

This workshop is important for anyone who is interested in understanding, planning, purchasing or deploying WiMAX Networks. Conducted by Frank Ohrtman, the author of the WiMAX Handbook for McGraw Hill, and Stuart Browne, a veteran telecom network developer and radio communications expert, this is the best course available to gain a practical understanding of WiMAX and how it will be effectively deployed in a real world environment.

The two day course includes a detailed review of WiMAX technology and standards and a workshop that will focus on the “hands on” and the actual processes involved with planning, purchasing and deploying a WiMAX network.

Who Should Attend?

This course is important for network engineers, product managers, developers, planners and network managers who are developing or considering using WiMAX systems in the next 24 months.

Objectives:

At the conclusion of this course the student will be able to:

- Understand WiMAX regulations, standards and applications
- Recognize the benefits of WiMAX versus WIFI and other wireless technology
- Conduct Radio Frequency (RF) band analysis, band selection, spectrum interference analysis and radio path profiling issues
- Undertake business planning and analysis for a WiMAX network
- Manage the procurement and deployment of a WiMAX network system

Please see pages 2 and 3 for a course description.

Please see page 4 for Instructor bios

COURSE OUTLINE

Day One: 8:00 - 5:00

1. WiMAX Technology

- WiMAX Nomenclature
- IEEE WiMAX Standards (802.16-2004, 802.16e-2005)
- WiMAX Forum Goals for WiMAX (certification and interoperability testing)

2. What is WiMAX and how does it compare to WIFI?

- QoS
- Security
- Range
- Throughput
- Applications
- Markets
- Standards

3. WiMAX Network Architecture

- LOS-Line of Sight & NLOS-Non-Line Of Sight
- Point to point
- Point-to-Multipoint
- Mesh
- Multipoint/mobile
- Antenna types
- Omnidirectional
- Sector antennas
- Panel antennas
- Smart Antennas
- Adaptive Antenna Systems
- MIMO
- SISO
- Software Defined Radios

4. The WiMAX Radio Link Control

- Channel Acquisition and Signal Strength
- Initial Ranging with SS-Subscriber Station
- Authentication and Registration

5. Overcoming WiMAX Objections via Technology Explanations or How the Physical and MAC-Media Access Control Layers overcome:

- QoS Issues at PHY Layer/OFDM/OFDMA
- Transporting voice, data or video services
- Interference
- Availability
- Security

6. WiMAX Market Drivers

- WiMAX as “disruptive technology”
- Cheaper, simpler, smaller and more convenient to use
- “Cannibalize your business before someone else does”
- Disaggregation of entire industries

7. WiMAX Regulatory Issues: Spectrum

- Radio Frequency (RF) transmission Principals and Spectrum issues
- WiMAX radio bands and coverage
- Radio Interference and data throughput
- Pros and Cons of Licensed and Unlicensed operations
- Licensed vs. Unlicensed
- Future casting on spectrum

8. WiMAX Economic Issues

- WiMAX and IMS
- WiMAX as Broadband Access
- WiMAX VoIP
- WiMAX IPTV
- Business calculations
- WiMAX vs. other broadband technologies

9. Day One Review and Summary



Day Two: 8:00 - 4:30
WiMAX Workshop

10. WiMAX RF Survey and Link Analysis

- RF Spectrum Analysis
- Noise Floor and Interference Analysis
- RF Path Profiling and Link Budgeting

11. WiMAX Radio Site Planning

- Site Selection
- Base Stations
- Antennas and Towers
- Power Supply issues
- Internet Backhaul

12. WiMAX Network Deployment

- RFP, RFQ, RFI and systems procurement
- Project Management
- Site acquisition
- Site power and maintenance
- Deployment, turn-up and test

13. Network Management

- QoS
- Security
- Interference mitigation
- NOC
- Outsourcing

Joint Summary

1. Beyond WiMAX

- 802.20
- Ultra Wide Band (UWB)
- SHF Giga Hertz microwave
- Future Directions



Instructors

Stuart Browne has worked in telecommunications for the last thirty years working in North America, Asia, Africa, The Middle East and Europe planning and developing voice, data and video networks for government, enterprise and telco's. He has worked recently as a consultant on WiMAX network development providing consulting expertise to SpeakEasy ISP, one of the early deployers of WiMAX in a major US city, Southern California Edison a large electric utility and recently the City of Folsom, California. Stuart hold a MSc. Telecommunications from the University of Colorado and FCC licenses and has presented at international conferences around the world and published many technical articles in industry trade publications.

Frank Ohrtman has been a consultant on WiFi, WiMAX, VoIP, IMS projects for Government of Canada, Carrier Access Corporation, Telesciences, Tricom (Dominican Republic), WorldNet, (Puerto Rico), GeoTel, International Packet Communications Consortium and C-COM focused on transitioning telephone companies from TDM-Time Division Multiplexing to VoIP-Voice Over Internet Protocol. He has managed multiple requests for proposal (RFP) for VoIP softswitch acquisitions and transitions. He has also produced WiMAX seminars for Denver Telecom Professionals, Tricom and WorldNet. He has been a presenter at Voice on the Net (VON) on WiFi VoIP. Mr. Ohrtman is fluent in German/conversant in Spanish.

Some of Frank's published works include:

- WiMAX Handbook: Building 802.16 Wireless Networks, comprehensive overview of new last mile technology, for McGraw-Hill. May 2005
- Voice over 802.11, 350-page technical book explaining the use of VoIP on 802.11 (includes WiFi) wireless networks and markets for this technology. Published by Artech House March 2004.
- Wi-Fi Handbook: Building 802.11b Wireless Networks, a 400 page technical book proposing 802.11 as a replacement for PSTN access and markets for Wi-Fi applications. McGraw-Hill Professional Telecom book April 2003
- Softswitch-Architecture for VoIP, a 350 page McGraw-Hill Professional Telecom book that defeats objections to VoIP and softswitch technology, covers economics of and market for softswitch, only book on the market with emphasis on softswitch technologies, DEC 2002