GSM RADIO NETWORK PLANNING AND OPTIMIZATION

“The tailored GSM Radio Planning training enabled us to plan and optimize our GSM Network and cut cost by making us less dependent on consultants.”

- Ahmed Mohamed, RAN Optimization Engineer, Golis Telecom, Puntland

Course Description

GSM is the most widespread, most commonly deployed system standard for mobile telephony in the world. Even though UMTS, the third generation mobile system is growing steadily and LTE (4G) has made its entry into the market, GSM is typically the biggest moneymaker yet. GSM has evolved with High Speed Circuit Switched Data (HSCSD), Enhanced Data for GSM Evolution (EDGE) and General Packet Radio Service (GPRS) added to the network resulting in new features and functionality.

GSM Radio Network Planning and Optimization provides a solid understanding of how to design and plan a high quality GSM radio network. The course also covers how to expand the network, techniques to boost capacity, how to lower interference and increase quality in the network. Macro cell planning is emphasised in the course, however planning with micro- and pico-cells is also featured. Furthermore it is discussed how cell-planning tools can enhance the cell planning process and how problems can be solved regarding co-existence with other GSM, WCDMA or LTE systems.

The course outline corresponds to the steps in a network planning process. Along the course, these steps are illustrated by calculation exercises. By performing the exercises, the participants complete their own networks.

Content

INTRODUCTION
- Network Architecture
- The Access method TDMA
- Logical Channels

DEFINITION OF NETWORK REQUIREMENTS
- Coverage requirements
- Capacity

THE NEED FOR MODELS
- Coverage models
- Parameter setting
- Network cost
- Planning tool
CAPACITY PLANNING
- Frequency planning 4/12, 3/9
- Frequency hopping
- Advanced frequency planning strategies
- Selection of frequency planning strategy
- Channels per cell
- Conversion of channels to Erlang

SELECTING SITE LOCATIONS
- Planning Tools
- Site Acquisition

IDLE MODE AND BUSY MODE
- Idle mode procedures
- Cell selection
- Cell re-selection
- System information
- Cell parameters
- Handover algorithms

INITIAL TUNING
- Antenna direction/tilt
- Output power
- Frequency plan
- Neighbour list
- Handover parameters and Code allocation

NETWORK OPTIMIZATION
- Handling poor C/N, C/I and C/A
- Handover problems and solutions
- Excessive load
- Battery life-time and paging Performance

INCREASING CAPACITY
- Features
- Tightening the frequency plan
- Micro cells
- Pico cells
- Dual band
- Half-rate
- Example of high capacity network

CO-EXISTENCE ISSUES
- Spectrum GSM 1900/TDMA
- GSM 900/900
- GSM 900/1800
- GSM/WCDMA
- GSM/LTE

Target audience
The target audience is radio engineers, project leaders and others, who need to understand the cell planning process and its challenges.

Pre-requisites
It is advantageous for the participants to have prior knowledge of the GSM system.

Course length
3 days
Widermind communicates the knowledge you need to develop and implement new technologies for current and future network operations. Our clients are telecom operators, system integrators, system suppliers and consultancy firms.

Based in Stockholm, Sweden, we develop courses backed by a comprehensive network of associates. Our instructors employ technical and pedagogical skills that have made Widermind training well known and appreciated as one of the best services in the field.

You are warm welcome to contact our representatives at:

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