

Course ID  
**WIMAXBIZ**  
Course Duration  
**2 days**

Course Title  
**WiMAX: Technology, Business, and Competitive Landscape**

**Related Courses**

- Wireless Technologies: A Comparative Study (COMPARISON, 2-4 days)
- 3G LTE/4G: The Next Generation Mobile Networks (3GLTE-4G, 2 days)
- State-of-the-art of WiFi for Non-engineering Professionals, Managers, and Executives (WIFI, 1 day)
- State-of-the-art of VoIP Technology for Professionals, Managers, and Executives (VOIP-EXEC, 1 day)
- Carrier Business Economics: Impact of 3G and IMS (3G-IMS-STRAT, 2 days)
- State-of-the-art of Satellite Communications for Non-engineering Professionals, Managers, and Executives (SATCOM- EXEC, 1 day)
- GSM: A Technology Overview (GSM-B, 1 day)
- iDEN™: A Technology Overview (IDEN-O, 1 day)
- Wireless Network Structure, Operation, and Technologies (WIRELESSNET, 3 days)

**Aimed At**

This tutorial is intended for those involved with technology evaluation and selection, business planning or strategy, product or services design, marketing or sales, procurement, investment analysis, and other managers and professionals who can benefit from an in-depth but nontechnical overview of the evolving WiMAX technology.

**Group Size**

5-25

**Prerequisites**

- State-of-the-art of Wireless Communications for Non-engineering Professionals, Managers, and Executives (WIRELESS-EXEC, 2-4 days)

While there are no specific prerequisites for this course, some exposure to telecommunications or IT and/or comfort with technological issues will be helpful. The course listed above is a recommended prerequisite that can help provide the necessary background.

**Course In a Nutshell**

Mobile WiMAX is a major contender among the broadband wireless technologies that seek to provide greater capability and/or lower cost than the evolving 3G, 3xxG, and 4G technologies. This course will help you understand why WiMAX is, what technical problems it was designed to solve and how it does that, and the basics of the WiMAX system architecture.

We will also take a look at the WiMAX arena including the standards bodies and user groups, manufacturers and service providers, spectrum and regulatory considerations, applications and services, and the roadmap of WiMAX products. We will conclude with a good look at the similarities, differences, strengths, and challenges of WiMAX vis-à-vis 3G technologies such as EVDO and HSDPA/HSUPA. The course will equip you with the knowledge necessary to

make good decision related to the evaluation, deployment, and management of this important technology.

**Customize It!** Ask us how we can adapt this course, usually at little to no added cost, to the “tech level” and job requirements of your group.

**Learn How To**

- Describe why WiMAX was needed and how it works
- Explain the spectrum considerations that affect the deployment of WiMAX
- List the various stages in the evolution of the WiMAX standard
- List the major WiMAX industry players
- Diagram the architecture of a WiMAX system
- Compare and contrast the strengths and limitations of WiMAX vis-à-vis the evolving 3G/4G technologies
- Describe some of the major applications of WiMAX
- Outline the major considerations involved in deploying a WiMAX system

**Course Outline**

- Wireless Basics
  - 1G, 2G, and 3G wireless technologies
  - TDMA vs. CDMA
  - GSM
  - WiFi and the evolving IEEE 802.11 standards series
  - Advent of WiMAX
- WiMAX: Why It Was Needed and How It Works
  - Technical issues underlying the advent of WiMAX: Fading and delay spread, propagation and attenuation
  - Why and how OFDM is employed within WiMAX
  - Use of CDMA in conjunction with OFDM
  - MIMO
- WiMAX Standards and Industry Groups
  - IEEE 802.16 working group
  - WiMAX forum
  - Broadband Wireless Association
- Evolution of the WiMAX Standards
  - Scope of IEEE 802.16 standard and “Broadband Wireless Access”
  - IEEE 802.16: Wireless MAN™ Air Interface for Broadband Wireless Access - December 2001
  - IEEE 802.16a - January 2003
  - IEEE 802.16.1: Air interface for 10 to 66 GHz
  - IEEE 802.16.2: Coexistence of broadband wireless access systems
  - IEEE 802.16.3: Air interface for licensed frequencies, 2 to 11 GHz
  - 802.16 - 2005
  - 802.16f - 2005
  - 802.16e: Mobile WiMAX - December 2005
  - 802.20: Standard air interface for mobile broadband wireless

access systems supporting vehicular mobility - physical and MAC layer

- The 802.20 suspension
- WiMAX: System Architecture
  - End-to-end network architecture
  - Physical and MAC layers
  - Mobility and Mobile WiMAX
  - Advanced features of mobile WiMAX: Smart antennas, fractional frequency reuse, multicast and broadcast service
  - Network design, deployment, and optimization
  - QoS issues
  - System performance considerations
  - Network security issues
- Technology Landscape and How WiMAX Fits into It
  - WCDMA family: UMTS, HSDPA, HSUPA, 3G LTE
  - cdma2000 family: 1xRTT, EVDO, and EVDV
  - WiFi, WiMAX, and 3G: Similarities and differences
  - Comparing Mobile WiMAX, 1xEVDO, and HSPA
  - WiMAX: Strengths and challenges
- WiMAX Deployment Considerations
  - Worldwide spectrum availability and regulation
  - Mobile WiMAX spectrum considerations
  - Licensed and unlicensed bands
  - Applications of WiMAX and Mobile WiMAX
  - Roadmap for WiMAX products
- Wrap-up: Course Recap, Q/A, and Evaluations

## **How You Will Learn**

- This tutorial will be taught in interactive lecture format, with plenty of opportunities for discussion of the issues of particular interest to your audience.
- Your lecturer will be someone who combines excellent instructional skills with subject matter expertise in WiMAX, 3G, CDMA, OFDM, and other wireless technologies.
- In addition to lecture, we will employ examples, analogies, and exercises to simplify the course content and add practicality to the class.
- If you already know something about LAN/WANs, WiMAX, or other wireless technologies, we will build on that to make the new material easier to master as well as more job-relevant.

*Revised*

*April 30f, 2007*