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## Rural-Suburban WiMAX

An ASEAN blueprint in support of the  
UN Millennium Development Goals



A grade school in Barbaza, Antique has only one computer. The pupils use stones to practice their hand motor skills in navigating the computer mouse.



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The nearest hospital in Malatunglan, Quezon is a seven-hour boat ride in treacherous waters. *“When medication is not available, there’s nothing we can do. Our children just die.”*



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...in year 2000 the United Nations of the world signed a declaration in support of the worlds developing countries

### UN Millennium Development Goals (MDG)

By the year 2015, all 191 United Nations Member States have pledged to meet these goals

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases
7. Ensure environmental sustainability
8. Develop a global partnership for development



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# ...how relevant is the ICT industry to these goals ?

## ICT...

“a fundamentally generic technology, that will likely have the **greatest impact** on achievement of the goals.”



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## Agenda

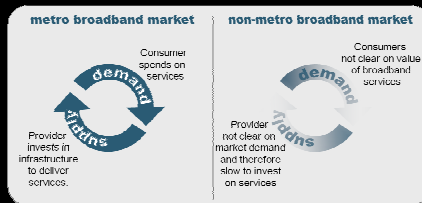
- ◆ Critical Mass & Sustainability Models
- ◆ Mode of Usage Alignment: Community Development
- ◆ Ecosystem of Innovation & Competition
- ◆ Thailand-ASEAN Blueprint Trial: Rural-Suburban WiMAX



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## ASEAN Rural-Suburban Broadband Critical Mass Disconnect



### Underlying Issues...

1. Value understanding of applied usage
2. Silo community demand
3. Technology capabilities and viabilities

The Problem Statement: is ASEAN wide, starting not far beyond metropolitan areas...and effects about 300 million people.



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## Rural-Suburban Broadband Towards Critical Mass

**Critical Mass of Value**  
Government, Businesses, Consumers

**Critical Mass of Demand**  
Service Providers / Telcos

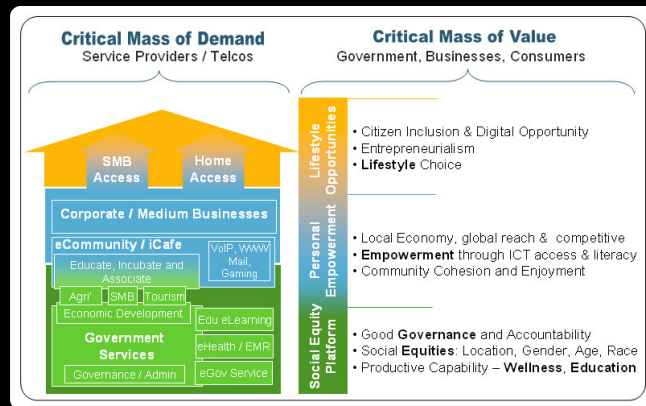
1. Educate rural-suburban stakeholders on application usages, value and possibilities
2. Consolidate community demands
3. Align mode of usage to technology ecosystems
4. Enable innovation and commoditisation based solution through standards



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## Rural-Suburban Broadband Stakeholder Sustainability Model



UN Millennium Development Goals (MDG)  
By the year 2015, all 191 United Nations Member States have pledged to meet these goals.



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## Rural-Suburban Broadband Key Modes of Usage

	Fixed	Nomadic (Device can move – but application used in fixed state)	Full Mobility	Voice Apps	Data Apps	Visual Interface
<b>School</b> (K-12 & Vocational e-Learning)	80%	20%	○	<5%	95%	15" to 17"
<b>Clinic / Hospital</b> (EMR, mPoC, Vital Signs)	60%	40%	○ Future (emergency services)	10%	90%	4" to 20"
<b>Tourism / Comm' Centre / iCafe</b> (Shared Access/VoIP, Entert', e-Learn')	90%	10%	○	30%	70%	15" to 17"
<b>SMB and Agriculture</b> (ERP, e-Learning, Market Link, VoIP)	70%	30%	○ Future (SMB m-Commerce)	30%	70%	15"
<b>Home: Child/Mother Access</b> (Equitable Access, e-Learning, VoIP)	90%	10%	○	40%	60%	15"



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# Broadband Technology Enabling Capability, Innovation and Competition

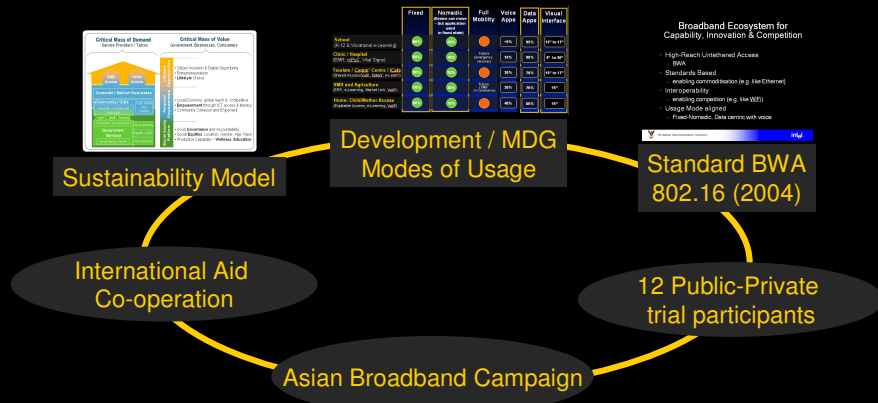
- ◆ High-Reach Untethered Access
  - BWA
- ◆ Standards Based
  - enabling scale, commoditisation and affordability (e.g. like Ethernet)
- ◆ Interoperable
  - enabling open market competition (e.g. like WiFi)
- ◆ Usage Mode aligned
  - Fixed-Nomadic, Data centric with voice



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## Rural-Suburban WiMAX Thai-ASEAN Blueprint Trial



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## Rural-Suburban WiMAX: Blueprint Trial

# Trial Objectives

1. To **validate WiMAX** based solutions as an **effective and economical** broadband technology in specific spectrums
2. To **validate the capabilities and economics** of WiMAX services supporting the Government **digital divide objectives** in rural areas (USO) and competitive offerings to suburban areas, specifically
  - Enhanced learning and access to education, religion, and local administration
  - Improved healthcare services and quality of life,
  - Incubation & support of small medium businesses
  - Enhanced agricultural productivity and trade efficiencies
  - Facilitate efficiencies of Tourism sector operators
  - Enable equitable and efficient access to data/voice services and the digital economy
3. To **gain interest and investment** into Thailand for strategy, infrastructure and solutions supporting the goals of narrowing the digital divide of rural and suburban areas and reducing rural poverty



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## Rural-Suburban WiMAX: Blueprint Trial

# Trial Participants

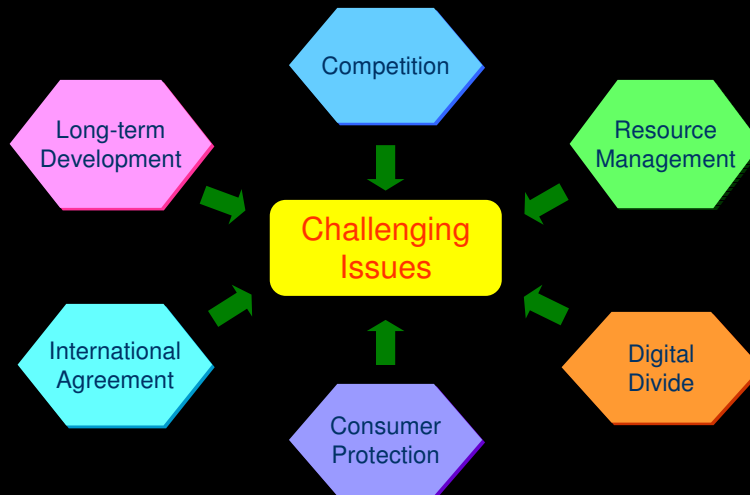
National Telecommunications Commission, of Thailand (NTC)
Ministry of Information, Communications and Technology
Intel
Alcatel Thailand
True Corporation
Telephone Organization of Thailand (ToT)
KSC Internet
Communications Authority of Thailand (CAT)
Ministry of Education
Ministry of Public Health
CP Group / CP Foods (Agriculture)
Software Industry Promotion Authority (Tourism)
Local Government and Citizens



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# Telecoms Master Plan



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# Telecoms Master Plan

## 1. Free & Fair Competition

- ➔ Licensing; types of license, licensing fee etc.
- ➔ Interconnection & unbundling network
- ➔ Promotion of free and fair competition

## 2. Telecommunication Resource Management

- ➔ Effective allocation of spectrum
- ➔ Efficient use of numbering plan



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# Telecoms Master Plan

## 3. Universal Service Obligation and Consumer Protection

- ➔ Equal access to public telephone and internet network for all villages throughout Thailand at an affordable price
- ➔ Narrow the digital divide between rural and urban area
- ➔ Provide telecommunication services to education, religion, health centre, handicap and elders



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# Telecoms Master Plan

## 4. Telecommunication Industry Promotion

- ➔ Promote Thai telecommunications industry to compete regionally
- ➔ Grant of R&D fund for telecommunications development

## 5. International Agreements

- ➔ Multi-lateral: WTO, GATS
- ➔ Bi-lateral: FTAs



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# Telecoms Master Plan

## 6. Specific Telecommunication Promotion

- ➔ NGN, WiFi, WiMAX, fixed and wireless broadband access
- ➔ RFID

## 7. Preparedness for Emergency and Natural Disaster

- ➔ Implementation and rehearsal of preparedness of national telecommunication network for emergency and natural disaster
- ➔ Promotion of amateur radio network for emergency and natural disaster



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# USO and Social Service

- ◆ Within 24 months, 6,000 villages will be installed with at least one public phone and Internet access.
- ◆ Within 36 months, 4,000 schools, health care centres, religious places, etc. will be installed with at least one public phone and one private phone.
- ◆ The handicap, senior citizen with income below the poverty line or without income and low income persons will be given 30 minutes prepaid phone card a month.



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## Present Status of WiMAX Exploitation

- ◆ Definite spectrum band for WiMAX is not yet allocated by NTC
- ◆ The trial is very beneficial to verify the best use of spectrum, bandwidth, technology, applications and finally standard.



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Table 2: Spectrum Requirements for Scope 1 and Scope 2

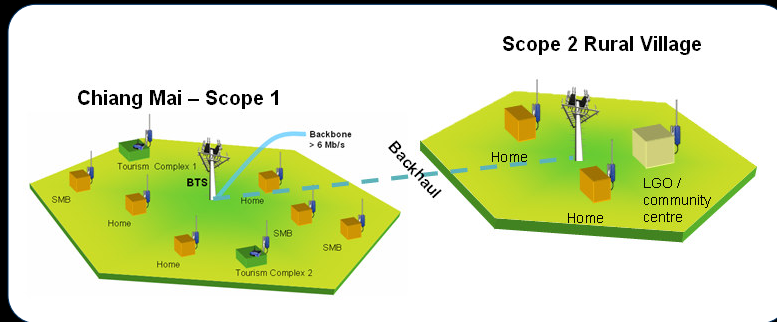
Band targeted for Trials	3.4GHz – 3.6GHz Uplink: 3399.5-3453.5Mhz Downlink: 3499.5-3553.5Mhz
Requirement per Location	30MHz
Lot Size	7MHz
Lots allocation / Operator	Multiple
Channel Spacing	FDD
Location	Korat, Chang Mai, Roi Et, Omkoy or Mae Chaem
Duration	Sep '05 to Mar '06



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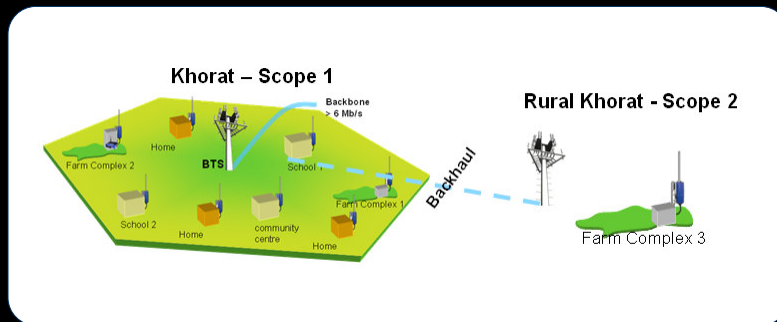
# Rural-Suburban WiMAX: Blueprint Trial Chiang Mai Region



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# Rural-Suburban WiMAX: Blueprint Trial Khorat Region

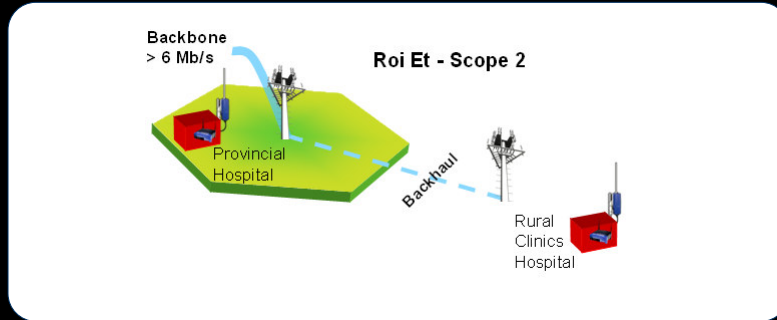


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# Rural-Suburban WiMAX: Blueprint Trial

## Roi Et Region



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# Rural-Suburban WiMAX: Blueprint Trial

	Human Development Index	PCs per '000 people	Telephone mainlines per '000 people
Year	2002	2001	2001
Thailand	0.768	28	105
Philippines	0.753	22	42
Vietnam	0.691	12	38
Indonesia	0.692	11	35
Laos	0.534	3	10
Cambodia	0.568	2	2

**Broadband Ecosystem for Capability, Innovation & Competition**

- High-Speed Unrestricted Access BWA
- Standard Based - enabling convergence (e.g. 4G Ethernet)
- Interoperability - enabling convergence (e.g. 4G Wi-Fi)
- Usage Made aligned - Fixed/Wireless, Data services with voice

**International Aid + equity investments + ASEAN collaboration + GTM programs**

**ASEAN Nations Rural-Suburban WiMAX-MDG Agenda**



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# ASEAN Rural-Suburban Broadband In Summary

Success requires -

1. Supply-Demand **Critical Mass** Tension
2. **Public-Private partnership** to create **Stakeholder Sustainability Models** supporting social, economic and living standard goals (i.e. MDG)
3. Inherent '**mode of use**' support by technology
4. Open-standard interoperable BWA – **802.16(2004)**
5. International aid and equity **investment** to accelerate infrastructure and content service implementation



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