



## Who Should Attend?

The main target group of this training is network operator staff involved in the optimisation of UMTS + HSPA networks or improving network performance, as well as system vendors involved in second and third level troubleshooting activities.

## Course Content

1. UMTS Network.
  - Quality in UMTS Networks.
  - UMTS Evolution.
  - UMTS Protocols.
  - Performance Data.
  - Key Performance Indicators.
2. Call/Connection Analyses.
  - Service Concept, Call Establishment, and Call Release.
  - PS Traffic in UTRAN and Examples of practical protocol trace.
  - NAS Procedures.
3. Mobility.
  - Handover Types and Measurements.
  - Soft and Hard Handover.
  - SRNC Relocation
  - HO Parameter Verification.
4. Quality.
  - Resources in UTRAN.
  - ATM, Throughput measurements, and Radio Measurements.
  - Codes, Quality, and Load-related KPI.
  - Air Interface Quality and Load Verification.
5. HSPA.
  - General Aspects; HSDPA and HSUPA.
  - Examples of practical protocol trace.
6. Optimizing UTRAN.
  - General Aspects.
  - Idle Mode.
  - Connected Mode.
  - Interworking with GSM.
  - Site Configuration Analysis.
  - HCS.

## Course Objectives

This course provides guidance on how to measure and optimise end-to-end network performance, service quality and the customer experience of UMTS + HSPA networks, with the main focus on UTRAN. Important KPIs to measure performance in the UTRAN are introduced and evaluated. The course contains a planning part, in which specific parameter



settings and setting combinations which influence the system operation are discussed. The course also contains a section of practical application, in which call flow examples based on protocol traces are analyzed.

## **Prerequisites**

Participants should have a good knowledge of UMTS and HSPA air interface and planning concepts.

## **Training Structure**

Three-day training divided into logical sessions.

## **Methodology**

Instructor-led training.