Course description

Voice over Long-Term Evolution (VoLTE) has been witnessing a rapid deployment by network carriers worldwide. During the phases of VoLTE deployments, carriers would typically face challenges in understanding the factors affecting the VoLTE performance and then optimizing it to meet or exceed the performance of the legacy circuit-switched (CS) network (i.e., 2G/3G).
This course is a technical optimization of the VoLTE network. The course includes VoLTE Architecture and Protocol Stack, procedures in VoLTE performance optimization, Voice Call Continuity (VCC) features, VoLTE call dedicated bearer setup, Radio Network Optimization, and Voice Quality Optimization

- Motivations for VoLTE:
  - Introduction to VoLTE.
  - VoLTE Principles.
  - VoLTE for Customers.
  - VoLTE for Operators.
  - Voice Solutions for LTE.
- SIP & IMS Architecture:
  - Introduction to SIP.
  - Important SIP Messages.
  - What is IMS?
  - Why we need IMS?
  - IMS Architecture
- VoLTE Architecture:
  - VoLTE Architecture.
  - VoLTE Protocol Stack.
  - VoLTE Capability in UE.
  - Radio Bearer for VoLTE.
- VoLTE Call Procedure:
  - Attach to LTE Network.
  - Bearer Setup and EPS Attach.
  - IMS Registration.
  - E2E IMS Flow.
  - E2E VoLTE Call Setup.
- VoLTE Mobility Optimization:
  - LTE Mobility.
  - Intra-Frequency Handover.
  - Inter-Frequency Handover.
  - Single Radio Voice Call Continuity Procedure.
  - SRVCC Parameters Optimization.
  - Handover Parameters Optimization.
  - Fast Return to LTE.
- VoLTE Performance-Enhancing Features:
  - Robust Header Compression (RoHC).
  - Uplink coordinated multipoint reception (UL CoMP).

- Semi-Persistent Scheduling for (SPS).
- RLC Segmentation.
- TTI bundling.

- VoLTE Optimization:
  - VoLTE Accessibility KPIs.
  - VoLTE Call Setup Failure.
  - VoLTE Retainability KPIs.
  - VoLTE Mobility KPIs.
  - VoLTE Integrity KPIs.
  - SRVCC Performance KPIs.
  - SRVCC Failure Rate.
  - High-level Troubleshooting Guide For Performance Analysis.
  - VOLTE Counters KPI'S & Thresholds.
  - VOLTE Optimization case studies during Drive Test.
  - VOLTE Key Optimization challenges.