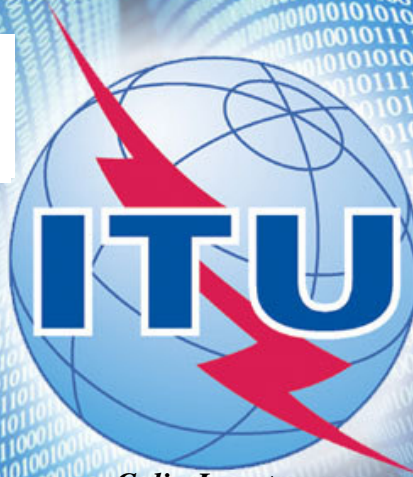# Wireless Broadband in the Global Scene
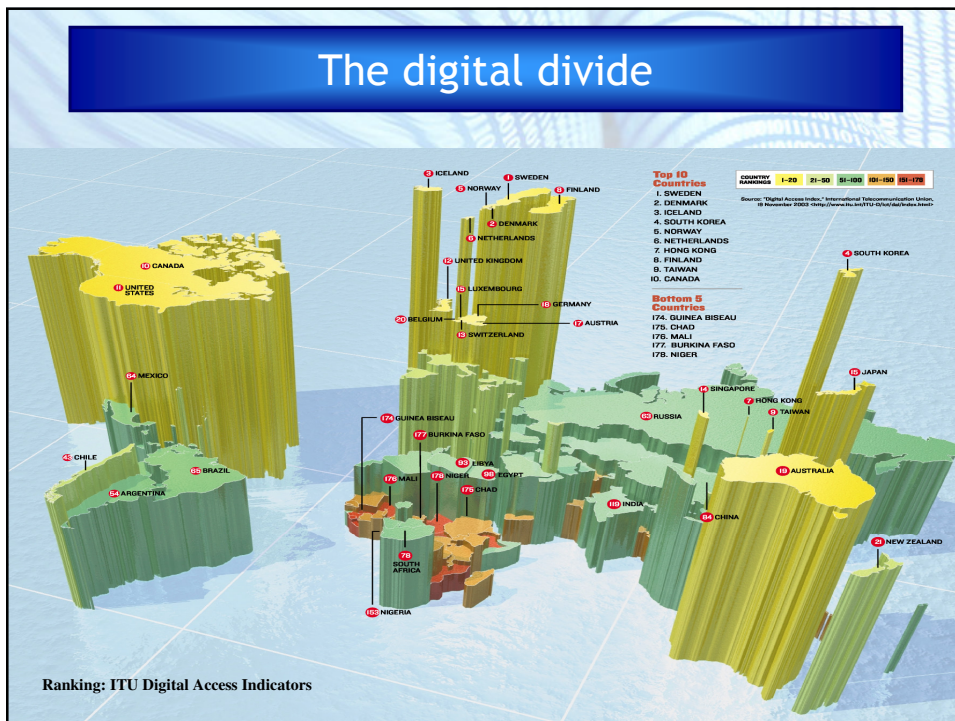
Broadband Wireless Access for rural and remote areas for the ASP Region

Shenzhen
1-2 September 2005

Colin Langtry
Counsellor SG 8, ITU-BR

The digital divide

Ranking: ITU Digital Access Indicators

Broadband global initiative

world summit on the information society
Geneva 2003 - Tunis 2005

Plan of Action (Document WSIS-03/GENEVA/DOC/5): C2. Information and communication infrastructure: an essential foundation for the Information Society:

d) Develop and strengthen national, regional and international **broadband network infrastructure, including delivery by satellite and other systems,** to help in providing the capacity to match the needs of countries and their citizens and for the delivery of new ICT-based services. Support technical, regulatory and operational studies by the ITU and, as appropriate, other relevant international organizations in order to:

• **broaden access to orbital resources, global frequency harmonization and global systems standardization**;
• encourage public/private partnership;
• promote the provision of global high-speed satellite services for underserved areas such as remote and sparsely populated areas;
• explore other systems that can provide high-speed connectivity.

Connecting the world

World population: 6.4 billion
Not having broadband: 6.3 billion

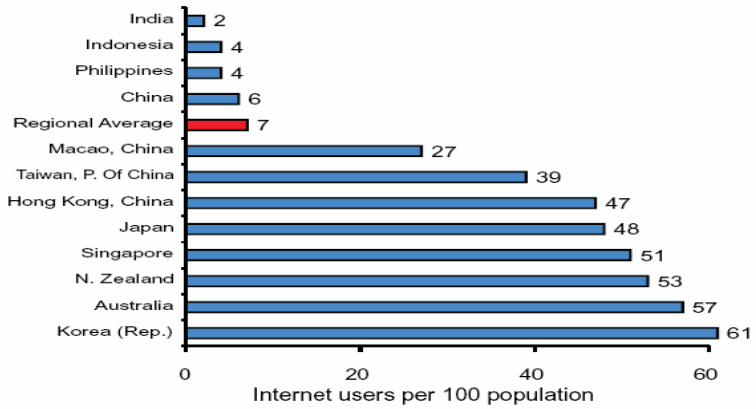*"…The economic and social case for developing broadband access is very strong and takes on added significance for **rural and remote communities, where improved communications** can address a variety of challenges posed by distance."*   OECD, April 2004.

New fact: **broadband wireless** is emerging as a platform to provide low-cost, high-performance access networks in rural and remote areas.
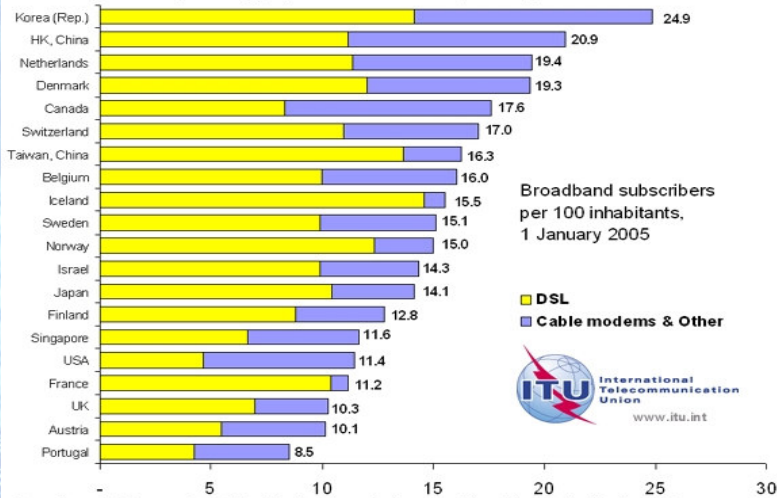
Internet users

Figure 11: Internet Users Per 100 Inhabitants in Selected Asia-Pacific Economies, 2003

Country	Internet users per 100 population
India	2
Indonesia	4
Philippines	4
China	6
Regional Average	7
Macao, China	27
Taiwan, P. Of China	39
Hong Kong, China	47
Japan	48
Singapore	51
N. Zealand	53
Australia	57
Korea (Rep.)	61

Source: ITU World Telecommunication Indicators Database.

Broadband penetration

Broadband penetration by technology, top 20 economies worldwide, 1 January 2005
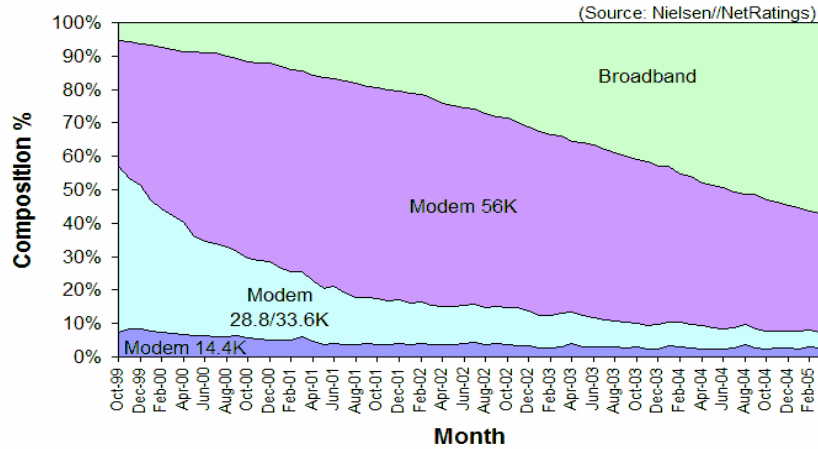
Economy	Broadband subscribers per 100 inhabitants, 1 January 2005
Korea (Rep.)	24.9
HK, China	20.9
Netherlands	19.4
Denmark	19.3
Canada	17.6
Switzerland	17.0
Taiwan, China	16.3
Belgium	16.0
Iceland	15.5
Sweden	15.1
Norway	15.0
Israel	14.3
Japan	14.1
Finland	12.8
Singapore	11.6
USA	11.4
France	11.2
UK	10.3
Austria	10.1
Portugal	8.5

Legend:
- ☐ DSL
- ☐ Cable modems & Other

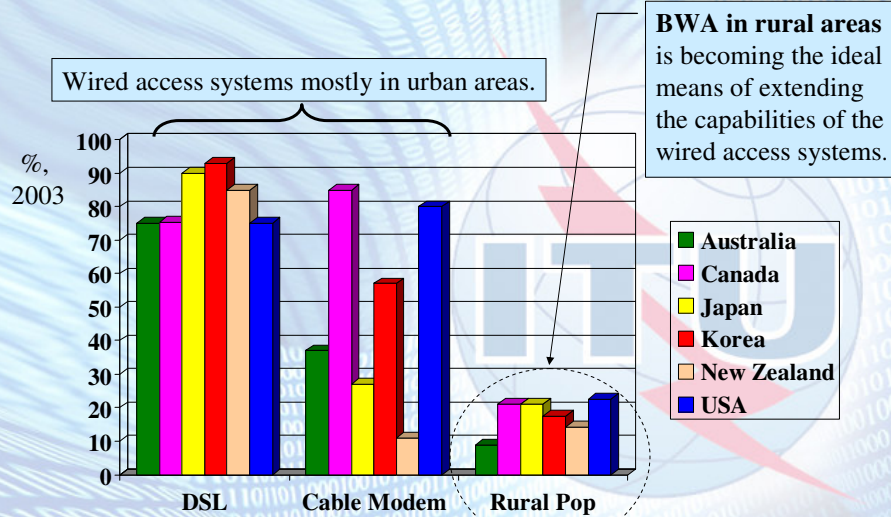International Telecommunication Union
www.itu.int

Source: International Telecommunication Union (ITU) adapted from national reports (excludes mobile cellular broadband (e.g., 3G)).

Access Methods

Web Connection Speed Trends - Home (US)

(Source: Nielsen//NetRatings)

Broadband

Modem 56K

Modem 28.8/33.6K

Modem 14.4K

Composition % (y-axis: 0% to 100%)

Month (x-axis: Oct-99 to Feb-05)

Wireless & wired broadband access

Wired access systems mostly in urban areas.

BWA in rural areas is becoming the ideal means of extending the capabilities of the wired access systems.

%, 2003

- Australia
- Canada
- Japan
- Korea
- New Zealand
- USA

DSL   Cable Modem   Rural Pop

Source: OECD, 2004.
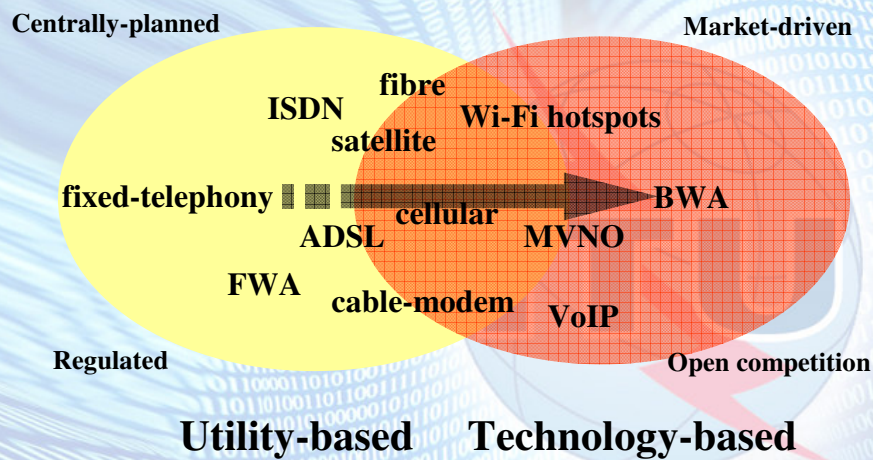
Broadband Wireless Access

*"**This will revolutionize society, just as mobile telephony revolutionized society in the 1980s**",*
Mike Galvin, Director of Internet Operations, BT.

*"The proposal for **Internet access through fixed wireless**, which led to major losses at Winstar, Teligent, as well as at AT&T Wireless and Sprint, may yet turn out to be the best way to provide residential broadband access.",*
Andrew Odlyzko, Univ. of Minnesota

Business Model Shift

Centrally-planned / Market-driven

fibre
ISDN
satellite
Wi-Fi hotspots
fixed-telephony → cellular → BWA
ADSL
MVNO
FWA
cable-modem
VoIP

Regulated / Open competition

Utility-based   Technology-based

Status & roles of BWA

World Market Forecasts 2003-2008 by VisantStrategies

A migration path to beyond IMT-2000 systems.

More likely to be used by holders of BWA spectrum rather than mobile carriers.

Plays a role in outdoor and private networks, the extension of hot spots, and backhaul applications that lack line-of-sight.

Equipment is forecast to reach a value of approximately $1 billion in 2008, the study finds, with growth accelerating late in the period

Systems for BWA

- IMT-2000 (3G) and systems beyond
- IEEE 802.16
- IEEE 802.20
- HiperMAN
- Satellite
- HAPS
- P-MP
- MMDS

- Wi-Fi -
IEEE 802.11b
IEEE 802.11a
IEEE 802.11g
IEEE 802.11i
- Free space optics
- HiperLAN2
- Ultra wideband
Etc….

The road to BWA

Need
Market
Technology

- Spectrum & regulations
- Radio interface standards
- Sharing and interworking