



## Who Should Attend?

This course is designed for employees of mobile network operators who need to understand the principles of signalling in mobile networks, including an in-depth view of selected topics.

## Course Scope

1. Introduction to Signalling.
  - Overview of GSM and 3G Architecture.
  - Node Functions.
  - Protocols and their Roles.
  - Interfaces and Protocols in GSM/UMTS.
2. "Classical" Signalling Transport.
  - MTPL1 - L3.
  - SCCP (addressing, routing).
3. Call Control Protocols.
  - ISUP.
  - BICC.
  - H.248 (MeGaCo).
4. ATM Bearer Control.
  - Overview of ATM/AAL2/AAL5.
  - Q.2630.x (for ALCAP).
5. SIGTRAN (Signalling Transport).
  - Short Summary of TCP/IP.
  - SCTP Protocol - features and procedures.
  - Architecture and Application of M2UA, M2PA, M3UA, and SUA.
  - Overview M2UA, M2PA, SUA/ISUA.
  - M3UA in detail.
6. IP Bearer Control.
  - IPBCP.
  - SDP.
7. Mobile Services.
  - Summary of TCAP.
  - MAP Protocol - interfaces and messages.
8. Traffic Cases from the Perspective of MAP.
  - Attach/Authentication.
  - Call Setup.
  - Inter-MSC Handover.
  - Intra-MSC Handover.
  - Handover between 2G and 3G.
9. Summary of Intelligent Network Architecture and INAP.
  - CAMEL standardisation and call models.
  - RAN/MS Signalling.
  - DTAP.



- BSSAP.
- RANAP.
- 10. UMTS Services (selection).
  - IMS System.
  - SIP Protocol Overview.
- 11. VoIP Usage in Mobile Networks.
  - Architecture.
  - Call Setup Procedures.

## Course Objectives

This extensive five-day training provides a unique overview of the signalling protocols that dominate the architecture of contemporary mobile networks. Presented in an easy-to-follow and logical order, during this course we discuss concepts ranging from basic Signalling System No. 7 protocols with a focus on specific user parts and signalling transport in ATM and IP infrastructure (including SIGTRAN), to the specialised protocols used in setting up bearers for multi-rate applications. Supplemented with a series of challenging exercises based on real network scenarios, this training is a great way to obtain an in-depth understanding of signalling concepts.

## Prerequisites

The participants must be familiar with the basics of mobile networks and their services. Knowledge of transfer technology such as TDM, ATM and IP is recommended.

## Training Structure

Five-day training divided into logical sessions.

## Methodology

Instructor-led training.