections to internet-based applications, now even LTE provides the ability to exchange data directly, without using a base station of the mobile network. C2C (car to car) such as also C2I (car-to-infrastructure) applications, but also in the future C2P (car-to-pedestrian) applications can be implemented based on LTE-V (C-V2X), so no additional integration costs by different technology stacks are needed. On the way to 5G additional network capabilities will be provided to support automotive use cases. For example, use cases that have specific quality of service requirements can be supported by dedicated logical networks that are operated as logical layers on one physical network (network slicing). Edge computing will support applications that are dependent on low latency and high availability. And with precise positioning services are offered in 5G, which help to significantly improve the accuracy of positioning as well as providing additional integrity mechanisms, to increase functional safety.

The presentation gives an overview of the advanced capabilities of mobile networks based on LTE and 5G.