Description:
Mobile data traffic has been growing rapidly. It makes network operators invest in solutions which provide more capacity and higher bandwidths to cope with increasing demands. While UMTS/HSPA and later LTE™ have been an enormous step forward in providing both, it has also been visible that more efficient solutions and more spectrum is needed. At the same time it has become clear that integrating WiFi with the mobile network infrastructure can lead to reduced CapEx and OpEx, while still satisfying the needs of data-hungry applications – everything with the use of unlicensed spectrum.

This training presents existing standard solutions allowing operators to offload the data to WiFi as well as improvements to femto-cell infrastructure which can further reduce the load in the mobile networks. Different offloading techniques are described in the form of separate modules, which makes possible to concentrate on one technique at a time and leads to better understanding of its capabilities and limitations.

Target audience:
The course is intended for network engineers, network planners and managers, who are already familiar with LTE and who work on projects related with WiFi integration and also for everyone who analyse data offloading possibilities.

Contents:
- **Introduction**
  standardisation bodies, WLAN implementations, WLAN architecture,

- **I-WLAN**
  network selection, authentication, authorisation, tunnel management, charging,
• **Access Network Discovery and Selection**
  Inter-System Mobility Policy ISMP, Inter-System Routing Policy ISRP, Inter-
  APN Routing Policy IARP, WLAN Selection Policy WLANSP, Preferred
  Service Provider List PSPL, S2a Connectivity Preference,

• **Network Architecture**
  Trusted/Untrusted Non-3GPP Access Network, seamless/non-seamless
  WLAN offload, ePDG, S2a, S2b, S2c, P-GW selection, ePDG selection, IP
  address allocation, attach/detach procedures, inter-system handover,

• **Multiple Access PDN Connectivity (MAPCON)**

• **IP Flow Mobility (IFOM)**

• **S2a-based Mobility over GTP (SaMOG)**

• **Broadband Access Interworking using WLAN/H(e)NB**

• **Local IP Access (LIPA)**

• **Selected IP Traffic Offload (SIPTO)**

• **MultiPath TCP (MPTCP)**

**Prerequisites:**
General knowledge of EPS/LTE system architecture and functionality is required. Knowledge about GSM/UMTS GPRS architecture is very useful. Completion of *EPS/LTE System Overview* course (or equivalent) is highly recommended.

**Training method:**
Lectures and multimedia presentations.