



5G V2X Training

This course focuses on 5G V2X (Vehicle to Everything) and its connection to different ITS (Intelligent Transport Systems) standards. The discussion encompasses V2X use-cases associated with 3GPP and 5GAA. Subsequently, the course delves into the examination of 5G V2X procedures, including Registration, V2X Provisioning, PDU Session Establishment, and VAE (Vehicle Application Enabler) Registration. Furthermore, the course thoroughly explores various operational aspects, such as NR-PC5 Quality of Service, device synchronization, mobility, roaming, as well as the utilization of Network Slicing and MEC (Multi-access Edge Computing) within a V2X environment.

Audience

Knowledge on 5G Technology

Content of the Training:

1) 5G Core functions and V2X application server

- 3GPP update and 5G capabilities
- 5G End to End architecture
- Main principles of 5G Core network transformation (CUPS, SBA ...)
- 5G SBA Network function
- Network function to be used in V2X

2) 5G V2X Landscape

- V2X Motivation
- 5G V2X opportunity
- V2X Terminology.
- V2X ecosystem
- V2X technologies (DSRC, C-V2X)
- ITS architecture

3) 3GPP NR-V2X Architecture

- Comparison between LTE-V2X and D2D
- 4G and 5G V2X Architecture
- 4G and 5G V2X Interfaces
- Interaction of 5G Network functions with V2X.
- 5G V2X RSU (Road Side Units).
- Multicast Broadcast Service Architecture

4) NR-V2X Registration and V2X PDU establishment

- NR V2X Registration Procedure
- 5G QoS and Qos Flow
- 5G V2X QoS.
- 5G V2X PDU Session Establishment Procedure
- VAE Procedures and Services.

5) NR-V2X PC5 communications

- Identifying PC5 Configuration
- ITS Sidelink Frequency Bands
- NR-PC5 Protocols and Bearers
- NR-PC5 Broadcast
- NR-PC5 Groupcast
- NR-PC5 Unicast

6) NR-V2X PQI, 5QI and V2X Network Slicing

- V2X Uu and PC5 QoS.
- PC5 5QI (PQI)

- V2X Network Slicing.
- V2X Network Slice Operation.
- Types of Synchronization.
- NR-V2X Uu and PC5 Synchronization.

7) 5G V2X Mobility and Mobile Edge Computing

- 5G V2X Mobility Xn Handover.
- 5G V2X Mobility N2 Handover.
- What is MEC
- MEC deployment
- MEC Architecture
- MEC Applications within V2X

8) 5G V2X use cases

- 3GPP use cases
- 5GAA Use cases
- Safety and Vehicle Management Use Cases
- Convenience Use Cases
- Autonomous Driving Use Cases
- Platooning use cases
- Traffic Efficiency and Society Use Cases