Challenges and Threats of WiMAX for Telecom Operators

Udo Duelberg, SD BWA
Contents

• Market overview
  – Business / licenses

• Operator
  – Challenge / Threat

• Customer
  – requirements

• Technology
  – right choice
Potential customer base for mobile broadband

5 B people covered by Broadband Wireless spectrum licenses today
Number of BWA licences by region and frequency

**North America**

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**APAC**

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• Operator
  -- challenge and threat
European “Telecoms” Industry is in transition ...

- Operator business model shift & fragmentation
- Voice over IP
- Technology fragmentation
- New & intense Competition
- Regional fragmentation, consolidation & alliances
- Growth in (data) users, traffic & applications
- Massive cost pressure
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Challenges for operators and service providers

- Competition intensifies
- Traffic increases
- Internet services
- CAPEX & OPEX efficiency
- Revenue from new areas
- Technology Business Case

- WLAN
- wimax
- HSPA
- cdma
- LTE
Growing need for partnering and a functioning ecosystem due to increased complexity

- MVNOs
- End Users
- Corporate clients
- Value Added Service Providers
  - Fixed operators
  - Equipment Vendors
  - Service Operator

- Content Producers/Owners
- Content Aggregators
- Content Providers
- Investors
- Site landlords
- Outsourcing
- IT Partners
- License Owner
- Regulator

Access Network Operator
Core Network Operator
Changing Business Environment Require Change of “Telecom Operator” Strategies

Disruptive business model

- Content Business Model
  - Buy content: Free BBA and Voice
  - Advertising, content based
  - Media company push on quality (HD_IPTV, Music & Video)
  - Gaming (i.e. Sony PS3 portal to buy and play on-line)
  - E.Transaction, online goods
  - Operator as bitpiper
  - “Bandwidth & QoS”

- Internet Business Model
  - Pricing is not dependent on amount of usage or used service
  - Data... VoIP could be added
  - Wealth of free services
  - Internet main source for services
  - Operator provides access
  - “Best effort”

Established business model

- Mobile Virtual Operator
- Fixed Virtual Operators
- Hybrid Operators
- Cable operators
- Fixed Operators
- Enterprise
- Monopoly
- International Operators
- Mobile Operators
- Telecom Operators
- Cable Operators
- Entertainment Operators
- Online Games
- Ads
- E.Pay
- Music
- E.Com
Business model impacts technology choice

**Telecom model**

- In Telecom business, focus is on providing **ACCESS**, but plays minor role in Internet business
- Service provider often has control in all segments

**Internet model**

- Internet is foremost about **CONTENT & APPLICATIONS**, but are yet to break through in Telecom business
- Typically different players in each segment
- Customer – requirements
Internet based business, communication and communities are shaping the mobile business
Online — anytime — anywhere …

Video on demand
Audio—”books”
Music online
File-sharing
TV news
News—”paper”
Internet radio
• Technology - right choice
Different roles for access technologies

Telecom operator and service provider model:
- HSPA
- LTE
- GSM, WCDMA, CDMA-2000

Internet service provider model:
- WLAN
- WiMAX

Economies of scale
Comprehensive charging system
Brand development through traditional marketing and sales channels

Low cost-structure
Charging technically simple or embedded
Brand development through Internet communities
WiMAX for wireless broadband

WiMAX is a technology for

- Offering wireless access as an alternative to fixed access
- Extending broadband service to areas without fixed broadband access
- Extending broadband service with mobility
- Operators without cellular spectrum allocations

Nokia Siemens Networks mobile WiMAX end to end solution supports both FIXED and MOBILE broadband applications
Nokia Flexi WiMAX Base Station
A new way to build your radio network

• Fits practically anywhere - easier site acquisition, cheaper and more optimal sites
• One person can carry the modules - faster, more economic roll-out
• Minimized energy consumption - lower operating costs
• Modularity with OBSAI – future-proof multi-radio BTS architecture
• A few module types can meet all site needs - multipurpose BTS

Installation options for indoor and outdoor use:
• Variety of possibilities, e.g. floor and shelf
• Wall, multiple units on wall
• 19” cabinet
• Stand or pole

Flexi WiMAX BTS enables you to build coverage exactly where it is needed and minimize the number of BTS’s
WiMAX terminal from Nokia in 2008 based on Internet Tablet concept. N800 is internet-optimized multimedia computer.

Key Nseries experiences:
1. Browsing
2. Internet communications

- Web on a portable-sized tablet with high-resolution widescreen display
- Internet communications (internet calling with integrated webcam, Instant messaging and email)
- Access to internet media from living room and on-the-go, with high quality stereo audio

Nokia N800
Easy access to web services and communications at home and on the move over Wi-Fi or over cellular network by using a mobile phone with Bluetooth technology.
WiMAX terminal - notebooks
Native Integration within Intel Centrino™ Platform

• WiMAX support integrated in new notebooks, similar to WiFi capability available today

• Most new notebooks worldwide are expected to be WiMAX-enabled by 2009

• Key enabler of a WiMAX business model based on unsubsidized terminals

Desktop modems

PCMCIA cards
WiMAX ecosystem booster

Sprint Nextel strategic relationship involves network infrastructure, Nokia mobile device and market development commitments.

Selected partners will deliver infrastructure and devices and interoperability between them will be tested and ensured.

Sprint Nextel commercial deployment will drive the whole WiMAX ecosystem.

"Nokia's expertise in delivering end-to-end wireless technology solutions, coupled with Nokia devices that enable enhanced multimedia content, will enable Sprint Nextel to provide our customers with reliable, high-quality WiMAX service," said Barry West, Sprint Nextel President, 4G Business Unit.

Nokia press releases 5.1.2007 and 14.3.2007
**Sprint update at CTIA – Mar 26, 2007**

**Sprint public timing**
- Initial service launches in several markets – yearend 2007
- Commercial service in a number of markets – April 2008
- 100 million people across the country – yearend 2008

**Nokia Siemens Networks markets**
- Austin*, Dallas*, Denver, Fort Worth*, Portland, Salt Lake City, San Antonio*, Seattle

**Device vendors**
- Nokia – Internet Tablets, Multimedia Computers
- Samsung – Data cards (some 1xEV DO)
- ZTE – Data cards, USB, Modems (CPEs)
- ZyXEL – Modems / CPEs

**Network vendors**
- Nokia Siemens Networks, Samsung, Motorola

Interoperability starts at Sprint – WiMAX Forum will follow
Conclusions

• Mobile WiMAX supports both fixed – and mobile broadband applications

• Modularity and compact size of Nokia Flexi WiMAX BTS enable new possibilities for site selection. Easier site acquisition enable significant site cost-savings

• The Flexi WiMAX BTS will be commercially available Q1/2008, and Nokia WiMAX capable mobile devices are expected to be available in 2008.

• Nokia Siemens Networks is a leader in mobile solutions and a pioneer in broadband wireless access
Thank You!
End to end WiMAX 16e solution

Services

Network Management System

Actively working with application providers

Multicast access

Market leader in terminals
Internet Tablet Nokia 770, N800

Mobile WiMAX

WiMAX BTS with remote RF Head

WiMAX BTS

ASN GW

Backhaul

Public Internet

Home Agent

AAA (IMS)

PSTN

Content & Services

Roaming PLMN

Corporate Internet

DSL

Cellular

WiFi

Mobile WiMAX

Single or Multi-mode device

WiMAX BTS

Network Design Solution

Telecom Implementation / Turnkey Solution

Care Solution / SWM Solution

Hardware Services Solution

Competence Development Solution

Telecom Implementation / Turnkey Solution

Care Solution / SWM Solution

Hardware Services Solution

Competence Development Solution

New Service Creation Solution

Hosting Solutions

Managed Services

Network Optimization Solution

Operations Support Solution

Network Design Solution

Telecom Implementation / Turnkey Solution

Care Solution / SWM Solution

Hardware Services Solution

Competence Development Solution

New Service Creation Solution

Hosting Solutions

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Network Optimization Solution

Operations Support Solution