

# Wireless Communications

Last Updated Saturday, 25 August 2007

## LIDO TELECOMMUNICATIONS ESSENTIALS®

Part 4 addresses the fundamental conflict between mobility and broadband communications, which is being addressed on many fronts, and exciting new technologies and implementation techniques are making anytime/anywhere computing and communicating a reality in many different and convenient form factors, encompassing WANs, MANs, LANs and PANs. We will look at the emerging area of broadband wireless, including fixed and mobile wireless alternatives for voice, data, and multimedia, as well as what may be the most important driver of wireless of all - wireless access to the Internet and the entertainment universe. Part 4 will examine the impressive range of emerging wireless technologies, systems and services, delving into the realm of next-generation wireless networks, covering the full scope of WANs, MANs, LANs, PANs and even FANs and BANs - discussing how each of these domains will move forward into the broadband era. Such a programme would not be complete without an exploration of the key applications and growing range of intelligent wireless devices that will drive the wireless broadband future &ndash; driving innovation in the industry, and changing the fabric of both commerce and lifestyle &ndash; bringing benefits to industry, and more importantly to the growing population of humans and machines alike. For the industry, it is no longer just a dream, but an available option today, fulfilling both current customer demand, and producing near term revenues. Given such a combination, both customers and service providers can look forward to an ecstatic future.

### RADIO TRANSMISSION BASICS

- \* Brief History
- \* The Radio Spectrum
- \* Regulatory Issues
- \* Radio Performance Issues
- \* Antennas
- \* Radio Channel Limits
- \* Signal Modulation
- \* Spectrum Utilization
- \* Classes of Wireless Networks and Systems

### WIRELESS WIDE AREA NETWORKS (WWANs)

- \* Analog Transmission
- \* Digital Cellular Radio &ndash; 2G
- \* Enhanced Data Services &ndash; 2.5G
- \* 3G Standards
- \* UMTS TDD / TD-CDMA
- \* HSDPA, HSUPA, HSOPA
- \* CDMA 2000, 1xEV-DO, 1xEV-DV
- \* TD-SCDMA
- \* CDMA 450
- \* Beyond 3G, OFDM, MIMO
- \* 4G and 5G Visions

### WIRELESS METROPOLITAN AREA NETWORKS (WMANs)

- \* Broadband Fixed Wireless Access (BFWA), Multimedia Wireless Service (MWS)
- \* IEEE 802.16x standards (Wi-Max)
- \* Wi-Bro
- \* ETSI Broadband Radio Access Network (BRAN), ETSI HiperMAN, ETSI HiperACCESS
- \* Digital Video Broadcasting Return Channel for LMDS (DVB-RCL)
- \* Flash-OFDM
- \* IEEE 802.20x (Mobile-Fi, MBWA)
- \* iBurst Personal Broadband System
- \* IEEE 802.22 standards (Wi-TV)

### WIRELESS LANS (WLANs)

- \* IEEE 802.11x standards, Wi-Fi
- \* WLAN Security
- \* VoWLANs
- \* Wireless and Cellular Unite
- \* Mesh Networking

#### WIRELESS PERSONAL AREA NETWORKS (WPANs)

- \* Ultra WideBand (UWB)
- \* IEEE 802.15.3 (WiMedia)
- \* IEEE 802.15.4 (Zigbee, Babytooth)
- \* Radio Frequency Identification (RFID)
- \* Near Field Communications (NFC)
- \* Sensor-based Networks

#### EMERGING APPLICATIONS

- \* The Handset Revolution
- \* Mobile IP
- \* IP Multimedia Subsystem (IMS)
- \* Push-to-Talk (IP Radio)
- \* Mobile Phones as Portable Music Players
- \* Mobile Gaming
- \* Mobile Video
- \* Mobile TV
- \* Mobile Content

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