
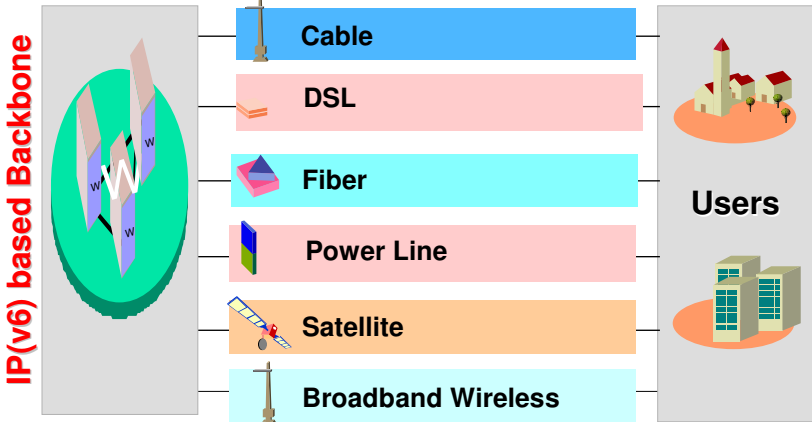


# The Development of WiMAX

Sep. 2005


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## Broadband Access Solutions



**IP(v6) based Backbone**


- Cable
- DSL
- Fiber
- Power Line
- Satellite
- Broadband Wireless

**Users**

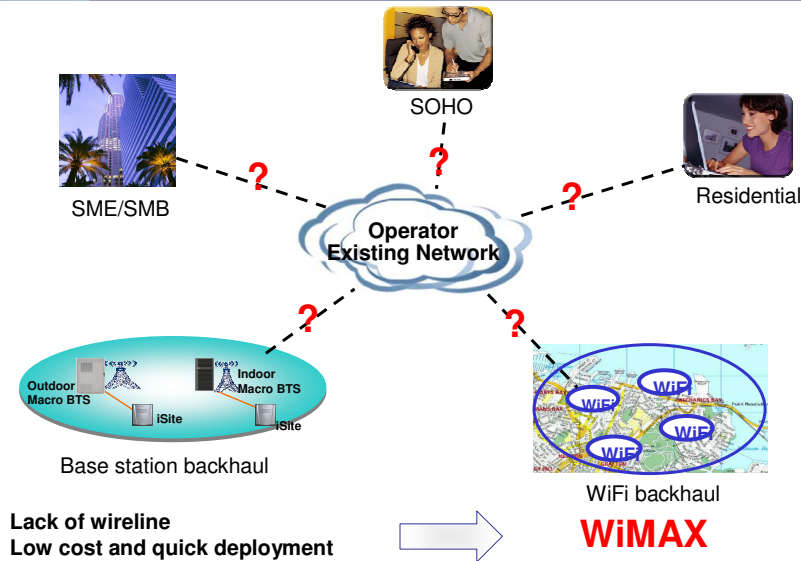
Deployment factors:

- Existing network and evolution
- Requirements of service
- Cost
- Etc.

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## Requirements from Broadband Market Development



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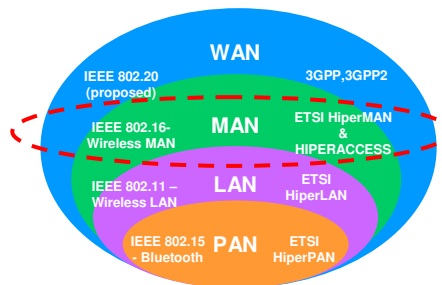


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## A Glance of WiMAX



Worldwide  
Interoperability for  
Microwave  
Access



### WHAT

- WiMAX is to 802.16d/e what WiFi is to 802.11
- Based on IEEE 802.16 and ETSI HIPERMAN standards
- Metropolitan area network (MAN) technology

### APPLICATION

- Hotspot connectivity
- Wireless backhaul
- Last-mile broadband access
- Portable broadband
- Future Mobile broadband

### BENEFIT

- Unified standard
- Conformance and Interoperability Certification
- Lower Cost CPE and multiple vendor
- Lower investment risk

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## Standard and Industrial Status

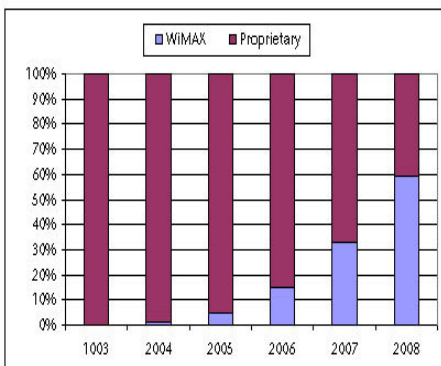
- **IEEE 802.16 standard status**
  - IEEE 802.16-2004 launched in July, 2004.
  - 16e is expected to be launched in September, 2005.
- **WiMAX Forum status**
  - Now 330 members, more than 120 members are carriers.
  - Certification test will start at Oct., 2005.
- **Industrial chipset roadmap**
  - Chipset based on 16d launched in April, 2005.
  - 16e chipset will be launched in 2006Q3.
- **Industrial equipment roadmap**
  - WiMAX 16d-based equipment will be trial in 2005H2, mass commercial application in 2006.



## WiMAX v.s MMDS

	MMDS	WiMAX
PHY layer	Single carrier	OFDM/OFDMA
Standard	Private	802.16d/e
Certification	No	WiMAX
Coverage	LOS	NLOS
Application	Fixed	Fixed/Potable/Mobile
Price	High(1000\$/CPE)	Low(<500\$/CPE)
Evolution	No	16d/16e portable/16e mobile

WiMAX proportion of total PMP market



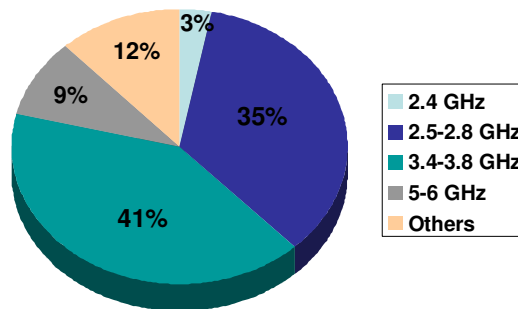
Source ABI

**Real Low cost on FBWA.....only after there is WiMAX ( 802.16d/e standard & Conformance and Interoperability Certification).  
WiMAX proportion will be 60% of total PMP market in 2008.**



## WiMAX Spectrum

**Projected BWA Spectrum Mix**  
2006 Forecast



Source: Skylight Research, Q2'03

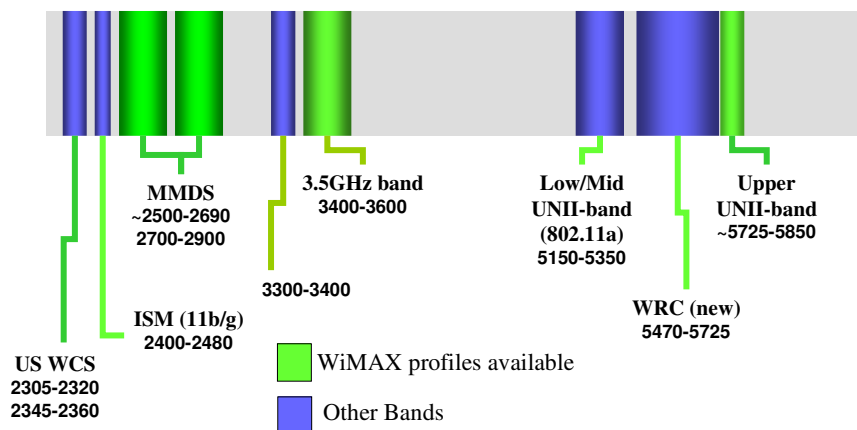
3.5GHz (3.3—3.8) , 2.5GHz (2.5-2.8) , 5.8GHz (5.25—5.85)

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6

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## Spectrum Condition

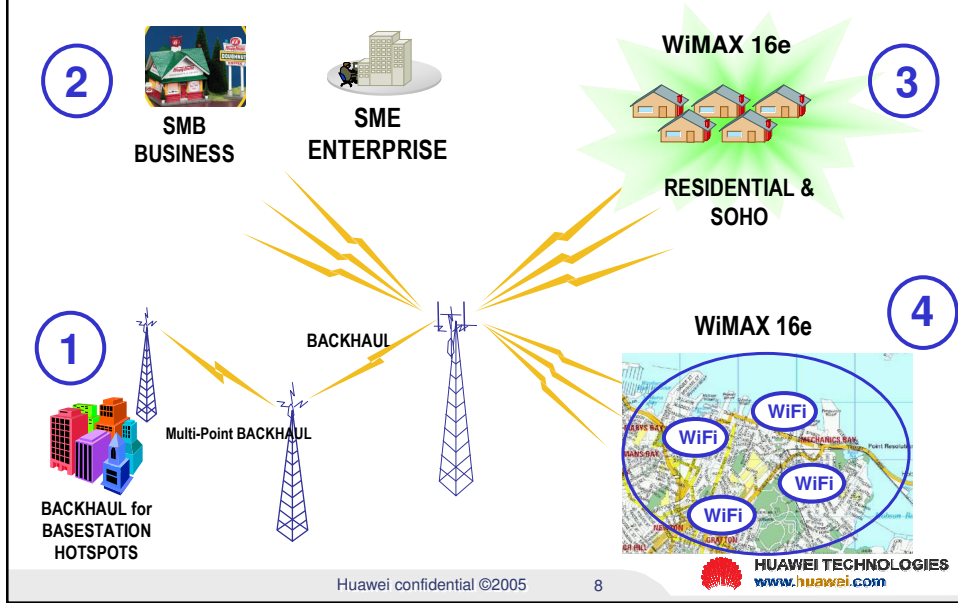


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7

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## WiMAX Application Segments



## WiMAX deployment strategy

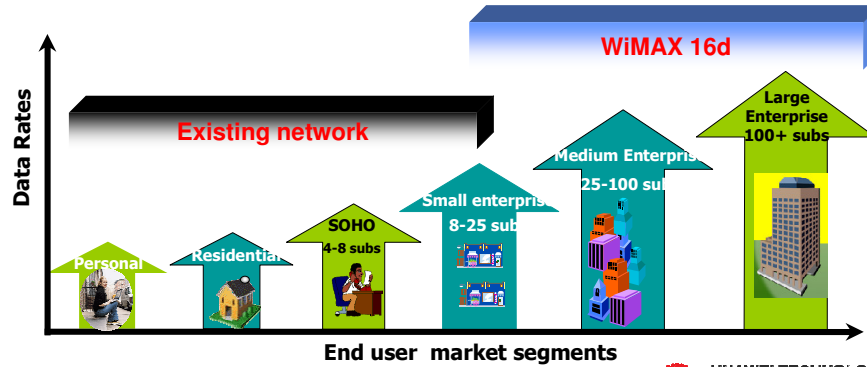
Various deployment strategy is possible and may be chosen by different players according to specific business conditions and future planning

WIMAX Deployment strategy					
Service	Fixed	Nomadic	Portable	Simple Mobile	Full Mobile
Option 1	Start/end				
Option 2	Start	end			
Option 3		Start/end			
Option 4		Start	end		
Option 5	Stage 1	----->			Stage2(end)
Option 6				Start	end
Option 7					Start/End

## Opportunity1: Fixed Wireless Access

### Phase 1 (16d based):

- ✓ **Fixed, 2005--2006**
  - ✓ 16d support SME/SMB broadband access
  - ✓ 16d support WiFi/base station backhaul
  - ✓ Complement of existing network



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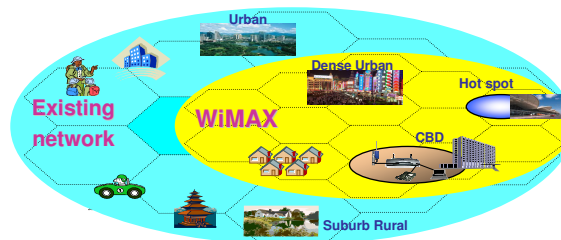
10

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## Opportunity2: Portable & Mobile Broadband Access

### Phase 2 (16e based) :

- ✓ **Portable, 2006--2007**
  - ✓ Existing mobile network support voice and mobile data access
  - ✓ 16e portable support broadband access for SOHO and Residential
  - ✓ Indoor CPE, PCMCIA
- ✓ **Mobile in the future**
  - ✓ Mobile broadband
  - ✓ Dual-mode PCMCIA or PDA



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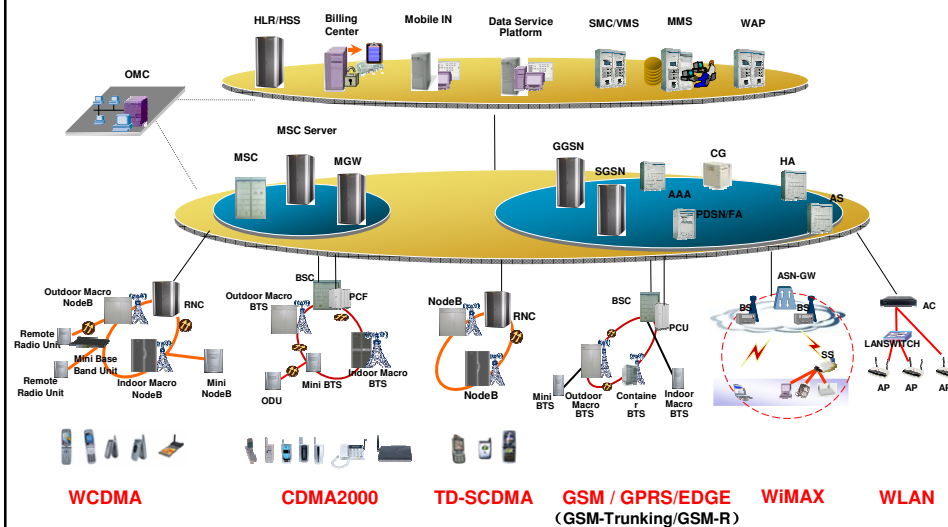
11

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## Huawei's effort on WiMAX

- ❑ Jun2001 802.16 standard tracking, key technology research, OFDM/OFDMA/MIMO...
- ❑ Dec2002 IEEE802.16 prototype products research
- ❑ Aug2004 Joined WiMAX Forum
- ❑ Jan2005 Hosted IEEE802.16 Session #35 in Sanya, China
- ❑ Jun2005 Chairman of TGnetman
- ❑ Coordinator from IEEE802.16 to CCSA (China Communications Standard Association)

## A Promising Wireless Solutions Provider



WCDMA

CDMA2000

TD-SCDMA

GSM / GPRS/EDGE  
(GSM-Trunking/GSM-R)

WiMAX

WLAN



**Thanks**

**Technology Changes  
Communication Lasts**

Mar. 15th 2005

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14



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