Using Wi-Fi and Wimax to bridge the digital divide

Hee Sung Lee
Director
Asia Pacific Communication
Marketing & Sales

Intel Corporation

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Agenda

- Intel in Communication
- Broadband Wireless
- Summary
Intel in Communication
MISSION

Be the pre-eminent building block supplier to the worldwide Internet economy
Intel Communications Group
S. Maloney

Intel in Communications
Silicon for Communications Clients and Infrastructure
Eco-system Enabling Technology and Standards
Intel Wireless Technologies

WAN  MAN  LAN  PAN

3G  WCDMA  UMTS  WiMAX  802.16  Real Broadband and Mobility  Wi-Fi*  802.11  <300ft.  UWB and Bluetooth  Software  RFID/TAG

Always Best Connected

*Other brands and names are the property of their respective owners.
**Intel’s Wireless Vision & Goals**

**Vision:**
- Easy, trusted connectivity anytime, anywhere

**Goals:**
- Win with Intel® Centrino™ Mobile Technology
  - Brand promise of safety, compatibility, reach
- Delivery of rich media services & applications
- Wi-Fi Handhelds & Handsets
  - 2H’04 products
- WiMAX Forum*
  - Enable the industry to deliver WiMAX Certified* solutions
Broadband Wireless Revolution
The Difference Of A Decade

1993: Less than 7 Million Internet Users
2003: More than 600 Million Internet Users

The 90’s were The Internet Decade

2003: Less Than 8 Million Access Points deployed
Less Than 3 Million Public Hotspot Users

2013: More Than 700 Million Access Points antcpd.
More Than 100 Million Public Hotspot Users

This will be The Broadband Wireless Decade

Source: RHK
Intel Confidential
And it’s happening...NOW!

**Content Distribution**

**Gadget Can Send Music on PC Around a House Without Lots of Wires**

That’s the vision of numerous electronics companies, which have dozens of products in the works to wirelessly “stream” music around your house. And it’s not just music that’s involved… (WSJ, Jan 19, 2004)

**Motorcycle Messengers Using Wireless Technology Act as E-Mail Relay Riders**

In the hills of northeastern Cambodia, five men on motorcycles are …using wireless Internet technology and a storage-and-transmission device strapped to their motorcycles, to drop off and pick up e-mail and Internet-search requests by driving near solar-powered electronic outposts along their rural route. (WSJ Jan 23, 2003)

**Classic Telecom**

**DoCoMo Tests Wi-Fi Handset**

NTT DoCoMo has developed a test model of a cellphone that can communicate over its super-fast third-generation cellular service and Wi-Fi Internet networks. With the new handset, people would be able to use Wi-Fi networks to surf the Web or to talk… (Associated Press, December 5, 2003, from WSJ)

**The Next 5 Billion**

**Consumer**

Broadband is a building block here. Getting at video, getting at music, getting at information… we are doing everything we can to make that attractive and push that forward.

-Bill Gates, Microsoft, CES Jan 7, 2004
Standards & Interoperability
The Path to Volume Economics

Formula:
- Existing proprietary technology & market
- Standards adoption
- Low cost manufacturing through economies of scale
- Wireless: available spectrum

Volume through Standards!

*Other names and brands may be claimed as the property of others.*
Wi-Fi Momentum

WW Wi-Fi Users

Million Units

WW Hotspots

Thousands

Shipments (Mu)

WW Wi-Fi Notebooks

Sources: Allied Business Intelligence, Inc Q4 ’03, Pyramid Research Report Nov ’03, In-Stat/MDR, Jan ’04
roadband Wireless Technology

Wireless DSL and Beyond

'04
1st Intel Si

'05
Mainstream Deployments
CPE / basestations

'06
Notebook Integration

'07
Handset Integration

Source: Intel Roadmap

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Broadband Wireless Usage Vision

ACCESS

- Fixed Access
- Data Focused
- RG’s for PC Clients
- Best fit for Rural Area Access

PORTABILITY

- Fixed and Portable access
- Data, some Voice
- RG’s & PC Cards
- Metro connectivity

MOBILITY

- Fixed, Portable & Mobile Access
- Data, Audio, Voice, Video
- Client Integration for PC’s & Handhelds
WiMAX Demonstration Video
Wireless Data Access Networks

GSM, CDMA

WiMAX

WiFi

Urban
Rural
Suburbs
Urban

Always Best Connected
How Can We Take Advantage?
WiMAX Benefits

• Consumers
  – More choices for getting broadband access!

• Operators
  – More choices for efficient use of valuable spectrum
  – Multiple equipment suppliers + lower costs = lower investment risk
  – Fill broadband access gaps for Residential & Business
  – Quickly provision broadband access & service levels
  – Create new “on demand” high margin broadband services

• Equipment makers
  – No longer need to develop every piece of the end-to-end solution
  – Can innovate more rapidly

• Component makers
  – Creates a volume opportunity for silicon suppliers
Summary

- Broadband Wireless Technology will help bridge the digital divide
  - Technology evolution will drive cost down
    - Standardization through Wi-Fi, WiMAX forum
    - Quicker ROI than wireline
  - Complements 3G deployments
  - Extends the network
    - Last mile for rural area
    - Quicker and flexible

Intel is uniquely positioned to help
Thank You
Backup
There’s no “best” technology -> the solution must be optimized for the Platform and the Usage Model.