Connected & On the Go:

Broadband Goes Wireless

FCC Wireless Broadband Access Task Force

May 2005

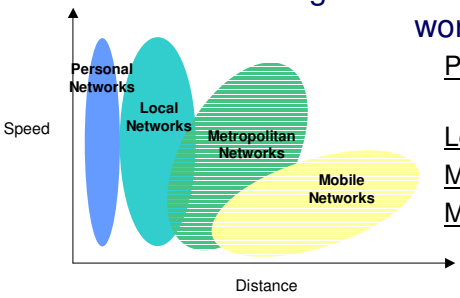
The Task Force

- Created in May 2004
- Purpose
  - Assess deployment of terrestrial wireless broadband technologies
  - Examine existing policies and make recommendations
- Public Notice sought comment
- Wireless Broadband Forum input
- Field studies

Wireless Broadband Defined

- Speeds ranging from 300 kbps to over 100 Mbps
- Digital, IP-based
- Licensed or unlicensed spectrum

Communicating across the room or around the world



Personal: arm's length (Bluetooth, UWB)

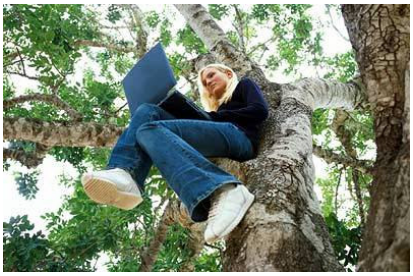
Local: building-wide (WiFi)

Metropolitan: city-wide (WiMAX)

Mobile: nationwide (3G, EV-DO)

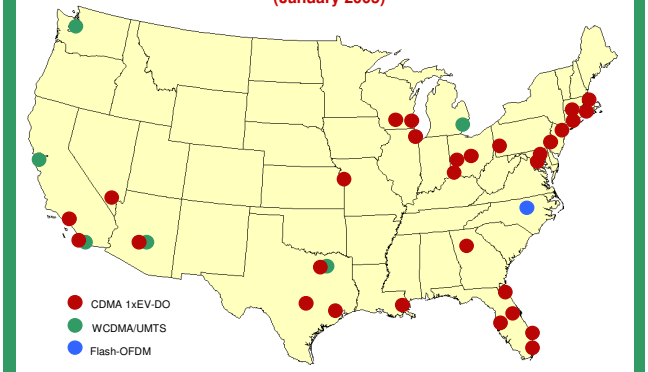
Wireless Broadband Attributes

- Portability and mobility
- Seamless connectivity

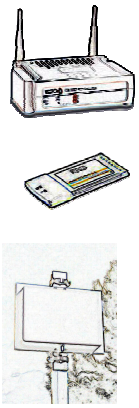


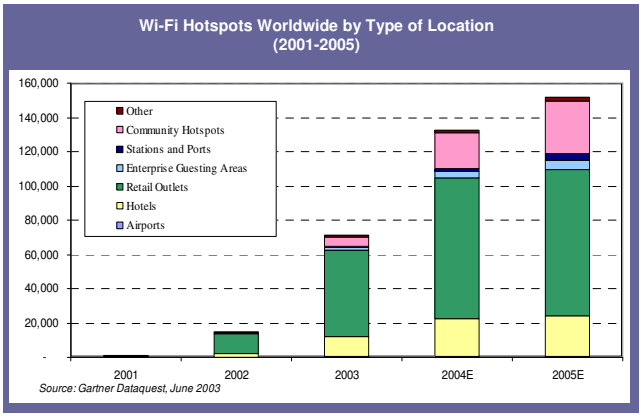
- Simplicity
- Off-the-shelf
- Critical role in reaching rural areas

Growth in Mobile Broadband



Growth in Wi-Fi





Wireless Internet Service Providers

- Small, often “mom-and-pop” businesses, using license exempt spectrum to provide broadband services to rural and underserved areas – between 4,000-8,000 in U.S.
- Networks aren’t just “last mile,” they are often last 30 or 50 miles

Sampling of Services

- Access to Broadband
- Community Networking
- Economic Development
- Education
- Telemedicine
- Basic Telephone Service Through Voice Over IP (VoIP)

Few Barriers to Entry

- Relatively low equipment costs
- Off-the-shelf or readily available equipment for consumers and small businesses
- Access to spectrum -- most WISPs operate in exclusively in unlicensed spectrum, therefore spectrum access is free
- Flexibility in regulations – type of technologies required to be used in unlicensed bands are not specified; instead, users operate within certain technical parameters

Unlicensed Part 15 Devices

- Equipment authorization in lieu of license: Radio transmitters and some electronic equipment must be authorized by FCC
- Operating Conditions: May not cause harmful interference and must accept any interference received
- Broad rules provide framework for private sector to develop detailed standards – *e.g.*, Bluetooth, Wi-Fi (IEEE 802.11b); Wi-Max (IEEE 802.16)
- *E.g.*, cordless phones, baby monitors, garage door openers, PDAs, wireless LANs, UWB
- "Way cool" area of development in spectrum use – growth has been explosive; millions of devices in operation

Making Spectrum Available -- Unlicensed Devices

- Spread spectrum bands
  - 902-928 MHz
  - 2400-2483.5 MHz
  - 5725-5850 MHz
- U-NII bands
  - 5150-5250 MHz
  - 5250-5350 MHz
  - 5470-5725 MHz
  - 5725-5825 MHz
- Upper bands

Licensed Services

- Pay for access to spectrum – licensing or secondary markets
- Receive interference protection
- *E.g.,* MMDS(BRS), LMDS, PCS
- Hybrid licensed/unlicensed – 3650-3700 MHz band

WISP Case Study: Coffman Cove, Alaska

- Prince of Wales Island
- Near the Tongass National Forest

The Challenge

- Population -- 140, winter; 200, summer
- Accessible only by ferry
- Commercial fisherman, road construction workers, and loggers

The Solution

- Wireless hot spot – 2 mile radius around “downtown” Coffman Cove
- Connects to VSAT link

Success!

Positive FCC Scorecard

- ✓ Allowing providers to offer the technologies and services that consumers demand
- ✓ Making spectrum available for wireless broadband
- ✓ Updating old rules to allow for new technologies
- ✓ Empowering consumers with off-the-shelf equipment

Task Force Recommendations: Unlicensed Devices

- Encourage voluntary frequency coordination
- Promote “best practices”
- Increase power limits in certain bands
  - allow WISPs to serve rural areas more easily
- Provide easier mechanisms for reporting of technical violations, including power boosting

Task Force Recommendations: Licensed Spectrum

- Streamline the process of getting spectrum to market
- Expedite the DTV transition
- Allow carriers to pair spectrum bands asymmetrically
- Adopt an “Innovation framework” for regulating wireless broadband

Important Factors for Continued Growth

- Access to Spectrum
- Flexibility in technical regulations
  - Equipment Authorizations
  - Smart Antennas
  - Cognitive or “smart” radios
- Technological Advances
- Continued Evolution of Industry Standards – from Wi-Fi to Wi-Max to Wi-Next

The Future of Wireless Broadband

- Convergence
- Seamless connectivity
- Innovative Technologies and applications