

3G Cellular Networking (Executive)

Covers: Network Evolution, Key aspects of a 3G network & transmission

Overview

This course takes the participant through the transition of a GSM network to a UMTS (3G) network. It highlights the main additions and modifications as the 3G network evolves through the various releases. The participant will learn the key roles of the network elements and how these elements are connected together via the transmission system. The basic concepts of what makes a 3G system different to a 2G network are also highlighted.

Who Can Benefit

Technical personnel for telecommunications organisations

Pre-requisite Knowledge

Participants should have a basic understanding of cellular communications.

Outline

Introduction

- Overview of 3G technology
- Comparison of 3G standards
- Basic UMTS technology & network structure
- 3G licencing issues

Network Evolution

- 3GSM Family of Technologies
- Evolution from GSM to GPRS/EDGE
- Evolution to UMTS Release 99
- UMTS Releases 4-11
- 3GPP Long Term Evolution (LTE)

CDMA Air Interface

- Review of FDMA and TDMA
- Multiplexing techniques
- Basic principles and coding schemes
- Capacity and interference
- Data protection
- Soft & softer handover
- CDMA key concepts & benefits
- Operation of WCDMA and WCDMA radio channels

Radio Network Planning

- Fundamentals of radio
- Principles of microwave transmission
- Issues related to signal quality
- Antenna types
- Diversity gain
- Link budget
- Advantages of fibre based transmission
- Use of Satellite

Radio Access Network

- RAN system architecture and terminology
- RAN Interfaces
- Signaling types
- The role of ATM & IP
- Radio Resource Management
- Synchronisation
- Macrodiversity
- High-Speed Packet Access
- UMTS/GSM interoperability

Packet and Circuit Core Network

- Core network principles of operation
- Core network domains & components
- QoS attributes
- Mobility and Session management
- UMTS network security
- Softswitching
- The IP Multimedia Subsystem

Services

- Customer requirements
- Triple & quad play
- Billing options
- Presence services
- Location Based Services
- TV & Video services
- Example Applications

DURATION

3 days

MAX CLASS SIZE

12