ENG-507 - Fixed & Mobile WiMAX: Planning, Design & Deployment

Description

A 5-day Training Program to provide participants with a comprehensive wealth of knowledge on the subject of fixed and mobile WiMAX technologies, applications and services, from the perspectives of technology, regulatory, marketing and business.

This training program covers all relevant and important topics concerning WiMAX, including:

- Standards: MAC and PHY protocol layers, security, quality and interoperability
- Technology: certified equipment manufacturers, products, systems and services
- Regulatory: spectrum policies and licensing
- Planning: propagation, coverage, interference, frequency and capacity
- Design: site survey and selection, network topology, backhaul
- Deployment: project management, vendor selection, installation and commissioning
- Optimization: testing and troubleshooting

Objectives

- Identify the components of fixed and mobile WiMAX products and systems
- Explain the detailed layers and protocols covered in the IEEE standards 802.16-2004 for fixed broadband wireless access systems and IEEE 802.16-2005 for mobile communications
- Provide an in-depth understanding of wireless voice, video and data access systems from a technical perspective combined with regulatory, market and business objectives
- Develop the skills to plan, design and deploy efficient and profitable wireless networks
- Plan for growth, operational support and emerging technologies

Topics

Part A – Fixed WiMAX

General overview

- Identify the components of WiMAX systems
- Explore the various standards, forums and suppliers
- Understand the network architecture, deployment challenges, marketing and business opportunities in terms of:
    - Regulatory and spectrum policies
    - Frequency bands and standards
    - Applications and services
    - Products and systems
    - Current deployments
    - Network architecture fundamentals
    - Voice and video over WiMAX
    - Emerging standards

IEEE standard for Metropolitan Area Networks (MANs)

- In-depth review of the fundamental concepts of the IEEE 802.16 standard for WiMAX :
    - Overview
    - References
    - Definitions
    - Abbreviations and acronyms
    - Service specific convergence sublayer
    - MAC common part sublayer
    - Privacy sublayer
    - Physical layer
    - Configuration file
    - Parameters and constants

Engineering planning, design and deployment of WiMAX

- Plan an efficient network deployment
    - Project management
    - Radio engineering
    - Frequency planning
    - Capacity planning
    - Site engineering
    - Backhaul

Business planning of WiMAX

- Understand the business objectives for optimum wireless network deployment
    - Business opportunities and service offerings
    - Market segmentation
    - Strategy and implementation
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Sales, cost of sales, capital and operational costs
    - Personnel plan
    - Management systems

Part B – Mobile WiMAX

Mobile communications standards

- Compare 2G, 3G and 4G mobile technologies
    - History
    - Terminology
    - Subscriptions and market share
    - Tariff models, solution providers
    - Spatial capacity
    - Goodput
    - Radio Resource Management (RRM)
    - GoS, LoS and QoS
    - Fixed Mobile Convergence (FMC)

IEEE standard enhancements for Wide Area Networks (WANs)

- Review of the enhancements of the IEEE 802.16 standard for WiMAX
    - Tolerance to multipath
    - Scalable channel bandwidths
    - Fequency selective scheduling
    - Power conservation management
    - Network-optimized Hard Hand-Off (HHO) and cell selection
    - Multicast and Broadcast Services (MBS)
    - Fractional frequency reuse
    - Certification waves

Core and edge networks

- Define the network elements involved in mobile WiMAX
    - Connectivity Service Network (CSN)
    - Access Service Network (ASN)
    - Mobile Home Agent (HA)
    - IP Multimedia Subsystem (IMS)
    - Border Gateway (BG) and Interworking Gateway (IG)
    - Backbone and distribution network

Smart antennas

- Explore the principles of new antenna technologies
    - Definition and overview
    - Terms and abbreviations
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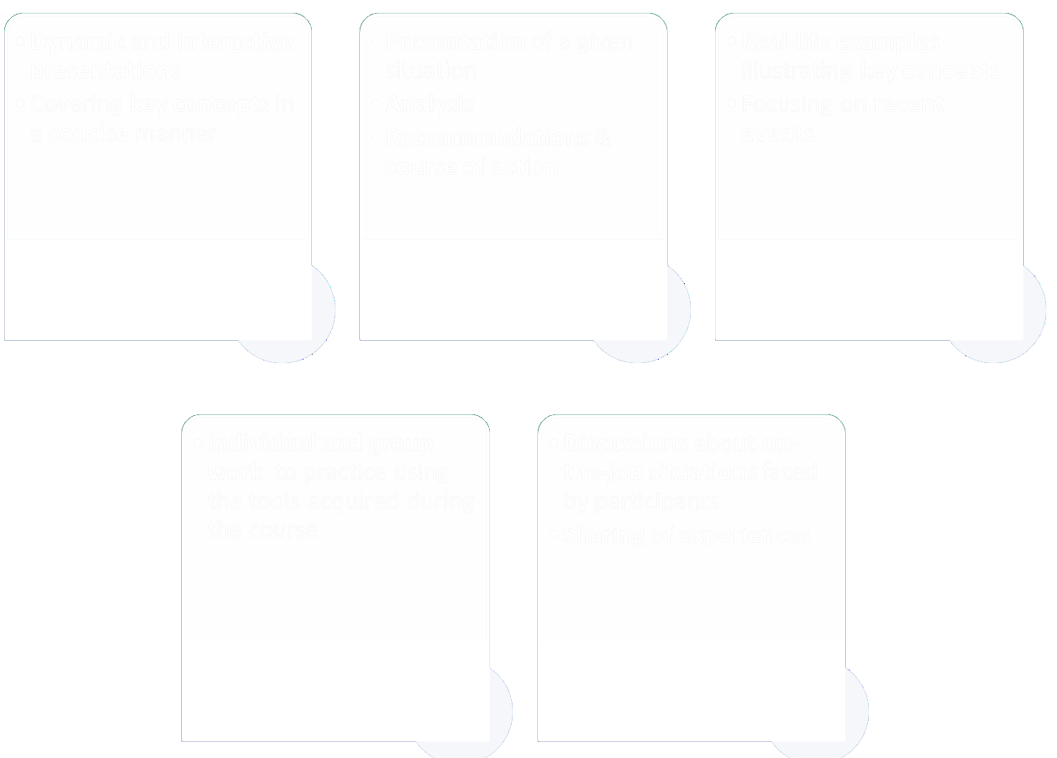
Principles and gains
- Implementation and algorithm
- Uplink and downlink processing
- Approaches and benefits

Target Audience

- Telecommunications engineers, technicians and personnel responsible for the design, planning, deployment and management of wireless voice, video and data access networks
- Entrepreneurs, managers, marketing and sales professionals looking to complement their skill-set by gaining a good understanding of broadband wireless access systems and technologies, applications and services, market and business opportunities
- Telecommunications regulators responsible for spectrum policies, coordination and standard radio system plans
- A good understanding of wired and wireless technologies and networks is helpful for anyone working in WiMAX or related areas (e.g. IEEE standards 802.3, 802.11, 802.16, etc.)

Methodology

A combination of engaging activities and dynamic presentations to stimulate and maximize participants' learning.



Location

A selection of Neotelis' training courses is held in various cities around the world. Please contact us at training@neotelis.com for the complete Yearly Training Calendar.

Neotelis can also deliver in-house sessions of this course specifically for your organization. Please contact us at training@neotelis.com for more information and a Proposal.

About Neotelis

Neotelis provides training, consulting, conferences and publications to the telecommunications industry worldwide. Its team of senior experts has trained thousands of executives and managers working for operators, regulators, policy-makers and governments in over 120 countries around the world.

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