6th World Telecommunication/ICT Indicators Meeting (Geneva, 2007)

Presentations

SOURCE: MCMC, Malaysia

TITLE: Building Community Access Statistics in Malaysia

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ITU Telecommunications Indicators
/ Community Access Indicators Meeting
Geneva
13 - 15 December 2007

Building Community Access Statistics in Malaysia

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Contents

- Definitions and operational equivalents
- Indicators and methodology
- Some statistics

Definitions and operating equivalents

A quick recap

Public Internet Access Centre

A Public Internet Access Centre (PIAC) is a location, at which Internet access is made available to the public on a full-time or part-time basis.

Definitions and operating equivalents

A Digital Community Centre (DCC) is a PIAC that offers equitable, universal and affordable access. Very often they are free, subsidized or at cost price and usually sponsored by government, the corporate sector and NGOs.

The minimum requirements for a PIAC to be considered as a DCC:

At least one printer & support and maintenance

A minimum connection speed to the Internet service provider (ISP) of 64 Kbps per centre, with an acceptable amount of bandwidth available to users

Minimum opening hours per week: 20 hours

Definitions and operating equivalents

```
                    ┌──────────────┐
                    │     PIAC     │
                    └──────────────┘
                           │
             ┌─────────────┴──────────────┐
      ┌────────────┐              ┌──────────────────────┐
      │    DCC     │              │  Other forms of PIAC │
      └────────────┘              └──────────────────────┘
                                          │
                              ┌──────────────────────────────┐
                              │ Internet cafes, telecentres etc │
                              └──────────────────────────────┘
```
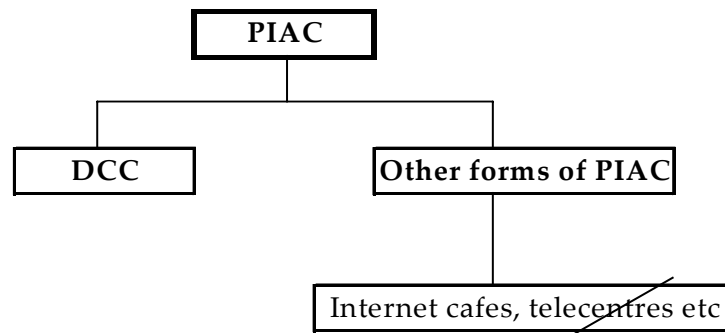
Definitions and operating equivalents

Based on the above, DCCs in Malaysia consists in the main of the following:

The Pusat Internet Desa (Rural Internet Centres) of the Ministry of Energy, Water and Communications

The Kedai.kom of the SKMM

The Medan InfoDesa of the Ministry of Rural and Regional Development (MRRD)

The libraries

Definitions and operating equivalents

These may not be the only DCCs.

The Aspirasi Digital website
http://www.aspirasidigital.net.my/InisiatifMain.asp lists all
outreach initiatives by KTAK, government agencies including
SKMM, corporate citizens and NGOs to bridge the digital divide.

Among them could be programs that qualify as DCCs.

Definitions and operating equivalents

Definitions and operating equivalents

Entire list published in the Aspirasi Digital website will be researched.

This would entail contacting the officers concerned and studying the type of services offered to see if they qualify as a DCC or other forms of PIAC or neither.

Those that fit the definition of PIAC/DCC into the Community Access Indicators system.

Definitions and operating equivalents

A form of outreach program that could defy the present definition of a DCC is the Mobile Internet Unit.

This is basically a bus that is driven into target areas to provide Internet access.

Is a bus, when parked, a site, a location, a centre of instruction as required by the definition of a DCC?

What about the 20 hours of operation per week?

Definitions and operating equivalents

The Mobile Internet Unit (MIU) was chosen as one of the finalists, out of 612 ICT projects contested worldwide in the Stockholm Challenge Award 2000, Sweden

Definitions and operating equivalents

Other PIACs are the Internet cafés.

The Companies Commission (Registrar of companies and businesses) is the main source of data on Internet cafés.

Reportedly there are 2,478 Internet cafés throughout the country.

However the data will have to be checked out to exclude those establishments that merely provide computers for games and not Internet access.

Definitions and operating equivalents

Hotspots do not count as other PIACs because they do not "have at least one public computer for Internet access".

SKMM however do keep a count of them.

As at end 2Q 2007 there were 1,463 hotspots operated by ISPs throughout Malaysia.

Definitions and operating equivalents

Computer labs in schools (SchoolNet in Malaysia) are not DCCs as the primary purpose of the SchoolNet is to teach the syllabus NOT provide access.

Definitions and operating equivalents

Locality

The ITU has defined a locality as a nation's villages, towns and cities in studying the distribution of PIACs.

However the various programs in Malaysia use different approaches. For example, SKMM's kedai.coms take a village approach while KTAK's Pusat Internet Desas (PIDs) are co-located with post offices which means that the PIDs may not be village centric.

To get around this, we would like to define a locality as the *mukim*. There are 1,214 *mukims* in all, enumerated in Census 2000.

Indicators and methodology

Nine (9) indicators were proposed by ITU as follows:

1 - Total number of PIACs
2 - Total number of DCCs
3 - Total number of other PIACs
4 - Number of localities with PIACs
5 - Percentage of localities with PIACs.
6 - Percentage of population with access to a PIAC.
7 - Target population for DCC services
8 - Total number of computers in DCCs.
9 - Actual DCC usage percentage.

Indicators and methodology

The first three indicators,

> Total number of PIACs
> Total number of DCCs
> Total number of other PIACs

are self explanatory and counts of those under major known programs are already available.

Indicators and methodology

Indicator 4: Number of localities with PIACs

This is work in progress as the location of each PIAC has to be mapped onto the *mukim* where it is located and the *mukims* with at least one PIAC counted up

Indicator 5: Percentage of localities with PIACs

A follow through from indicator 4 expressed as a percentage of the 1,214 *mukims* in Malaysia.

Indicators and methodology

Indicator 6: Percentage of population with access to a PIAC

A *mukim* can be quite large and taking reasonable accessibility into consideration, we propose that the population within a 5 kilometer radius of the PIAC be defined as the population with access.

A GIS with a population layer at EB level is available at the DOS Malaysia and using this, counting people within a 5 km radius will not be difficult. But these are Census 2000 figures.

Utilising population estimates at state level and assuming similar growth rates across *mukims* apply, present day population may be estimated.

Indicators and methodology

Similar estimates summed up over all *mukims* with a PIAC and expressed as a percentage of the population to derive indicator 6.

Indicators and methodology

Indicator 7: Target population for DCC services

The Target Population for DCC services refers to the potential population (the potential population refers to anyone of age 6 years or more) minus the number of non-community internet users (non-community internet users are those citizens that have internet access from a point different from a PIAC, for example from at home).

As points of access are not mutually exclusive we might just have to define a non-community Internet user as someone with access at home.

Indicators and methodology

Each year, the Household Use of the Internet Survey, estimate the number of home based Internet users. This as well as the numbers below 6 years of age can be netted out from the population to derive the Target Population for DCC services.

Indicators and methodology

Indicator 8: Total number of computers in PIACs

Refers to the total number of computers available in all PIACs. Non-working PCs to be included on the assumption that they will be replaced or repaired soonest possible.

Stocks are not included.

To be reported by PIAC.

Indicators and methodology

Indicator 9: Actual DCC usage percentage

To calculate the actual DCC usage percentage, the actual number of DCC users is divided by the DCC target population for DCC services and multiplied by 100. A DCC user is defined as a person who accesses the internet at the DCC at least once a month.

The actual number of DCC users is required which means putting in place some kind of registration and login system that can detect unique users on a monthly basis as a user is defined as a person who uses the community facilities at least once a month. Foresee difficulties and challenges.

Indicators and methodology

To seek the cooperation of all providers of PIACs including KTAK in order to coordinate and streamline the reporting on a monthly basis of community access to SKMM.

It will also study data needs of these providers themselves other than that specified by the ITU.

To this end, it may be necessary or even desirable to set up a working group.

Some statistics

DCCs

	Rural Internet Centre	*Kedai dot kom*	*Medan Info Desa*	*Libraries*	*Total DCC*
Number	42	58	39	225	364

Other PIACs

	Internet Cafés	*Total PIACs*
Number	2,478	2,842

Thank you!

SOURCE: CMT, Spain

TITLE: New and emerging indicator work in Spain: mobile broadband and convergence

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New and emerging indicator work in Spain:
mobile broadband and convergence
6th World Telecommunication/
ICT Indicators Meeting

13-15 December 2007, Geneva, Switzerland

Berta del Olivo, CMT Spain

International Telecommunication Union

Comisión del Mercado de las Telecomunicaciones

Outline

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Telecomunicaciones

- **Part I: Collection of mobile broadband data**
- **Part II: Indicators to track convergence**

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Part I: Mobile broadband data collection

Comisión del Mercado de las Telecomunicaciones

Outline: collection of mobile broadband data **CMT** Comisión del
Mercado de las
Telecomunicaciones

- **Data collection: lines and subscribers**
- **Access to and usage of broadband services**
- **Data collection: transactions**
- **Data collection: a more precise definition of lines**
- **2006: the birth of mobile broadband in Spain**

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Data collection: lines and subscribers

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@ **Number of lines associated with UMTS handsets**

Definition:

Total number of <u>active lines</u> associated with <u>handsets that have access</u> to UMTS networks

- <u>*Active lines*</u>*: prepaid or postpaid lines that have made or received at least one communication subject to be billed during the last three months.*

@ **Number of lines associated with computer cards (Datacards)**

Definition:

Total number of <u>active lines</u> associated with computer cards (data cards UMTS and data cards HSDPA)

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@ Number of cellular mobile subscribers <u>with access to</u> data communications at broadband speeds (271mb)

Definition:

Number of subscribers to cellular mobile networks with access to data communications (e.g. the Internet) at broadband speeds (greater than or equal to 256 kbit/s in one or both directions) such as WCDMA, HSDPA, CDMA2000 1xEV-DO, CDMA200 1xEV-DV, etc.

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Access to and usage of broadband

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@ UMTS

Access to 3G

Possibility of using 3G networks

@ Data cards

Access to 3G

Usage of 3G networks

Measuring *access* …

…measuring *potential usage…*

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…*but how to measure* *usage*?

@ *Revenue*
  @ *Taking into account the effect of:*
  ✓ *Flat-rate plans*
  ✓ *Promotions (attractive pricing: introduction of a new produ*

@ *Traffic*
  @ *Gigabytes*
  @ *Number of transactions*

@ **Actual usage**

Definition:

Total number of transactions whereby a user accessed the internet and has used data services

…business matters!

…service targeted at business users

Definition:

Total number of transactions, breakdown by business and residential lines and by pre-paid and post-paid contract, whereby a user accessed the internet and has used data services

---

Data collection: transactions

Number of transactions for data services (mobile TV not in)				
	Residential		Business	
	Prepaid (transactions)	Postpaid (transactions)	Prepaid (transactions)	Postpaid (transactions)
Traffic in UMTS networks				
Downloads (songs)				
Web browsing				
Others				
Total traffic				

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Data collection

Lines and subscribers: a measure of access

Transactions: a measure of usage

…towards a more precise definition of lines

not only a measure of access but also of usage…

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Data collection:
a more precise definition of lines

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@ **Number of lines associated with UMTS handsets and data cards**

Definition:

Total number of <u>active lines</u> that have made a transaction to use data services at broadband speed

- *FIRST DEFINITION <u>Active lines</u>: prepaid or postpaid lines that have made or received at least one **<u>communication subject to be billed</u>** during the last three <u>months.</u>*

- *MORE PRECISE DEFINITION <u>Active lines</u>: prepaid or postpaid lines, in the business and residential segment that have made a **<u>transaction to use 3G data services</u>** <u>during the last three months</u>*

2006
The birth of mobile broadband in Spain

2006
The birth of mobile broadband in Spain

UMTS terminals gathering momentum…

@ 3G effective take off: 3.4 million UMTS (W-CDMA) terminals

$$3G\ density = \frac{UMTS\ lines}{mobile\ lines}$$

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2006
The birth of mobile broadband in Spain

**Mobile sector
Revenue break down
2005**

UMTS data
services
0%

Data
13%

Voice
87%

**Mobile sector
Revenue break down
2006**

UMTS data
services
1%
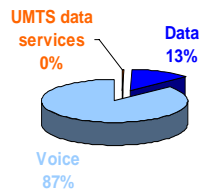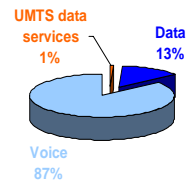
Data
13%

Voice
87%

…*but still a long way for 3G non-voice data* revenues

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Part II: Indicators to track convergence

Comisión del Mercado de las Telecomunicaciones

Outline: indicators to track converge

- **Convergence**

- **Network convergence**

- **Service convergence**

- **Tracking converge through revenue: revenue migration**
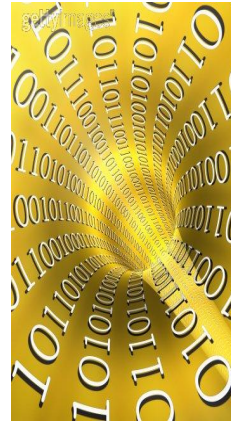
Outline: list of proposed indicators

- **Network convergence**

  Investment in NGaNs

  @ **Investment**

  @ **Number of installed accesses of FTTx**

- **Service convergence**

  VoIP services

  @ **Subtotal of revenue/traffic in fixed telephone market**

  Bundling

  @ **Bundled offers subscribers**

  @ **Penetration of bundled offers**

  @ **Multiplatform TV**

- **Tracking converge through revenue: revenue migration**

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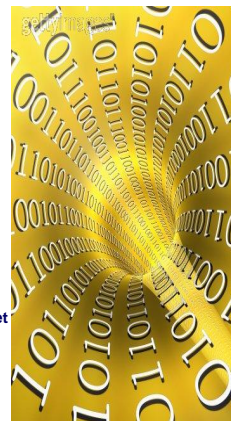
Convergence

Convergence   **CMT** Comisión del Mercado de las Telecomunicaciones
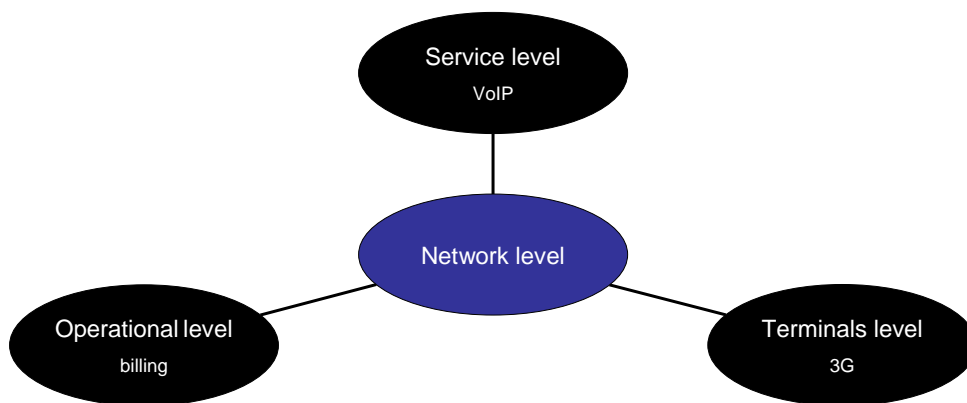
NGaNs: catalyst for convergence

Network convergence

NGaN

Unbundling to the limit!

IP completes a technical unbundling process:

network facilities

clear separation between

services (data, video and voice)

Tracking NGaN

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How to track the plans of deployment of NGN?

***Investment* in networks**

@ **Investment in NG*a*Ns**

Breakdown by fixed or mobile network no necessary

***Number of accesses* by technology**

@ **Number of installed *accesses* of *FTTx/Xdsl/Cable/PLC/Wifi-Wimax***

NGN implications

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…but too soon for an economic analysis:

the effects on markets could be ignored in the short term

Challenging issues *for the future*:

measuring **interconnection**

focusing on **wholesale markets**
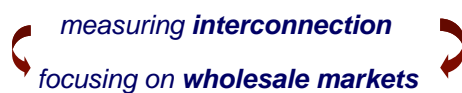
implications of NGaNs on interconnection among   *voice (fixed, mobile, VoIP),*

internet   access

broadcasting services

Fixed-mobile convergence

@ *EC: **separate markets** for fixed and mobile networks*

 @ **"Despite some moves towards converged offerings, the distinction between**

  Services provided at fixed or non-fixed locations remains valid"

@ *Call origination on fixed and mobile: **distinct markets***

 @ **Fixed networks: can use CS or CPS for outgoing calls**

 @ **Mobile networks: no choice of alternative operators for outgoing calls**

Services start to converge

     but regulation remains network oriented

Service convergence

VoIP services

Voice over IP: the latest major step in a convergence process

All type of services can be provided in an integrated manner over the Internet using IP

"*That´s one giant leap for convergence, but one small step for measuring*"

An easy approach for tracking VoIP services:

 included in the total amount of revenues and minutes

@ Subtotal of revenues in fixed telephone market due to VoIP

@ Subtotal of minutes in fixed telephone market due to VoIP

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Bundling

Service converge does not imply network convergence necessarily

@ **Bundles already available in the market: can be provided over circuit switching technology**

Operators: convergence process for providing multi-services

@ **Mergers and acquisitions**

■ ***Analysis* and *comparison* of converging services in each country.**
■ *Comparisons on country __penetration of bundles__ and bundle types, in order to have a snapshot on how markets are evolving:*

   ■ *Service and platform description.*
   ■ *Service providers supplying multiple play offers.*
   ■ *Data regarding penetration of bundles.*
   ■ *Retail prices of main bundles.*

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Bundled offers subscribers

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•Double play bundled offers subscribers
Broadband + TV
Broadband + fixed voice
Broadband + mobile voice
TV + fixed voice
TV + mobile voice
Fixed voice + mobile voice
Total double play bundled offers subscribers

•Triple play bundled offers subscribers
Broadband+fixed voice+TV
Broadband+fixed voice+mobile voice
Broadband+mobile voice+TV
TV+fixed voice+mobile voice
Total triple play bundled offers subscribers

•Quadruple play bundled offers subscribers
Broadband+fixed voice+mobile voice + TV
Total quadruple play bundled offers subscribers
•TOTAL BUNDLED OFFERS SUBSCRIBERS

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Penetration of bundled offers

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Penetration of bundled offers
Spain
2006

Broadband alone 5%

Triple-play subscribers 18%

Double-play subscribers 77%
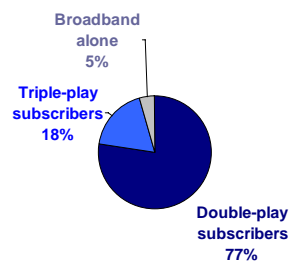
$$Bundled\ offers\ penetration = \frac{Bundled\ offers\ subscribers}{Total\ broadband\ subscribers}$$

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Broadcasting: multiplatform TV

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TV Households split in Spain per platform, July 2007

IP TV
2%

Cable TV
5%

Satellite TV
9%

Digital Terrestrial
16%

Analogue Terrestrial
68%

A new platform! Mobile TV:

• to be measured (revenues, subscribers) from 2008 on
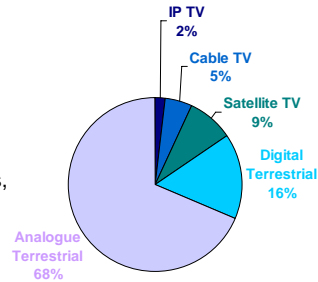
New platforms   *New business models*

Importance of measuring: signals to the market

Revenue migration

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First, from voice to data

Evolution of revenue

revenue level

140
120
100
80
60
40
20
0

Voice revenues

Video revenues

Data revenues

Conventional services   Bundling services   Information Society environment
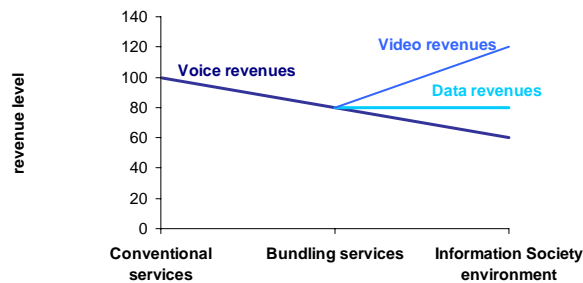
and then, from data to video

Many thanks!

Berta del Olivo Ferreiro

bolivo@cmt.es

SOURCE: STAT, ITU

TITLE: WSIS Target a: ICTs in Villages

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WSIS Target a: ICTs in Villages

Michael Minges

Senior Market Analyst
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Contents

- WSIS target
- Measurement issues
- Global locality demography
- Locality ICT access data
- Mobile coverage
- Household penetration
- Demand side
- Regulatory strategies
- Conclusions & recommendations

WSIS Plan of Action

B. Objectives, goals and targets

6. Based on internationally agreed development goals, including those in the **Millennium Declaration**, which are premised on international cooperation, **indicative targets** may serve as global references for improving connectivity and access in the use of ICTs in promoting the **objectives of the Plan of Action**, to be achieved by **2015**. These targets may be taken into account in the establishment of the **national targets**, considering the different national circumstances:

a. to connect villages with ICTs and establish community access points;

Comments - WSIS Target a

a. to connect villages with ICTs and establish community access points;

- Village as unit of measurement
  - Practically all national statistical systems do not disseminate data in this way
- Village implies rural
  - "a group of houses and other buildings, such as a church, a school and some shops, which is smaller than a town, usually in the countryside" [Cambridge Advanced Learner's Dictionary]
- "Connect villages with ICTs"
  - ICT is undefined
  - How many villages to connect is unspecified…
- "Community access points"
  - Undefined in the Plan of Action

Hardly any countries are directly tracking this…

Villages

- Few countries readily publish data on number of localities let alone "villages"
- Information on administrative divisions usually stops at "region/state"
- No precise definition of village. Implies rural but definition of rural varies within & between countries

Levels of measurement
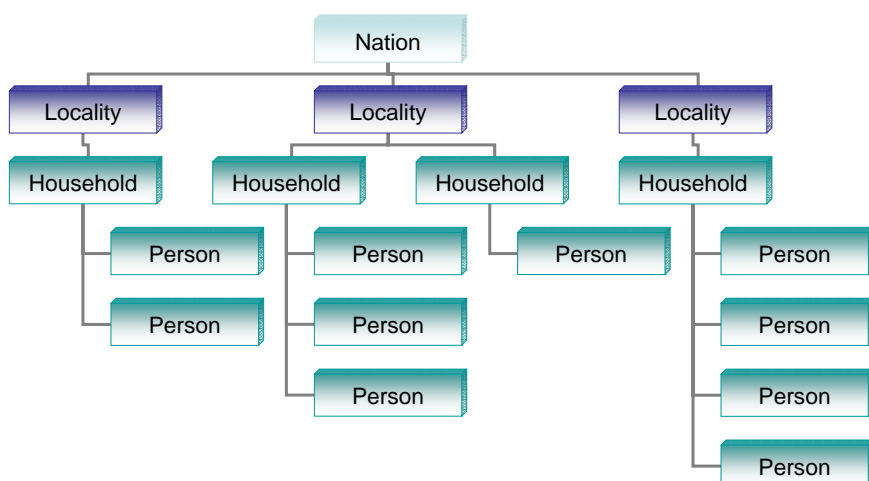
Spatial hierarchies in Malawi

Nation
1st Level

3 Regions
2nd level

27 Districts
3rd level

Rural areas

Urban areas

250 Traditional Authorities

110 Administrative Wards

44,908 people per "Traditional Authority"?
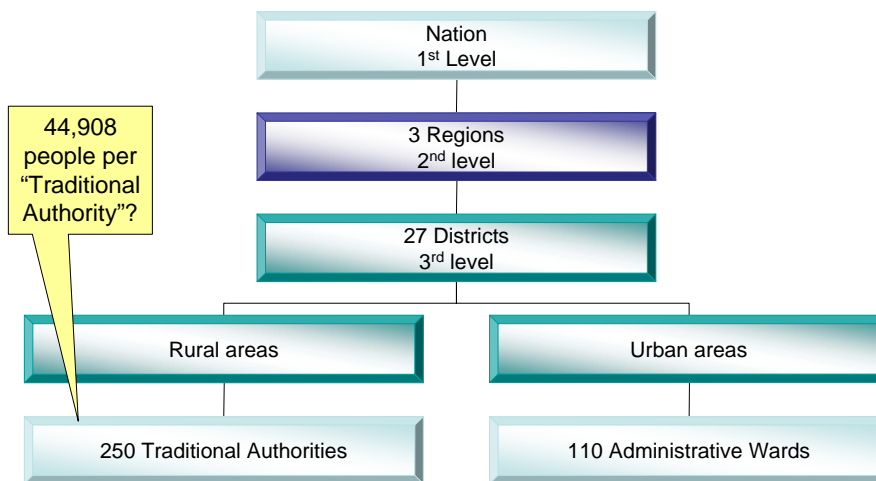
ICTs in Villages   World Telecommunication/ICT Indicators Meeting   December 2007

Differing national counts of localities

40,000	
35,000	
30,000	
25,000	
20,000	
15,000	
10,000	
5,000	
0	

Official government data   **Geo-coded populated places**   **Electricity utlity**
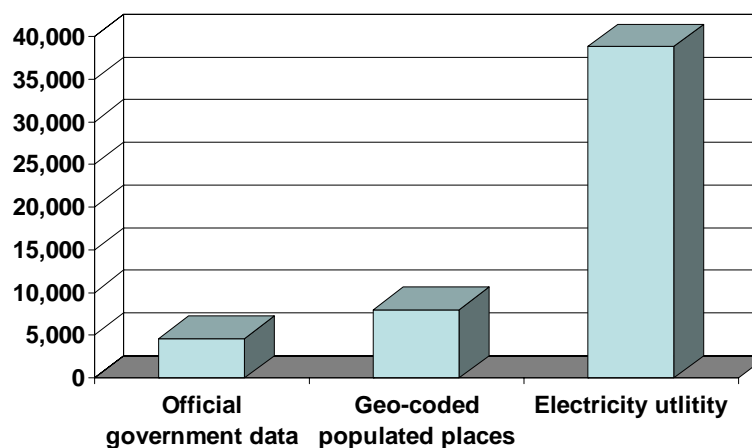
ICTs in Villages   World Telecommunication/ICT Indicators Meeting   December 2007

Urban definition comparison

- 105 countries based their urban data on **administrative** criteria, limiting it to the boundaries of state or provincial capitals, municipalities or other local jurisdictions; 83 use this as their sole method of distinguishing urban from rural.
- 100 countries define cities by **population size or population density**, with minimum concentrations ranging broadly, from 200 to 50000 inhabitants; 57 use this as their sole urban criterion.
- 25 countries specify **economic** characteristics as significant, though not exclusive, in defining cities-typically, the proportion of the labour force employed in non-agricultural activities
- 18 countries count the availability of **urban infrastructure** in their definitions, including the presence of paved streets, water supply systems, sewerage systems, or electric lighting.
- 25 countries provide **no definition** of "urban" at all
- 6 countries regard their **entire population** as urban

http://www.scorus2006.ae.wroc.pl/modules/Downloads/presentations/Markandey_Rai.pdf

ICTs in Villages | World Telecommunication/ICT Indicators Meeting | December 2007

Population distribution of localities

Population of locality	% of total localities	% of total population
<500	41	2
500-1'999	31	6
2'000-4'999	15	10
5'000-9'999	7	9
10'000-99'000	6	37
>100'000	1	37

29% of localities account for 92% of population

Source: Adapted from Jordan Population & Housing Census 2004

ICTs in Villages | World Telecommunication/ICT Indicators Meeting | December 2007

Number of localities methodology

- Some countries have official administrative data on number of localities
- Secondary sources on number of localities (e.g., electricity utility, health surveys, election / local government data, etc.)
- Census enumeration areas
- Online gazette of geo-coded populated localities
- Estimate based on regional average locality size

Overall global demographics

Source: ITU from national data, UNDP and ITU estimates.

	Population (millions)	Rural population (%)	Rural population (millions)	Number of localities (000s)	Size
Developing	**5,108**	**56%**	**2,850**	**2,961**	**1,826**
East Asia & Pacific	1,717	58%	1,000	956	1,795
Europe & Central Asia	446	33%	148	285	2,841
Latin America & Caribbean	529	21%	113	349	1,645
Middle East & North Africa	308	42%	129	107	2,961
South Asia	1,354	72%	977	868	1,560
Sub-Saharan Africa	754	64%	484	396	1,904
Developed	**1,013**	**22%**	**228**	**248**	**4,092**
World	**6,145**	**50%**	**3,102**	**3,059**	**2.009**
Developing as % of world	**84%**		**93%**	**92%**	

ICTs in villages

- ICTs not defined in Plan of Action
- For this study, consider fixed telephony access for localities
- Also consider electricity
- "Establish community access points" not defined in Plan of Action. However ITU has done pioneering work in this area and Partnership has identified following indicator:
  - A10: Percentage of localities with public Internet access centres (PIACs) by number of inhabitants (rural/urban)

Same data problems as localities: Few countries collect this information or offer it in the format required

---

ICTs in localities

Percentage of localities with (simple average, latest year)

Electricity

Region	Value
East Asia & Pacific (EAP)	62
Europe & Central Asia (ECA)	99
Lat. Am. & Carib. (LAC)	81
Middle East & North Africa (MENA)	83
South Asia (SA)	63
Sub-Saharan Africa (SSA)	17

Telephone

Region	Value
EAP	52
ECA	53
LAC	45
MENA	35
SA	51
SSA	12

Internet

Region	Value
EAP	13
ECA	35
LAC	15
MENA	2
SA	
SSA	1
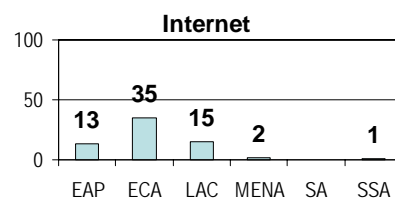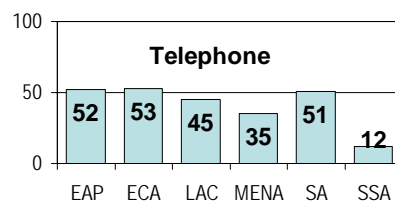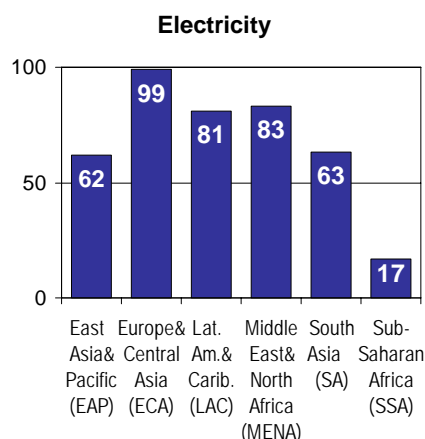
Source: ITU from national administrative data.

Peru

Number of Public Internet Access Points (PIAP)

	Locality by size	Number of localities	Population	Locality with PIAP	Population covered by PIAP	Percent with PIAP	
						Locality	Population
Urban	>500 000	1	582,975	1	582,975	100%	100%
	50 000-499 999	122	12,501,916	88	9,212,782	72%	74%
	10 000-49 999	228	3,891,678	153	3,100,222	67%	80%
	2 500-9 999	255	1,259,256	126	553,183	49%	44%
Rural	1 000-2 499	565	831,928	75	86,548	13%	10%
	500-999	1,933	1,273,209	67	40,002	3%	3%
	100-499	19,809	4,292,805	462	135,093	2%	3%
	<100	46,194	1,290,252	48	2,812	0.1%	0.2%
	Total	**69,107**	**25,924,019**	**1,020**	**13,713,617**	**1%**	**53%**

Source: OSIPTEL, El Acceso Comunitario a las TICs (2004)

Other ways of measuring access

Chile, % of households less than 3 blocks from a phone
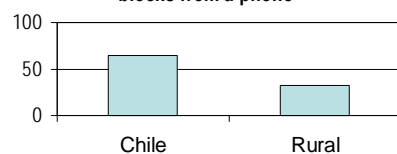
Source: SUBTEL.

Uganda: Community access, 2005/06
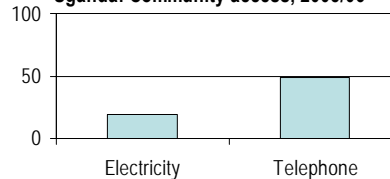
Source: UBOS National Household Survey.

Zimbabwe: Teledensity, 2003
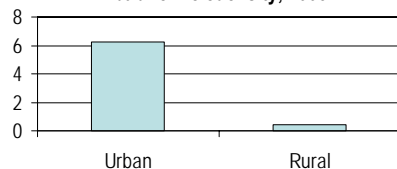
Source: POTRAZ.

Ghana: % of households < 1/2 hour from phone
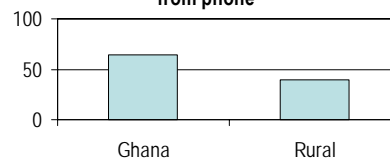
Source: Ghana 2003 CWIQ Survey Report.

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Spatial difference between fixed & mobile
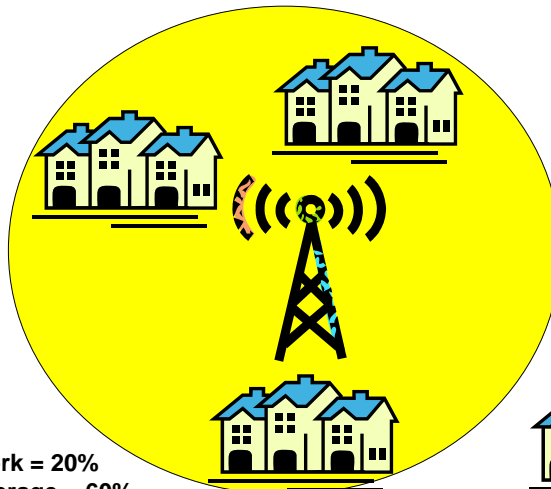
5 localities
1 with fixed network = 20%
3 with mobile coverage = 60%
1 with none = 10%

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Mobile coverage & settlements
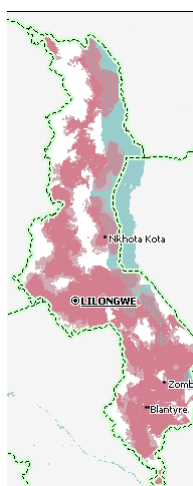
Malawi
Mobile population coverage:
Total (TC): 93%
Rural (RC): 92%

Population:
Total (TP): 12.7 million
Urban (UP): 1.5 million
Rural (RP): 11.2 million

Rural population coverage=
(TC x TP – UP) / RP =
93% x 12.7m – 1.5 m = 10.3m
10.3 / 11.2 ~ 92%

Source: WinRock, National Statistical Office of Malawi, GSMA, maplibrary.

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Rural mobile population coverage

Mobile population coverage 2006, %

	Total	Rural
Developing	**76**	**62**
East Asia & Pacific	89	83
Europe & Central Asia	90	83
Latin America & Caribbean	87	41
Middle East & North Africa	79	69
South Asia	62	47
Sub-Saharan Africa	57	42

Source: ITU from regulators, operators, World Bank and ITU calculations.

Rural population _not covered_ by mobile signal

Total 1.1 billion

- South Asia 46%
- Sub-Saharan Africa 25%
- East Asia & Pacific 16%
- Europe & Central Asia 3%
- L. America & Carib. 6%
- Middle East & North Africa 4%

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ICTs in households

Percentage of households with (latest year, simple average):

Electricity (Total / Rural): EAP 80/62, ECA 99/98, LAC 96/87, MENA 88/81, SA 45/34, SSA 30/9

Radio (Total / Rural): EAP, ECA, LAC, MENA, SA, SSA

TV (Total / Rural): EAP, ECA, LAC, MENA, SA, SSA
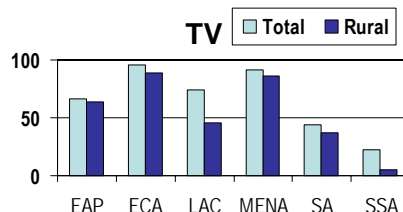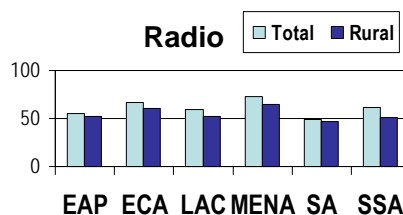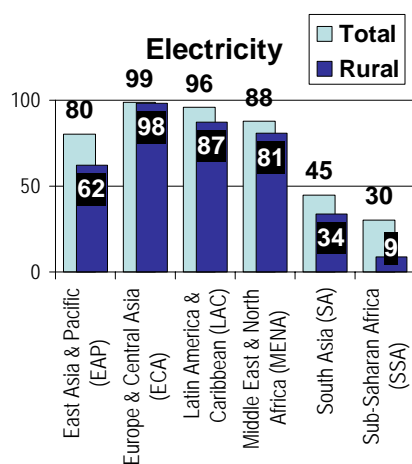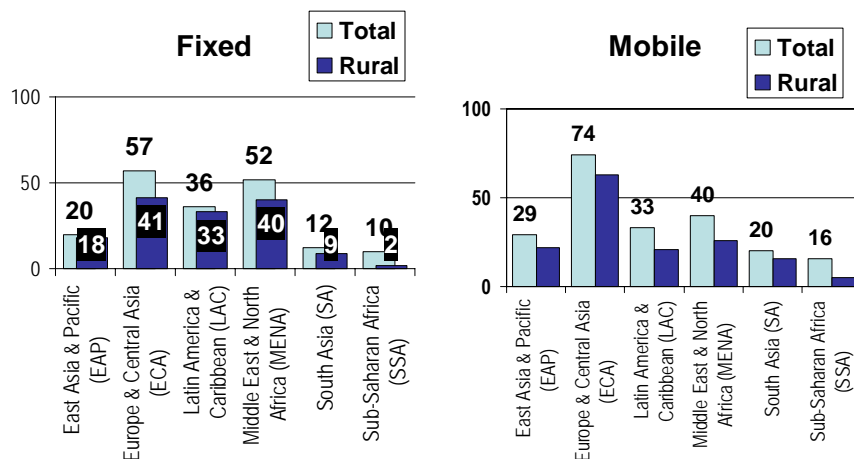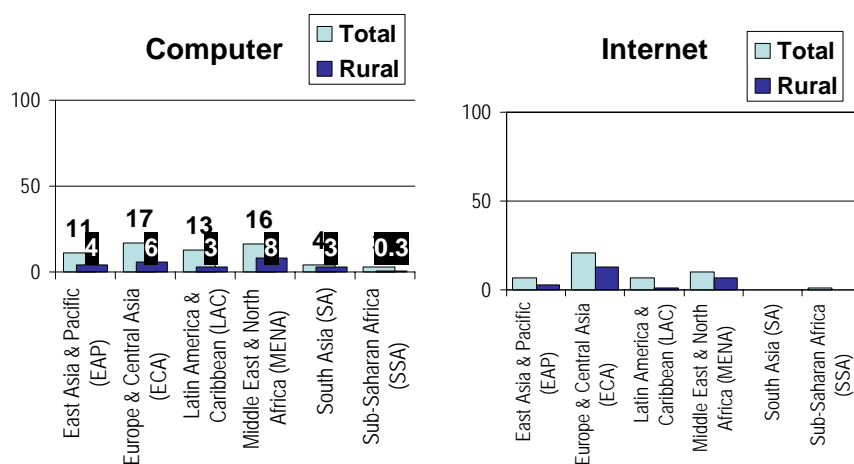
Source: ITU from national household surveys.

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Urban / Rural in the EU

Percentage of households with ICT, 2006

Telephone — Any ■ Mobile

	Total	1	2	3
(Any)	96	96	97	96
(Mobile)	88	89	89	85

Computers

Total	1	2	3
64	66	65	59

Internet

Total	1	2	3
54	56	55	48

Broadband

Total	1	2	3
34	39	32	25

Source: EUROSTAT.
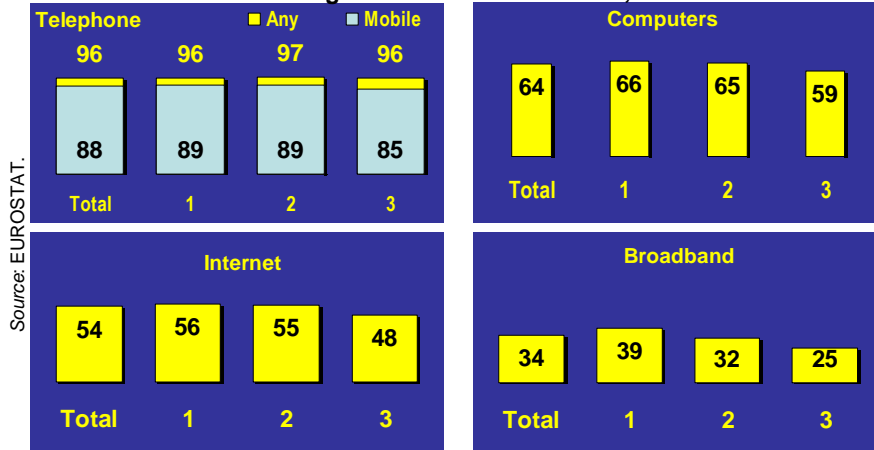
1 Households living in densely-populated area (at least 500 inhabitants/Km2)
2 Households living in intermediate urbanized area (between 100 and 499 inhabitants/Km2)
3 Households living in sparsely populated area (less than 100 inhabitants/Km2)

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Localities & households

Mexico, % households with ICTs by locality size, 2000
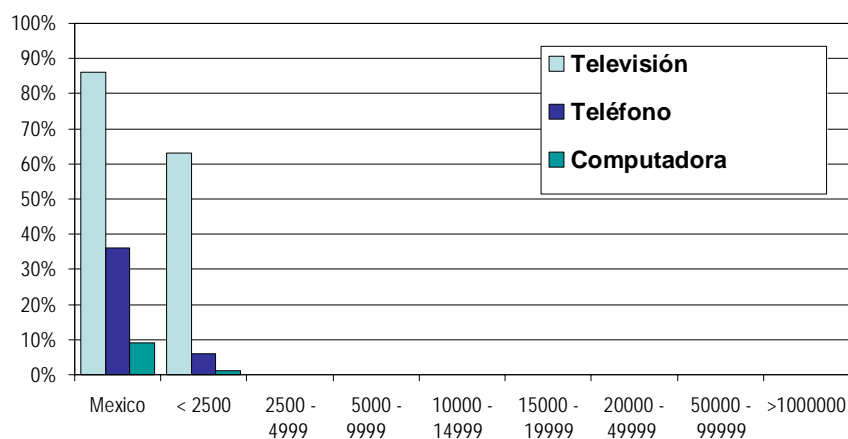
Legend: ■ Televisión ■ Teléfono ■ Computadora

X-axis categories: Mexico, < 2500, 2500 - 4999, 5000 - 9999, 10000 - 14999, 15000 - 19999, 20000 - 49999, 50000 - 99999, >1000000

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Demand side

- Have looked at availability of infrastructure
- Also important to see how it is used, particularly in the context of rural
- Partnership has identified this indicator:
  - HH9 Location of individual use of the Internet in the last 12 months:
    - (a) at home;
    - (b) at work;
    - (c) place of education;
    - (d) at another person's home;
    - (e) community Internet access facility (specific denomination depends on national practices);
    - (f) commercial Internet access facility (specific denomination depends on national practices); and
    - (g) others

Internet café usage

% of Internet users who used Internet Café in the last 3 months, 2006
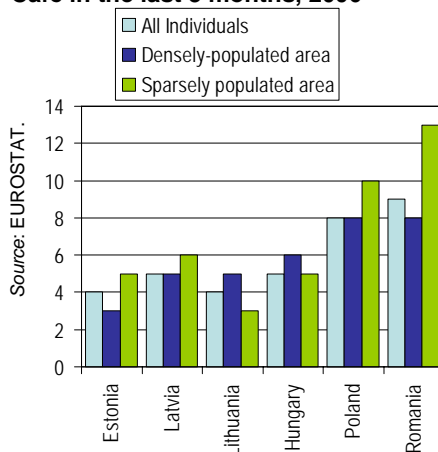
Legend:
- All Individuals
- Densely-populated area
- Sparsely populated area

Source: EUROSTAT.

% of Internet users who used Internet Café, 2006
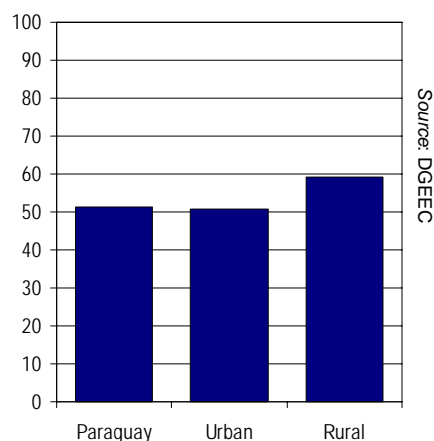
Source: DGEEC

Regulatory strategies

- Mobile coverage targets in license
- Competition
- Village payphone programs
- Reverse subsidy auction
- E-government programs

Mobile coverage trends

Bangladesh
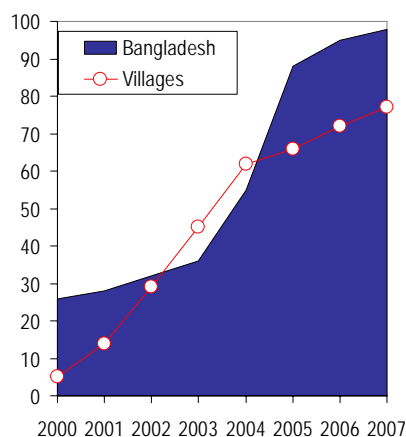
Source: Grameen, own estimates.

Japan
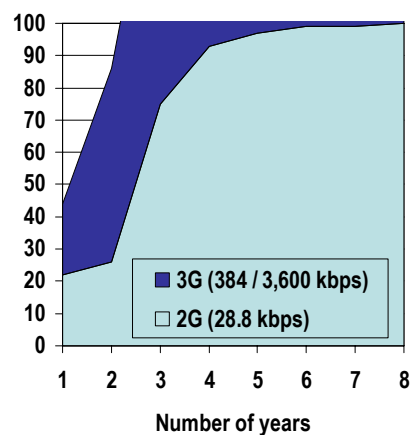
Source: DoCoMo.

Conclusions & recommendations

- Government agency responsible for ICT compile existing information
  - When available from NSO sometimes not "user-friendly" (e.g.):
    - Language
    - Disaggregated
    - Hard to locate
- Locality data be broken down by population
- Household data broken down by rural
- Mobile coverage broken down by technology
- Other WSIS targets

Thailand

% of localities with:

70,785 Villages (2006)

Electricity   Mobile   Fixed line   Internet

% of households with (2006):

Fixed   PC   Internet

- Total
- Urban
- Rural

% of persons age 6+, using (2006):

Mobile   PC   Internet

- Total
- Urban
- Rural
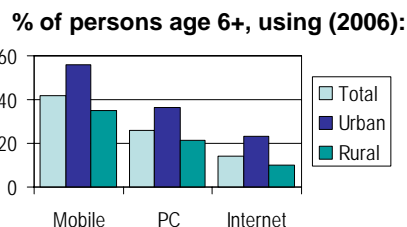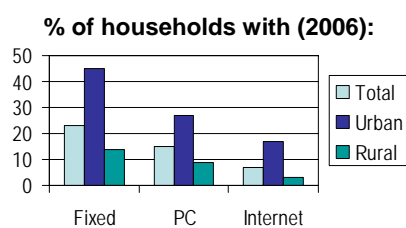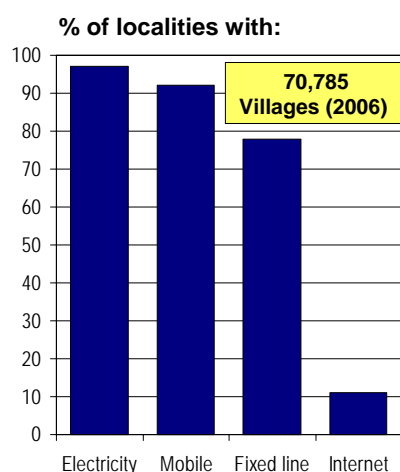
Source: National Statistics Office, AIS, SRRU.

Technology coverage

Italy, Coverage of population (%), 2006
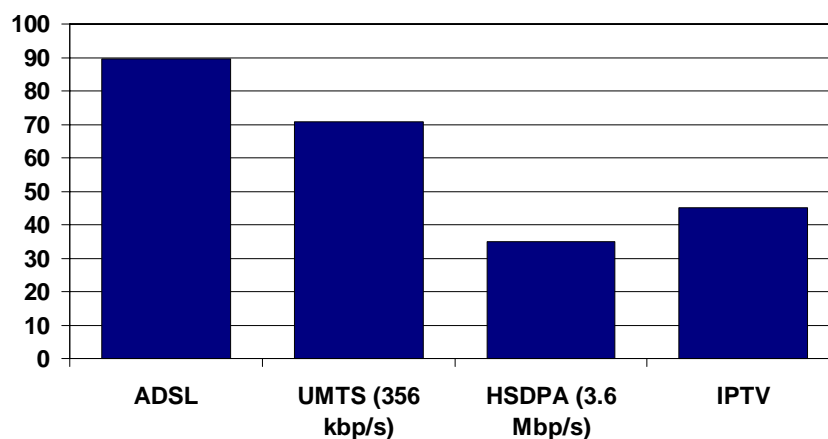
All WSIS Targets

1. to connect villages with ICTs and establish community access points;
2. to connect universities, colleges, secondary schools and primary schools with ICTs;
3. to connect scientific and research centres with ICTs;
4. to connect public libraries, cultural centres, museums, post offices and archives with ICTs;
5. to connect health centres and hospitals with ICTs;
6. to connect all local and central government departments and establish Web sites and email addresses;
7. to adapt all primary and secondary school curricula to meet the challenges of the Information Society, taking into account national circumstances;
8. to ensure that all of the world's population have access to television and radio services;
9. to encourage the development of content and to put in place technical conditions in order to facilitate the presence and use of all world languages on the Internet;
10. to ensure that more than half the world's inhabitants have access to ICTs within their reach.

Uganda: Targets for short-term 2007

Education 256Kbps
- 5 UPE schools at @ sub-county =5000
- 1 secondary schools at each sub-county level= 1000
- All universities
- All tertiary institutions

Health 256Kbps
- 1 Hospital per district=104
- 2 Health centre Level IV at county level=156
- Public Voice Access Points at all HC level III and II

Government 256Kbps
- All government Institutions
- All DISTRICT HQs. = 56
- All sub county headquarters= 900
- Public Voice Access Points at @ Local Council (LC11) = over 100,000

E-Commerce and Trade
- Legal framework for e-commerce
- Interconnectivity of Govt inst.
- No. of website transaction
- Connected financial institutions
- Number of Co. using EDI

Agriculture 256Kbps
- All district R&D centres
- Agricultural extension offices
- Key district market centre

assemboga@ucc.co.ug

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Some of Lebanon's ICT Targets

- Villages are already connected, 30 community access points by 2004
- Connecting public institutions (government agencies, schools, universities, libraries, hospitals) by 2005
- Secondary school curriculum revised in 2002. All students to reach ICT competency level as part of the formal education by 2010
- All universities & research centers to be connected by 2005, all secondary schools by 2008 and all primary schools by 2010
- All public libraries and museums are to be connected by 2008
- All hospitals are to be connected by 2006 & health/social centers by 2010
- Internet penetration rate to reach 18% by 2006 and 25% by 2010
- Broadband connectivity services to be offered by 2005
- Building awareness of the use of ICTs to all segments of the society by 2010

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End

minges@tmgtelecom.com

World Telecommunication/ICT Indicators Meeting December 2007

**TELECOMMUNICATION
DEVELOPMENT BUREAU**

**Document 008-E
07 December 2007
Original: English**

6TH WORLD TELECOMMUNICATION/ICT INDICATORS MEETING, GENEVA, 13-15 DECEMBER 2007

SOURCE: Ministry of Information and Communication, Korea (Rep.)

TITLE: Further Suggestions on the Single ICT Index: Rep. of Korea

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Further Suggestions on the Single ICT Index: Rep. of Korea

Based on the WTI Background Paper

Ministry of Information and Communication
Republic of Korea

Content

1. Background

2. Principles of the Single ICT Index

3. The Design of the Single ICT Index Indicators

4. Summary

1. Background

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1. Background

❖ Objective of a Single ICT Index

- As a key methodology to achieve the goal of WSIS to implement '[a] realistic international performance evaluation and benchmarking, through comparable statistical indicator…taking into account different national circumstances' (para. 28 Plan of Action)

  ↳ Facilitate the efforts to achieve the goal of the WSIS and serve as a measure to evaluate its progress

3

Broadband ICT Korea

2. Principles of the Single ICT Index

2. Principles of a Single ICT Index

- ❖ **Provide policy implications and development**
  - Identify the obstacles of ICT development and provide policy implications
  - Not to simply report on the rankings and progress of countries' ICT development level
  - But to analyze the countries' status and problem in order to develop relevant policies
    - ↳ Therefore, take into account obstacles factors deterring ICT usage and promotion

- ❖ **Challenge to comply and accommodate the rapid transition of ICT development**
  - Consider the changing trend from PSTN to the application of IP-based data transition and VoIP
    - ↳ Therefore, shift its focus on indicators of current trend (eg., broadband and mobile technologies)

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Broadband ICT Korea

2. Principles of a Single ICT Index

❖ **Utilize diverse data source based on its availability and contextual reliability**
- Rigid approach may restrict availability of data resource
- A more flexible approach must be taken to allow flexibile utilization of diverse data sources based on different country context
  ↳ A modular approach will be appropriate which enables additional components to complement and create for its specific purposes

❖ **Encourage to improve nation's data collection method**
- Importance of countries' availability of data source and credibility of the Index
  ↳ An active involvement of ITU to encourage countries to yield the necessary data would be required rather than passively rely on the existing sources

6   *Broadband ICT Korea*

2. Principles of a Single ICT Index

❖ **Measure not only the 'digital divide' between countries but also within countries (including gender inequality)**
- Need for social survey to measure ICT status of each individuals and social groups within a country
  ↳ Can be supported through ITU's support to assist statistical techniques and knowledge for its member countries to conduct social survey

❖ **Index that is applicable to different context with transparent methodology**
- Keep the Index as simple as possible to easily replicable
  ↳ Allow each country to input their own data online and have access to the source code on the model

7   *Broadband ICT Korea*

3. The Design of the Single ICT Index Indicators

---

3. The Design of Single ICT Index Indicators

❖ **Standardization of indicators through Z-score method**
- Although method suggested by the Background Paper avoids weighting, problems of difference in measurement units and distribution range occurs.
- A particular indicator with a large unit and high distribution range will predominate the overall index score and its ranking
- For example:
  - International voice/tariff volume ranges: 30 ~1600
  - Literacy rate ranges: 20 ~ 120
- A country with a very high volume of International voice/data traffic will score high in the total Index entirely based on one indicator

↳ Standardizing methodology Z-score, simple and easily replicable, will allow equal contribution of all indicators

Z-score = (actual value – average value)/standard deviation

Broadband ICT Korea

3. The Design of Single ICT Index Indicators

❖ Inappropriateness of *International voice and Internet bandwidth* indicators

- Consider the main goal for ICT development is to facilitate communication between its people and rich contents created by domestic users in local language
- Focus on measuring interaction between people within the nation rather than inter-nation

- Telecommunication trend moving from voice calls via PSTN to VoIP and data transition (emails, messengers)
- However, VoIP yet not included in the voice call measurement

✥ Use only domestic Internet traffic as a indicator for measuring of ICT utilization

10   *Broadband ICT Korea*

3. The Design of Single ICT Index Indicators

❖ Separating fixed and mobile Internet subscribers

- According to the background paper, the Usage-Intensity sub-index includes *Broadband Subscribers*
- However, needed to separate fixed and mobile broadband subscribers to match the recent explosive use of mobile broadband

- Also needed to use the ratio of broadband subscribers to total Internet subscribers rather than just broadband subscribers in order to measure usage intensity

✥ Thus, use fixed/mobile Internet subscribers for measuring infrastructure and use the ratio of fixed/mobile broadband subscribers to total fixed/mobile Internet subscribers for measuring utilization

11   *Broadband ICT Korea*

3. The Design of Single ICT Index Indicators

❖ Adoption of 'goal post' methodology

- Since the universal access condition for mobile service is 100%, any country exceeding 100% does not always represent high ICT opportunity
- Countries using prepaid card subscription and having many foreign residents will exceed the 100%

- Such problem will not occur if survey method is conducted
- ↳ When using data of service operators, set a 'goal post' of 100% and assign 100% rate to any cases exceeding this rate
- ↳ Using a 'goal post' will enhance credibility of measuring *mobile subscription* rate

12   *Broadband ICT Korea*

3. The Design of Single ICT Index Indicators

❖ Re-composing sub-indices

- First, ICT infrastructure must be established; secondly, accompanied by an appropriate environment to utilize the infrastructure; lastly, followed by active utilization

- ↳ More appropriate for the composite of the Index to include sub-indices of *infrastructure, opportunity*, and *utilization* rather than *user-density, opportunity*, and *usage-intensity*

13   *Broadband ICT Korea*

3. The Design of Single ICT Index Indicators

❖ Household as a unit of fixed telephone and Internet service

- Subscription rate by household is more appropriate than individual units since fixed-line telephone and Internet services are provided at a household level

✋ Given the absence of such survey statistics in many countries, dividing the total number of subscribers of fixed-line telephone and Internet services by the number of household would be the most relevant alternative

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Broadband ICT Korea

3. The Design of Single ICT Index Indicators

❖ Re-composing sub-indices: User-Density and Usage Intensity

- According to the background paper, *Internet User per capita* is included as a sub-indicator of User-Density measuring network infrastructure
- Rate of Internet users directly relates to ICT use
✋ Re-locating *Internet User per capita* under Usage-Intensity (Utilization) & *Subscribers data* under User-Density (Infrastructure) is appropriate

- Take into account the increasing trend of wireless Internet use
✋ Separate Internet subscription rate into fixed (by households) and mobile service (by individuals)

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Broadband ICT Korea

4. Summary

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4. Summary

Categories	Background Paper	Rep. of Korea	Comparison
User-Density/per capita (Infrastructure)	- Mobile subscribers - Fixed line households - Internet users	-Mobile subscribers -Fixed line households -Fixed Internet subscribers (by households) - Mobile Internet subscribers (by individuals)	-Goal post -No change -Change -Change
Usage-Intensity (Utilization)	- International voice + Data bandwidth - Broadband subscribers	-Domestic Internet bandwidth(/capita) - Ratio of fixed broadband subscribers to total fixed Internet subscribers - Ratio of mobile broadband subscribers to total mobile Internet subscribers	-Change -Change -Change
Opportunity	- Mobile population coverage - Internet + mobile affordability - Adult literacy	-Percentage of population covered by mobile telephony -Internet and mobile phone tariffs -Adult literacy rate	-No change -No change -No change

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Broadband ICT Korea

5. Appendix

Korea Internet domestic bandwidth
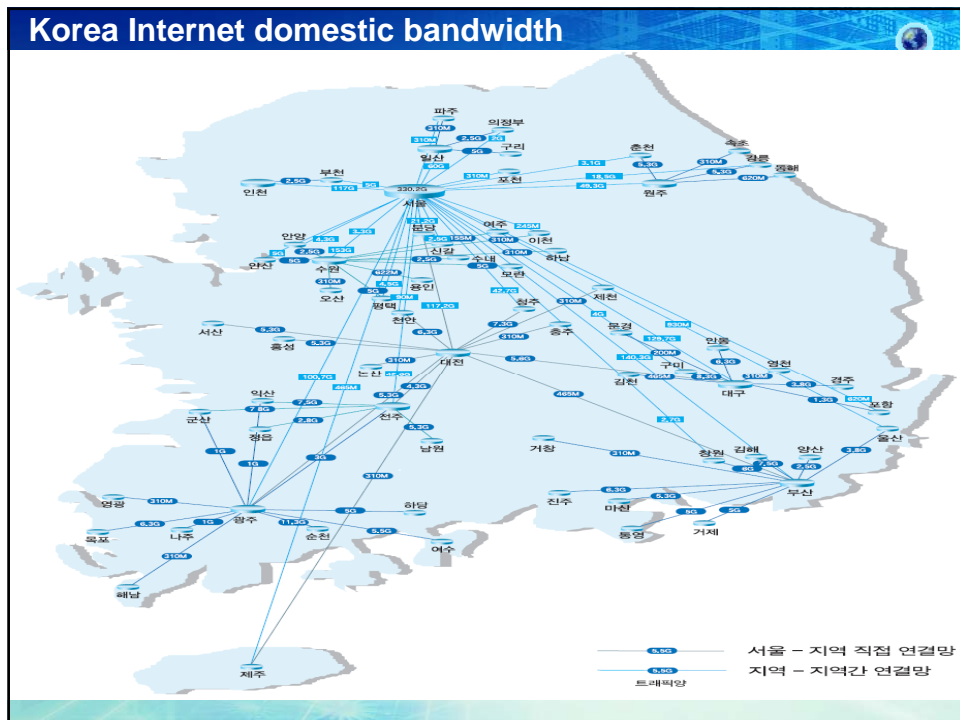
Korea Internet domestic bandwidth

City	City	Dacom	Dreamline	SK Networks	SK telecom	Onse telecom	KT	Hanaro telecom	Samsung Networks	Enterprise	Sum
							ISP				
Within Seoul	–		6G				(2.5G*16)+(16G*20)			4.2G	80G	330.2G
Seoul	Kangrung			4G*4		310M					2.5G	18.5G
Seoul	Kwangju	5G	1G	2G		2.7G	10G*8	2.5G*4				100.7G
Seoul	Koomi									4G		4G
Seoul	Daegu	5G	10G	2G		2.7G	10G*10	2.54G				129.7G
Seoul	Daejon	5G	1G	5G	622M*2	1G	10G*8	2.5G*8	4G	10G		117.2G
Seoul	Pusan	5G	10G	5G		5.3G	10G*8	2.5G*8		15G		140.3G
Seoul	Bundang				622M*2	16				4G		21.2G
Seoul	Singal									2.5G		2.5G
Seoul	Suwon					3G	10G*14			10G		153G
Seoul	Pyeongtag			2G						2.5G		4.5G
Seoul	Incheon		1G		310M	2G	10G*8	2.5G*8		10G		117G
Seoul	Ansan									5G		5G
Seoul	Suwon	310M	1G	2G								3.3G
Seoul	Paju	310M										310M
Seoul	Pocheon	310M										310M
Seoul	Uijeongbu									2G		2G
Seoul	Anyang	310M								4G		4.3G
Seoul	Ulsan					930M						930M
Seoul	Wonju	310M	1G	5G	310M	200M	10G*4			2.54G		49.3G
Seoul	Icheon					245M						245M
Seoul	Ilsan						10.6G*6					60G
Seoul	Jundgu	310M		2G		310M	10G*4					42.6G
Seoul	Jeju					465M						465M
Seoul	Changwon					2.7G						2.7G
Seoul	Cheonan					90M						90M
Seoul	Cheongju					2.7G	10G*4					42.7G
Seoul	Chuncheon					620M				2.5G		3.1G
Seoul	Pohang					620M						620M
Seoul	Bucheon									5G		5G
Suwon	Yongin						622M					622M
Suwon	Hanam						155M*2					310M

SOURCE: STAT, ITU

TITLE: ITU statistics work

_____

6th World Telecommunication/ICT Indicators Meeting
13-15 December 2007
Geneva, Switzerland

ITU statistics

Esperanza C. Magpantay
Market Information and Statistics (STAT) Division
Telecommunication Development Bureau
International Telecommunication Union

ITU Statistical work: Why?

- ITU as UN specialized agency, produces and disseminates statistics covering its sector
  - ----> global statistical system of the UN

- PP06 (Antalya): Resolution 131
  "instructs the Director of BDT to promote the adoption and regular reporting to ITU of community connectivity indicators... to promote an index...to cooperate with international bodies particularly the Partnership on Measuring ICT for Development...to work on the development of community connectivity indicators and forward the results on an annual basis"

- WSIS Geneva Plan of Action (para 28)
  called for "A realistic international performance evaluation and benchmarking ... through comparable statistical indicators...All countries and regions should develop tools so as to provide statistical information on the Information Society......"

WTDC06 (Rev.Doha): Resolution 8

"resolves to instruct the Director to...

➤ *continue to* survey countries and *produce world and regional reports*

➤ *encourage countries to* collect information *illustrating national digital divides*

➤ *further* develop and improve benchmarking efforts, *including the ICT Opportunity Index*

➤ *participate in the establishment of* core indicators *to measure efforts to build the information society*

➤ *provide* technical assistance *for the development of telecom databases containing statistical information*

➤ *develop* training material *and conduct specialized* training courses *on information society statistics for developing countries*

➤ *cooperate with relevant* international bodies *involved in the collection and dissemination of ICT-related information and statistics*

13 Dec 2007

Demand for ITU statistics

Number of requests, answered by email

597 769 836 1011 1418 1182 1296 1301 1490

First phase of the World Summit on Information Society

1999 2000 2001 2002 2003 2004 2005 2006 Nov.07
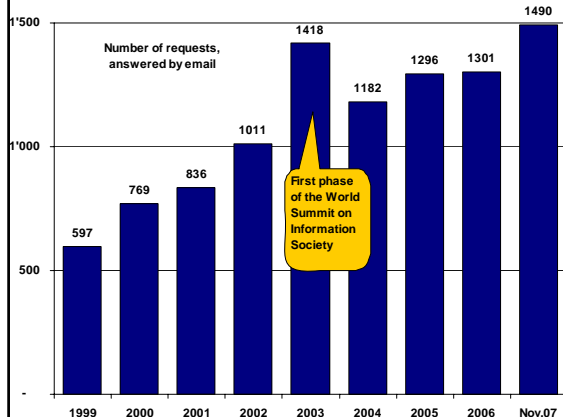
Source: ITU

- Requests answered by email only
- Increase in demand
- Request are mainly made by analysts, students and the press
- Average requests for 2007: 135 per month
- Number of requests is still high despite availability of important statistics on our website

13 Dec 2007

…to survey countries

1. Data collection tool - online survey

- The ICT "eye" , a unified system that compiles all databases of the ITU Development Bureau that enables users to track th...   ...ment and use of ICTs, and measures effo...   ...d the information society.

2. Dissemination:

- A user-friendly website that provides information including ICT indicators and statistics, regulatory and policy profiles, national tariff policies, operator information, financial and scientific institutions.

- Country profiles and indicator reports

13 Dec 2007

Challenges:

Administrative data - (telecom statistics)

❑ Not all countries return the questionnaires

❑ Not all questions get answered

❑ More work to aggregate operators' data since market is more and more competitive

❑ Operators data or annual reports sometimes not published

❑ Newer telecom/ICT data hard to obtain from developing countries

❑ Some information collected does not meet the ITU definition

---

Administrative data: use & limits

CAN

- Track market trends, service uptake and market opportunities
- International benchmarking: ICT Opportunity Index
- Identify and measure the digital divide
- Inform policy makers

CANNOT

- Administrative data are limited mainly to 'access'
- Who is actually using ICTs, where, why (not): = limits to the understanding of the digital divide
- Limits in terms of policy making
- Measure impact of ICTs

ITU International Telecommunication Union

...to survey countries

Household/individual survey data

- ITU is expanding from administrative data to survey data and from contacts with Ministries/regulators to National Statistical Offices

- Produces valuable information for policy makers and regulators: for this reason, regulatory authorities should be involved in the identification of indicators that the NSO could collect

13 Dec 2007   11

ITU International Telecommunication Union

... Cooperate with relevant international bodies involved in the collection and dissemination
...participate in the establishment of core indicators

CORE ICT INDICATORS

PARTNERSHIP ON MEASURING ICT FOR DEVELOPMENT

1. Analyse the availability of internationally comparable ICT statistics and identify a common set of ICT indicators

2. Assist developing countries in producing ICT statistics by enhancing capacity of National Statistical Offices and by providing methodologies

3. Set up a global database for ICT indicators
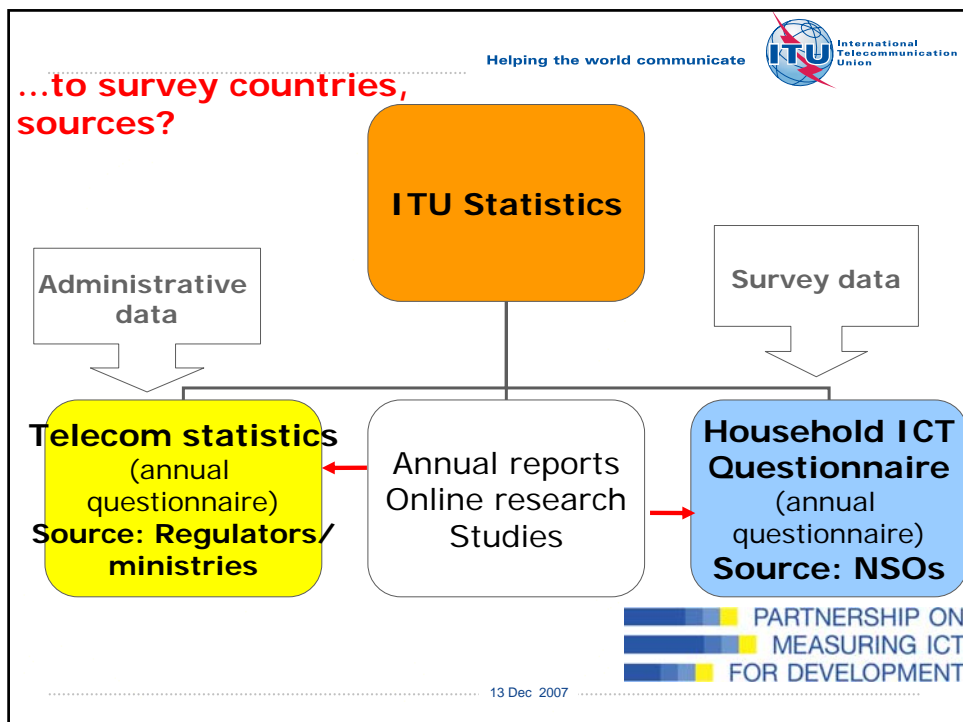
13 Dec 2007

Survey data

- Part of the *Partnership on Measuring ICT for Development*
- Annual ICT household and individual questionnaire addressed to all national statistical offices
  - To collect statistics on access to and use of ICTs by households and individuals
  - Data collection started in 2003

- Last data collection February 2007 (results by end 2007)

- Data mainly on availability of ICTs in households

- Also collected data on usage of ICTs by individuals,
  - by age, gender, educational attainment, employment status, etc.

13 Dec 2007   14
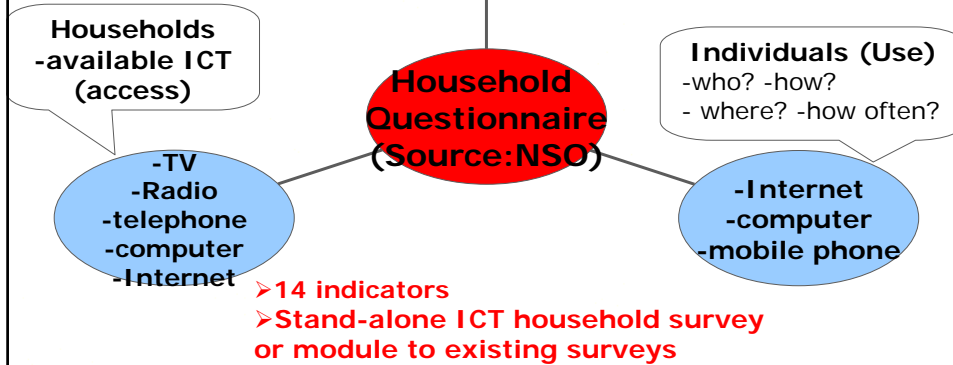
Challenges – (Survey data)

- Limited availability – not many developing countries collect data using official survey
- Most countries collect access indicators only (availability of computer, Internet and telephone)
- Very few developing countries use the Core List of ICT Indicators
- Limited comparability of data collected
  - ➢ Differences in categories used by different countries
- Lack of continuity of data collection
- Data not representative
- Lack of metadata to support statistics
- Disaggregated data not available

...develop training materials

...provide technical assistance

- Materials
  - ITU Manual on household and individual ICT statistics (to be available from March 2008)
  - ITU Handbook of Telecommunication indicators
- Country capacity building workshops (Indonesia)
- Regional workshops
- Global meetings
  - World Telecom/ICT Indicators meeting
  - Global meeting of the Partnership on Measuring ICT for Development

13 Dec 2007

...further develop and improve benchmarking efforts, including the...

ITU's ICT Opportunity Index

- Latest update in February 2007
- 183 countries, five years (2001-2005), 10 indicators:
  - Networks: fixed telephone lines, mobile subscribers, international internet bandwidth
  - Skills: adult literacy, gross school enrolment rates (UNESCO)
  - Uptake: internet users, households with a TV, PCs,
  - Intensity: broadband internet subscribers, international outgoing telephone traffic

- The benchmarking exercise provides cross-country comparisons
- Helps track the digital divide
- Highlights relative movements and progress of countries, over time and in terms of the different ICT areas
- Provides an analytical tool for national/regional/ international analysis and case studies

To be presented and discussed during the Single Index session of the meeting

13 Dec 2007
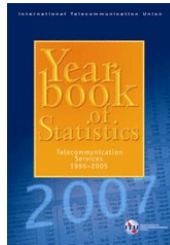
... *produce world and regional reports*

o **Yearbook of Statistics** (annually, since 1974), latest July 2007.
o **World Telecommunication/ICT Indicators (WTI) database** (available online, updated every 3 months), latest 15 October 2007.
o **World Telecommunication/ICT Development Report (WTDR)** (last published in March 2006)
o **Regional Telecommunication Indicators reports** (Africa, Asia-Pacific, Americas), latest 200
o **ICT Eye** – key statistics online and for free (http://www.itu.int/ITU-D/ict/statistics/)
o **Requests** through email, telephone, fax

Main Points:

1. Coordination among agencies dealing with ICT issues (clear definition of roles)

   ✓ Ministry, regulator (identifying indicator needs)

   ✓ National statistics office (survey implementation)

2. Use ITU Indicator manual and handbook in collecting ICT statistics for comparability of results

   • Core list of ICT indicators

   • ITU Telecom Indicators handbook

3. Disseminate timely and transparent telecom/ICT statistics

Thank You

For further information, contact:
indicators[at]itu.int
and visit
www.itu.int/ict

INTERNATIONAL TELECOMMUNICATION UNION

**TELECOMMUNICATION
DEVELOPMENT BUREAU**

**Document 010-E
12 December 2007
Original: English**

6TH WORLD TELECOMMUNICATION/ICT INDICATORS MEETING, GENEVA, 13-15 DECEMBER 2007

SOURCE: STAT, ITU

TITLE: Review of existing indicators

—————

**6th World Telcommunication/ICT Indicators Meeting
Geneva, Switzerland
December 13-15, 2007**

Review of existing indicators

**Vanessa Gray
Market Information and Statistics Division
Telecommunication Development Bureau
International Telecommunication Union**

Types of ICT indicators

World
Telecommunication/ICT
Indicators
(Indicators Handbook)

Tariff indicators
(operators &
questionnaire)

Household indicators
(NSO questionnaire)

International Telecommunication Union
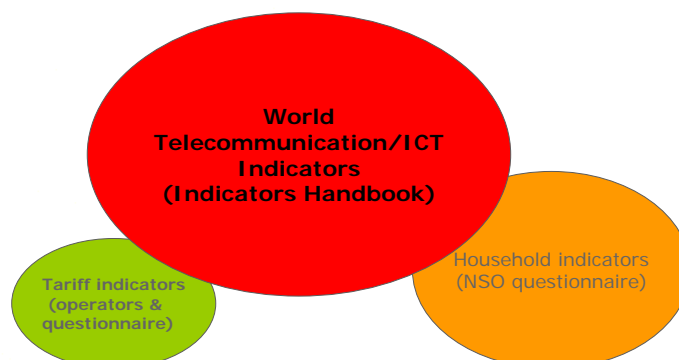
WTI: Indicators Handbook

- Fixed & Mobile network
- Internet/broadband
- Tariffs
- Traffic

- Staff
- Revenue & Investment
- Community Access
- Broadcasting

World Telecommunication/ICT Indicators Meeting 2006 saw revision of ITU Indicators Handbook
Information Document Nr 12

World Telecommunication /ICT Indicators (Indicators Handbook)

International Telecommunication Union

Revised/new indicators

Traffic	i132t: International outgoing total telephone traffic (minutes): includes fixed and mobile minutes
Mobile	i271L: Number of mobile cellular subscribers with access to data communications at low speeds (below 256kbit/s). Typically referred to as 2.5G.
Mobile broadband	i271mb: Number of mobile cellular subscribers with access to data communications at broadband speeds (defined as greater than or equal to 256 kbit/s in one or both directions). Typically referred to as 3G.
Fixed broadband	Total fixed broadband Internet subscribers: high speed access to the public Internet at speeds equal to, or greater than, 256kbit/s, in one or both directions.

World Telecommunication /ICT Indicators (Indicators Handbook)

Adapting/revising indicators

- To reflect technological changes and new services
  - NGN
    - Convergence
    - VoIP
  - Mobile broadband
  - Cybersecurity
- In response to
  - Requests from ITU Member States
  - Market trends
  - National data collections
  - Work carried out by international and regional organizations

---

Household & individual survey indicators

- To measure the Information Society, access/network data are not sufficient
- Measure ICT use (who? where? why?) through household and individual surveys
  - Collection started in 2005
- Part of the Partnership on Measuring ICT for Development
  - ITU's expansion from administrative to survey data
  - Cooperation of National Statistical Offices (NSOs) with regulatory authority!

Household indicators
(NSO questionnaire)

ICT household/individual indicators

HH-1   Households with a radio
HH-2   Households with a TV
HH-3   Households with a fixed line telephone
HH-4   Households with a mobile cellular telephone
HH-5   Households with a computer
HH-6   Individuals that used a computer (from any location) in the last 12 months
HH-7   Households with Internet access at home
HH-8   Individuals that used the Internet (from any location) in the last 12 months
HH-9   Location of individual use of the Internet in the last 12 months:
  ➤ Home
  ➤ Work
  ➤ Place of education
  ➤ Another person's home
  ➤ Community access (subsidized, or free)
  ➤ Commercial Internet access

Household indicators
(NSO questionnaire)

To access list of indicators and definitions:http://www.itu.int/ITU-D/ict/partnership/index.html

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ICT household/individual indicators

HH-10   Internet activities undertaken by individuals
  ➤ Getting information
  ➤ Communicating
  ➤ Purchasing or ordering goods or services
  ➤ Internet banking
  ➤ Education
  ➤ E-government services
  ➤ Leisure activities
HH-11   Proportion of individuals with use of a mobile telephone
HH-12   Proportion of households with access to the Internet by type of access from home
  ➤ Narrowband (dial-up, ISDN)
  ➤ Broadband (>256kbit/s)
HH-13   Frequency of individual access to the Internet
  ➤ 4 options (once a day, once a week, once a month, less than once a month)

Household indicators
(NSO questionnaire)

To access list of indicators and definitions:http://www.itu.int/ITU-D/ict/partnership/index.html

Tariff indicators

- Measure of affordability of ICT services
- Important information to understand barriers to ICT use/uptake
- Tariff data collected through research (from operators)
  - Mobile services
  - Internet/broadband

Affordability of mobile services, selected regions, 3Q 2007

%

- 100 minutes of use as a % of Gross National Income

70
60
50
40
30
20
10
0

66.1 — Africa
10.3 — Americas
12.6 — Asia
5.2 — Europe
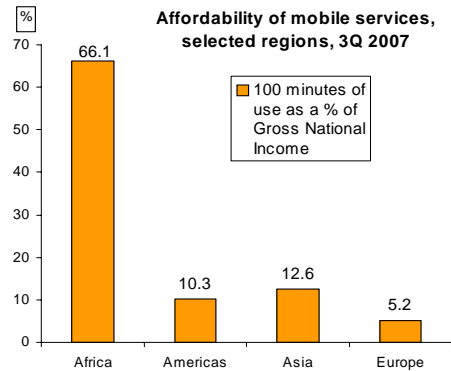
Tariff indicators
(operators & questionnaire)

Mobile tariffs - rules

- Dominant operator (in terms of subscriber numbers)
  - Prepaid or postpaid, depending on dominant payment method (in terms of subscribers) within the country
- Average of peak and off-peak minutes
- Average of calls to same network, off-net, and fixed network

Tariff indicators
(operators & questionnaire)

Internet tariffs - rules

- Both, dial-up and broadband tariffs are collected
1. Cheapest price commercially available for 20hours use per month (dial-up or broadband)
   - Average of peak and off-peak minutes (for dial-up)
2. Broadband: Low-speed and high-speed broadband offers are collected and made comparable (lowest sample cost of 100 kbit/s per month)

Tariff indicators (operators & questionnaire)

Reality check

- Are ITU indicators reflecting market trends and helping countries measure their progress in terms of adopting ICTs?
- Are data available from countries?
  - Example: Community access indicators
- Are data available from operators?
  - Example: Mobile broadband

International
Telecommunication
Union

Thank you

For questions or comments, please contact indicators@itu.int

INTERNATIONAL TELECOMMUNICATION UNION

TELECOMMUNICATION DEVELOPMENT BUREAU		**Document 011-E** **12 December 2007** **Original: English**

6TH WORLD TELECOMMUNICATION/ICT INDICATORS MEETING, GENEVA, 13-15 DECEMBER 2007

SOURCE: Ministry of Communications and Information Technology, Egypt

TITLE: Egypt's Approach to increase Community Access

_____

Egypt's Approach to increase Community Access

Dr. Nagwa El-Shenawy

**Information Center Director
Ministry of Communication and
Information Technology-Egypt**

Content ..

- Introduction.
- Basic Elements of Egypt's approach to increase community access:
1. Internet initiatives:
    - Subscription- Free Internet Initiative.
    - Broadband internet Initiative.
2. PC for every home initiative.
3. IT club initiative.
    - Background and Description.
    - Types of IT clubs.
    - Types of services.
    - MCIT role.
    - Benefits.
    - Monitoring and evaluation system.
    - Hard indicators.
    - Soft indicators.
    - Future challenges.

Introduction

ICT Indicators

- **Mobile users**
  - ➤Penetration is at 38%
  - ➤One of the highest growth rates in the world
  - ➤The number of subscribers almost quadrupled in 3 years reaching 28 million subscribers.
  - ➤Over 1 million subscribers are being added monthly
- **Internet**
  - ➤Internet users approaching 8 million.
  - ➤ internet penetration 10.5%
- **Telecom Companies Revenues**
  - ➤The reform resulted in growth of the revenues by 30% annually.

Basic Elements of Egypt's approach to increase community access

- MCIT seeks to guarantee universal, easy, affordable and rapid access for all Egyptian citizens to ICT, and stimulating awareness of the potential uses and benefits of ICT.

- In this respect, MCIT has implemented a number of programs with the chief aim of providing benefits to users, promoting computer literacy, and encouraging increased use of ICT by the public. These initiatives include:

1. Free Internet initiative.
2. PC for every home initiative.
3. IT club initiative.

1.1 Subscription- Free Internet Initiative..
Background

- "Subscription- Free Internet Initiative", lunched in 2002 offers subscription-free Internet services to users via dialup connections to special prefix numbers starting with '0777' or '0707'.

- Today, Internet users across Egypt are only charged for the price of the local phone call associated with connecting to the network. The local phone call charges are approximately US$ 0.15 for an hour of access.

- Through this model, the Internet Service Provider (ISP) installs remote access server (RAS) equipment at local exchanges in a given region and Telecom Egypt configures a Free Internet number for the ISP to cover this region. To date over 70,100 access ports are installed nationwide.

1.1 Subscription- Free Internet Initiative..
Success Indicators

Number of Internet user (million)

A significant increase in Internet Users

Launching Subscription-Free internet initiative

million user

	2000	2001	2002	2003	2004	2005	2006	Oct-07
	0.65	1	1.7	3	3.9	5.1	6	8.1
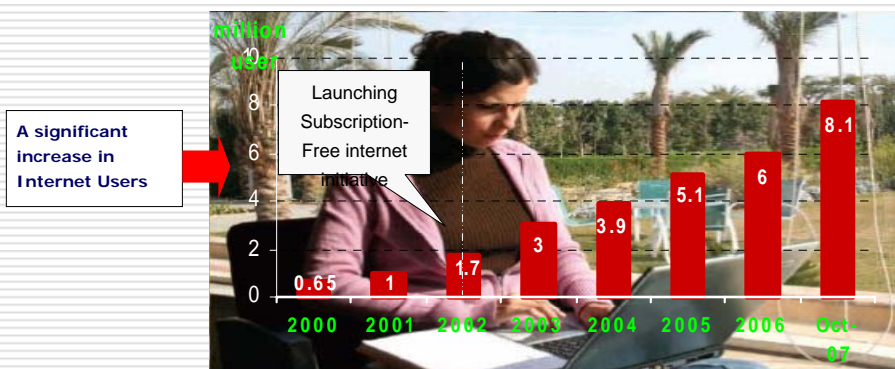
1.2 Broadband Initiative..
Background

- The "Broadband Initiative", was developed by MCIT in partnership with Telecom Egypt and Egyptian ISPs in May 2004, to provide residential users as well as small and medium enterprises with easy and affordable high speed access to the Internet through the use of new broadband technologies.
- A restructuring of the Broadband Initiative in July 2006, which lowered the basic monthly subscription fee to 16.9 US$ (for 256 Kbps), <u>had</u> a profound effect.
- In addition this cost reduced in July 2007 to less than 10 US$, and this lead to a significant increase in no. of ADSL monthly subscriber reached 53 thousand subscriber in the next two months.

www.techdevfind.com

- The initiative's initial target was to introduce the ADSL service to 50,000 subscribers during the first year by focusing on decreasing monthly charges for 256 kpbs ADSL services by 50 %.

1.2 Broadband Initiative..
Success Indicators

ADSL Subscribers

Year	ADSL Subscribers
2002	937
2003	4,850
2004	29,307
2005	91,111
2006	205,690
Oct-07	366,789

ADSL Subscribers

A significant increase in ADSL subscribers

Subscriber

Launching of broadband initiative

The first reduction in ADSL cost

The second reduction in ADSL cost

	2002	2003	2004	2005	2006	Jan.-Oct. 2007
	937	4850	29307	91111	205690	366789
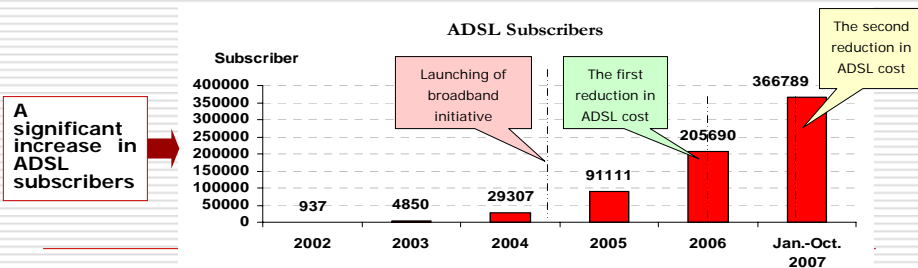
2. "PC for every home" Initiative

Background

- "PC for Every Home initiative", launched in November 2002. The project's objective is to increase PC usage and penetration.
- In 2006 the PC for Every Home initiative, underwent a major restructuring to become a national program under the name "Egypt PC 2010 – Nation Online".
- Cooperation with international technology providers was realized to reach discounts up to 50% on hardware.
- This initiative, will cover 3 million families by the end of 2010, with greater focus on citizens in the C and D economic brackets. This would represent coverage of at least 25% of Egyptian families. Currently, only 7% of Egyptian families own PCs, the majority from the A and B economic brackets.

www.mcit.gov.eg

- Under this initiative; cooperation with international technology providers was realized to reach discounts up to 50% on hardware.

---

2. PC for every home Initiative

Description

- Egypt PC 2010 focuses on three categories of **PCs: Family; Desktop Mid/High-End; and Laptop.**

- The Family Category offers two models starting at US$ 286.98 with monthly installments of US$ 7.79.

- The Desktop Mid/High-End Category, intended for professional/specialized use, offers two models starting at US$ 525.07 with monthly installments of US$ 15.21.

- The Laptop Category, for professional/specialized or personal use, offers two models starting at US$ 722.42 with monthly installments of US$ 20.64.

2. PC for every home Initiative

Basic Indicators

Sales Of Personal Computers By Region Within The Initiative

Region	Oct - 2006	Sept - 2007	Oct - 2007
Cairo	87,404	100,054	100,056
Alexandria & Matrouh	14,600	18,301	18,301
Delta	12,676	14,289	14,304
Upper Egypt	11,628	12,778	12,783
Canal - Red Sea - Sinai	6,496	7,054	7,056
	132,804	152,476	152,500
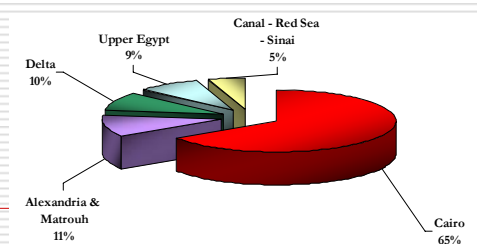
3. IT Clubs Initiative

3. IT Clubs Initiative..
Background and description

- Going hand-in-hand with the Free Internet and the PC for Every Home initiatives, MCIT established IT clubs in every district focusing primarily on the low income areas across the nation feeds into the strategic objective of familiarizing people with computers and promoting IT awareness.

- Thus far, <u>1548</u> clubs have been established with full equipment (computers, printers, software, networking, etc.) <u>1311</u> of which have full internet access.

---

3. IT Clubs Initiative..
Background and description

- Encouraging public-private partnership, MCIT provides equipment; computers, printers, peripherals, Internet access, a network (LAN), and a server and business models while the private sector partners provide the space, infrastructure, utilities, furniture, and security for the clubs.

- They are vehicles for providing public access to ICT and services, and are expected to contribute to the development and socio-economic progress of communities and empowering women specially in the economic and social fields.

- IT Clubs have the potential to help break down some of the largest barriers to development that are presently faced by low-income populations in rural areas.

- MCIT is encouraging diversity and therefore at least 40% of the clubs are setup at youth clubs, schools, universities and non-governmental organizations.

3. IT Clubs Initiative..

Types of services

- Although the services that IT-Clubs provide should be flexible to accommodate the needs of their respective communities, there are a set of basic services they provide. These services are:

■ General computer access	■ Desktop publishing services	■ Professional Writing	■ training
■ E-mail and internet access	■ Printing	■ Information services	■ Word Processing and similar activities
■ Spreadsheets and databases	■ Webpage design	■ Internet searches	

3. IT Clubs Initiative..

Types of services

- The potential services that IT-Clubs can provide go beyond these basic services. Most IT-Clubs have created revenue generating services that address needs of their local communities. Some of the services implemented in various IT-Clubs are the following:
  - Outsourcing.
  - Computer hardware and software maintenance.
  - Technical training courses.
  - Language courses.
  - Professional skills training courses.
  - Professional information electronic libraries.

3. IT Clubs Initiative..

Benefits

Generating revenues	■ A typical club is expected to cover its expenditures
Creating more job opportunities	■ IT-Clubs generated about 4752 job opportunity, "the average number of employees in each club reaches 3 employees". ■ IT-Clubs have been successful in creating over 2000 new jobs for the graduates of MCIT Specialized training programs. Almost 50% of these graduates have been females.
Empowering women	■ IT-Clubs have been an optimistic experience in Egypt, they have attracted large crowds and provided equal access to different sectors of society specially women as more then 46% of users are females.
Alleviating computer illiteracy	■ IT-Clubs are expected to have contributed successfully to the reduction of computer illiteracy, especially among the youth.

---

3. IT Clubs Initiative..

Hard indicators .. Data collection

■ In the light of MCIT's plan to setup 150 clubs annually; and in order to monitor the performance of the existing IT clubs and set priorities for the new ones; MCIT is collecting different set of IT clubs hard indicators.

■ These indicators are obtained from a comprehensive IT clubs database collected by MCIT and updated monthly.

■ IT club database contains about 23 basic variable tackling IT clubs in different aspects (geographical locations, infrastructure, connectivity to the net, …etc.).

3. IT Clubs Initiative..

Hard indicators .. Data collection

- These hard indicators are used in two directions.

Evaluating the performance of existing IT clubs	■ MCIT is monitoring the performance of IT clubs regularly in order to ensure their efficiency in achieving the targeted goals, when MCIT senses that the performance of a club is not up to the level, there is an intervention by boosting the training. The evaluation is based on:
	  ➤ A minimum utilization level of 50%to avoid downsizing or shutdown by MCIT.
	  ➤ The efficiency of business models adopted in IT clubs.

Set the priorities for the new IT clubs	■ A critical factor in the success of the IT Clubs initiative is that it is working by its motto 'a club in each neighborhood'. Accordingly, when MCIT is faced with hundreds of requests to establish new IT Clubs approval is partly based on :
	  ➤ The availability of IT Clubs in the neighborhood.
	  ➤ The accessibility of the new location to a wide range of society, specially for the youth from the age of 10 to 25 .

---

3. IT Clubs Initiative..

Hard Indicators .. Results

No. of IT clubs	1598 clubs.
No. of Computers in IT clubs	20451 Computers.
No. of IT clubs connected to the internet	1344 clubs.
No. of localities with IT clubs services	1180 localities.
No. of localities with IT clubs supported by broadband internet connectivity	523 localities.
MCIT is targeting to increase number of IT clubs by <u>150</u> club annually.	

3. IT Clubs Initiative..
Hard Indicators .. Results
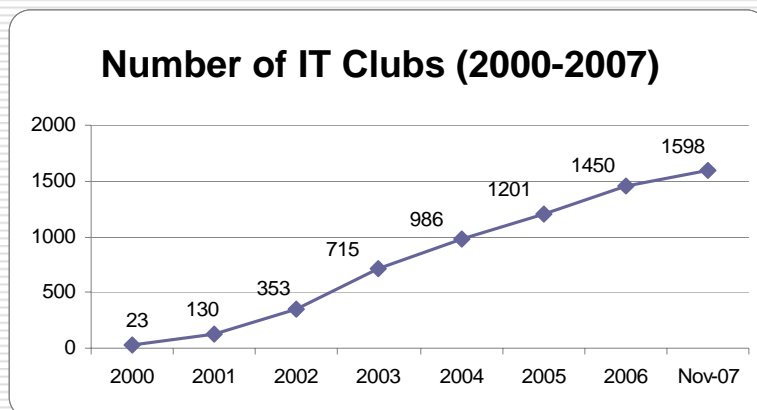
Number of IT Clubs (2000-2007)

Year	Value
2000	23
2001	130
2002	353
2003	715
2004	986
2005	1201
2006	1450
Nov-07	1598

3. IT Clubs Initiative..
Hard Indicators .. Results

Number of computers in IT Clubs (2000-2007)

Thousands

Year	Value
2000	0.371
2001	1.985
2002	4.946
2003	9.493
2004	12.598
2005	15.501
2006	18.829
Nov-07	20.451
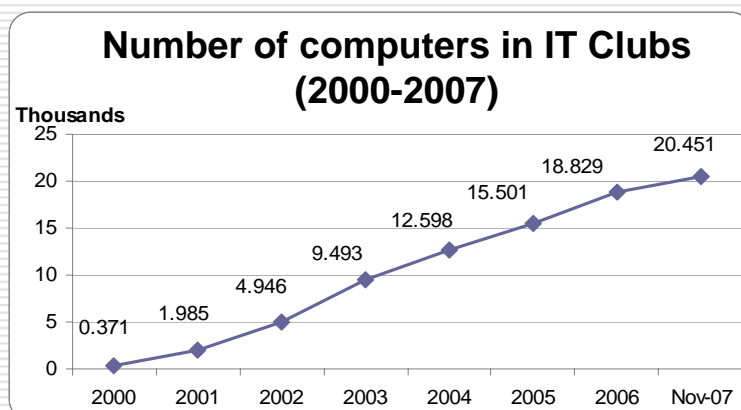
3. IT Clubs Initiative..
Hard Indicators .. Results

- Percentage of localities with public access centers (2007)
- Percentage of localities with public internet access centers (PIACs) (2007)

- 79 %
- 35 %

Localities with PIAC's

- No. of villages with IT Clubs
- No. of counties with IT Clubs
- No. of cities with IT Clubs

173 33%
140 27%
210 40%
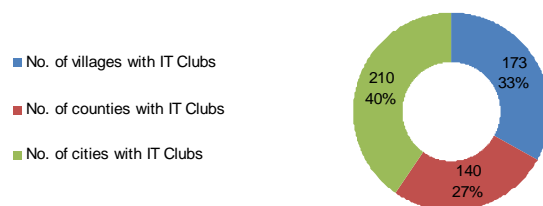
3. IT Clubs Initiative..
Hard Indicators .. Results

Number of localities with PIAC's (2000-2007)

Year	villages	Cities	counties
2000	2	8	4
2001	20	41	20
2002	41	98	60
2003	81	151	99
2004	126	186	126
2005	139	197	133
2006	153	201	136
2007	173	210	140
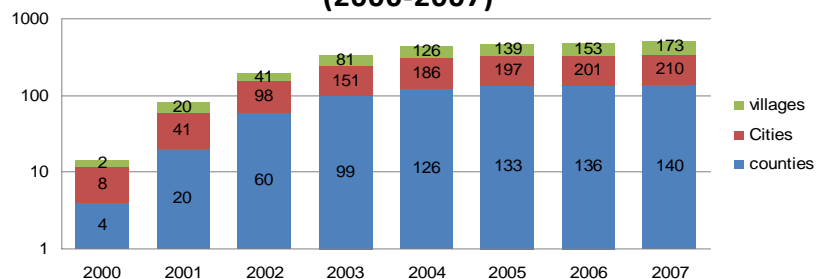
3. IT Clubs Initiative..
Hard Indicators .. Results

Number of IT Clubs By Governorates 2007

Number of Computers In IT Clubs By Governorates 2007
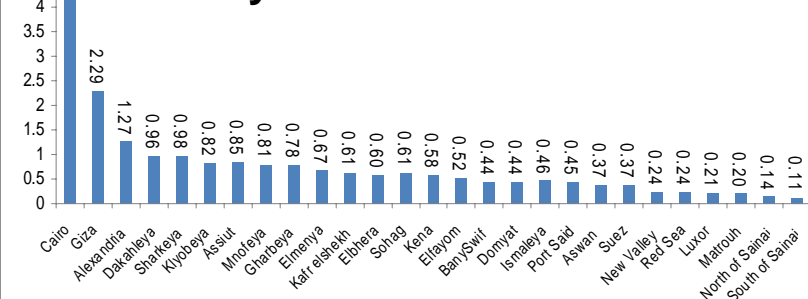
3. IT Clubs Initiative..

Hard Indicators .. Results

Distribution Of IT Clubs by Type Of Organization 2007

- Culture Palaces
- Libraries
- NGOs
- Others
- Schools
- Universities
- Youth Centers

33 24
346
430
338
298
114
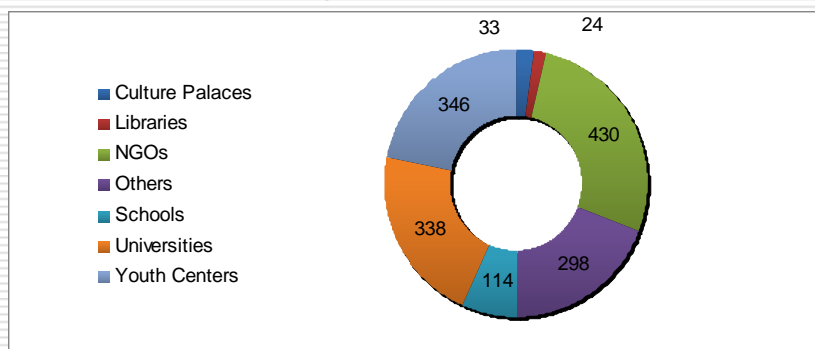
3. IT Clubs Initiative..

Hard Indicators .. Results

IT clubs by internet connection status 2007

- Connected
- Not Connected

16%

84%
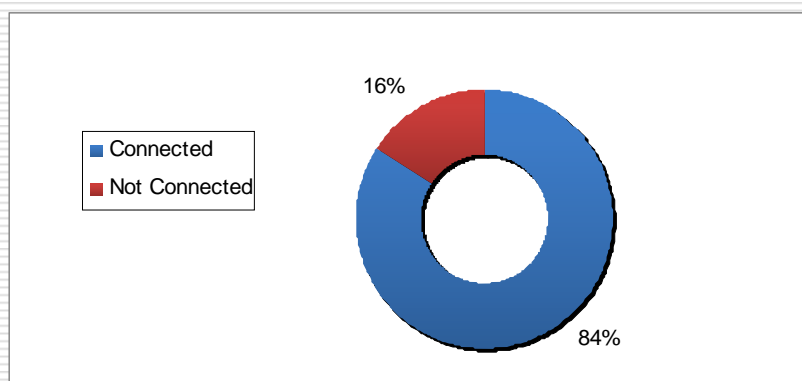
3. IT Clubs Initiative .. cont.
Soft indicators .. Methodology

- In WSIS meeting "Measuring the information society" – It was called upon all countries and regions to develop tools to provide statistical information on the information society.

- Therefore the United Nations in cooperation with many international organizations developed "core ICT indicators to measure both ICT infrastructure and usage in different sectors.

- Upon this, (MCIT) had launched national ICT indicators project in September 2005 "Information and Communication Technology (ICT) Indicators Project" with the vision of "Building information society indicators in Egypt".

- The project provides necessary, accurate and meaningful data about ICT usage in Egypt, Specially in the area of increasing community access. The following slides will highlight some of the results of this project in this specified area.

IT clubs 2006 survey

- *In 2006, The IT Clubs survey was conducted on total of 1,540 clubs with a response rate of 73.4% (1,131 IT club) covering 27 governorates, where 915 represent urban areas and 216 represent rural areas.*

---

3. IT Clubs Initiative..
Soft Indicators .. Results

General Indicators for IT Clubs

	2005/06	2006/07	% change
No. of IT Clubs	1,037	1,131	9.1
Average no. of Fixed Lines	1.3	1.1	-15.4
Average Weekly Working Hours	60.7	59.3	-2.3
Average No. of Weekly Visitors	192.6	221.2	14.9

Services Provided by IT Clubs

	2005/06	2006/07
No. of IT Clubs Surveyed	1,037	1,131
Service Provided (%)		
Using Printers	51.3	77.6
Internet	58.7	63.5
Training	89.7	63.3
Using Computers without internet	84.6	59.2
Using Scanner	12	22.3
Web games	*	22.1
Play station	*	15.1
Fax	6.5	18.1
Photocopying	4.5	10.7
Multimedia devices	*	10.7
Telephone	14.3	12.2
Other	4.6	7.3

* Item was not included in the question.

** Multiple answers are allowed.
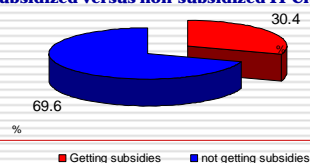
3. IT Clubs Initiative..
Soft Indicators .. Results

Computers, Internet Connection and Average Cost of Hour in IT Clubs

	2005/06	2006/07	% Change
No. of IT Clubs Surveyed	1,037	1,13	9.1
Of which: Connected to the internet			
No.	670	704	5.1
(%)	64.6	62.2	-2.4
No. of Computers in IT clubs surveyed	19,524	18,003	-7.8
of which (%):			
Connected to the Internet	56.2	56.2	0
Not Connected to the Internet	43.8	43.8	0
Average Cost of Hour for Computers:			
Connected to the Internet	1.3	1.6	23.1
Not Connected to the Internet	1.1	1.1	0

No. and (%) of Subsidized IT Clubs Surveyed 2006/07

No. of IT Clubs Surveyed	1,131
of which:	
Getting subsidies	
No.	344
(%)	30.4
Not Getting subsidies	
No.	787
(%)	69.6

Subsidized versus non-subsidized IT Clubs

- Getting subsidies
- not getting subsidies

---

3. IT Clubs Initiative..
Soft Indicators .. Results

Purpose of Using the Internet in IT Clubs 2006/07*

Studying	94.7
chatting	67
email	30.7
technical	19
egov	18.8
other	9.2
epurchase	0.9
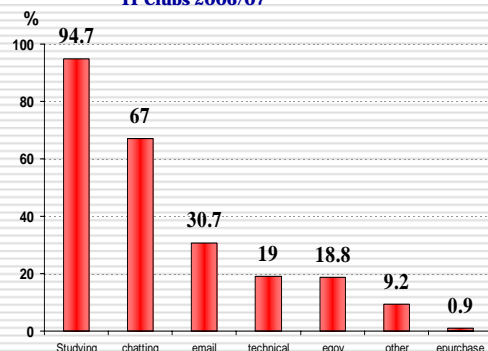
* Multiple answers are allowed.

IT Clubs Means of Connection to the Internet

■ 2005/06 ■ 2006/07

	Dial up	ADSL	ISDN	Leased Line	Other
2005/06	18.1	56.9	5.1	19	6.6
2006/07	6.30	1.40	14.90	77.00	0.40
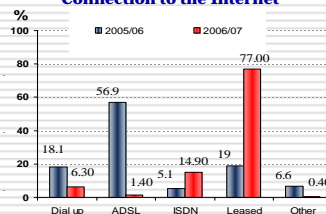
Language Used by IT Clubs Visitors 2006/07

0.10% 17.2% 5.8% 76.8%

- Arabic
- English
- More than 1 language
- Other

16
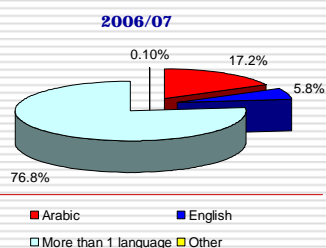
3. IT Clubs Initiative..
Soft Indicators .. Results

Workers in IT Clubs 2006/07

	Males	Females	Total
Total No. of Workers	2,281	1,164	3,409
Of which:			
Permanent	1,637	745	2,382
Temporary	644	383	1,027

Average no. of Workers IT Clubs

	2005/06	2006/07	% change
Average no. of workers/ IT club	5.3	3	-43.3

Permanent Workers in IT Clubs

Classified by Gender 2006/07

31.3% 68.7%

■ Males   ■ Females
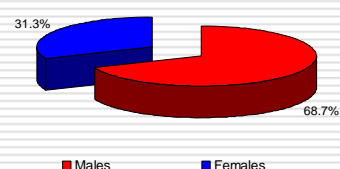
Temporary Workers in IT Clubs

Classified by Gender 2006/07

37.3% 62.7%

■ Males   ■ Females

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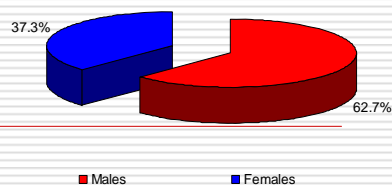
3. IT Clubs Initiative..
Challenges.. Data collection

- **Time, money and efforts required for monitoring and evaluating the performance of 1600 IT Clubs and growing on an annual basis.**

- **Lack of mechanism to assess and measure the impact of these Clubs on the communities they serve**

3. IT Clubs Initiative..
Challenges

Illiteracy:
- Without basic literacy IT Clubs cannot facilitate development and socio-economic growth. This remains to be a major challenge despite the national efforts to make available illiteracy programs for adults.
- The illiteracy eradication CD-ROM readily available at IT Clubs can be a facilitator in this process as it might be more attractive to users than the traditional teaching methods.

Information Relevance
- The IT Clubs must provide relevant information to the community. In that manner, the center becomes relevant to the community in addressing its needs.
- IT Clubs will be better utilized when the information available to users is in Arabic in a reliable, accurate, and comprehensive manner.
- MCIT is working in parallel on an Arabic E-content Initiative which promises to provide users with the content they need electronically.

3. IT Clubs Initiative.. Cont.
Challenges

Awareness
- Awareness seems to be one of the major challenges in the success of the IT Clubs in Egypt. MCIT approached all sectors in the society at the initiation of the project to take part in establishing the IT Clubs.
- Additionally, members of the community are in need of publicity, marketing, awareness programs. There are three aspects to this challenge:
  - ➤ Awareness of the value of information
  - ➤ Awareness of the importance of being computer literate
  - ➤ Awareness of the existing IT Clubs, facilities, services and incentives
- MCIT put forth a number of incentives to increase awareness and encourage participation in the club activities. Participants receive a 100L.E. monthly stipend for attending the courses offered. Additionally they find availability to use the free internet services for as long as they wish.

Focusing on measuring ICT usage
- Shifting focus from measuring the infrastructure levels in IT clubs towards measuring ICT usage in IT clubs and its impact on different beneficiaries categories (how these clubs affect their lives in many aspects like employment, education, social and political awareness, ...).

4. ITU Community Access Indicators Relevance

- **PIAC1 : % of localities with public internet access centers**
- **PIAC2: % of population with access to a public internet access centers**

Thanks

nagwash@mcit.gov.eg

Toward a Single Index
Overview and Methodology

World Telecommunication / ICT Indicators Meeting

Geneva
13-15 December 2007

Mike.Jensen@suvabay.com

Independent Consultant

Background

- The ITU membership at the ITU Plenipotentiary Conference 2006 (PP06) and the World Telecommunication Development Conference 2006 Doha Action Plan gave Director of BDT specific mandates for measuring access to telecommunication and ICT

- Also, PP06 (Antalya) Resolution 131 – instructs the Director of BDT to 'promote the activities required to define and adopt new indicators for the purpose of measuring the real impact of community connectivity on the development of communities'

Needs for ITU Indices

- The ITU's mandate means an ICT index needs to measure progress in developing countries
- At the same time, the ITU has an obligation to all of its members, including the developed countries
- The difficulty of providing useful information relevant to all countries within one index has been noted - developed countries may require their own index using the more sophisticated indicators they have available and to measure more advanced technologies
- Thus it may be necessary to maintain a single flagship index as well as develop a 'second-speed' index

Goals for a Single Index

1. Provide a universally accepted measure of access to, and use of ICTs at a national level that includes as many nations as possible
2. The Index should be transparent in its formulation, easy to understand and use, and effective in informing policy decisions
3. Index components should be easily unpacked for more detailed analysis
4. The time period for its use should be until 2015 to correspond to the MDG and WSIS goals
5. Lack of universally available up-to-date data means the smallest number of component indicators will be the most inclusive and comparable across countries

Goals for a Single Index (2)

5. Indicators that measure numbers of ICT users and levels of usage provide the clearest measures of the access to ICTs and their levels of adoption
6. The focus of the index should be on personal or community access measures, rather household or business-use - more relevant for developing countries and complements WSIS and MDG goals
7. To maximise the long-term validity of the index as technologies evolve, the indicators should anticipate future evolution of ICT infrastructure and services
8. Indicator data used should be compiled by credible organisations and be issued on a regular basis to allow for comparisons over time

Indicators Choices

The Partnership on Measuring ICT for Development Core Indicators:

- A1 Fixed telephone lines per 100 inhabitants
- A2 Mobile cellular subscribers per 100 inhabitants
- A3 Computers per 100 inhabitants
- A4 Internet subscribers per 100 inhabitants
- A5 Broadband Internet subscribers per 100 inhabitants
- A6 International Internet bandwidth per inhabitant
- A7 Percentage of population covered by mobile cellular telephony
- A8 Internet access tariffs (20 hours per month), in US$, as a percentage of *per capita* income
- A9 Mobile cellular tariffs (100 minutes of use per month), in US$, and as a percentage of *per capita income*
- A10 Percentage of localities with public Internet access centres (PIACs) by number of inhabitants (rural/urban)

Extended core

- A11 Radio sets per 100 inhabitants
- A12 Television sets per 100 inhabitants

Indicator Choices (2)

The Partnership on Measuring ICT for Development Household Indicators:

- HH1 Proportion of households with a radio
- HH2 Proportion of households with a TV
- HH3 Proportion of households with a fixed line telephone
- HH4 Proportion of households with a mobile cellular telephone
- HH5 Proportion of households with a computer
- HH6 Proportion of individuals who used a computer (from any location) in the last 12 months
- HH7 Proportion of households with Internet access at home
- HH8 Proportion of individuals who used the Internet (from any location) in the last 12 months
- HH9 Location of individual use of Internet in the last 12 months: (a) at home; (b) at work; (c) place of education; (d) at another person's home; (e) community Internet access facility (f) commercial Internet access facility (g) others
- HH10 Internet activities undertaken by individuals in the last 12 months·

Extended Core:

- HH11 Proportion of individuals with use of a mobile telephone
- HH12 Proportion of households with access to the Internet by type of access
- HH13 Frequency of individual access to the Internet in the last 12 months (from any location): (a) at least once a day; (b) at least once a week but not every day; (c) at least once a month but not every week; and (d) less than once a month
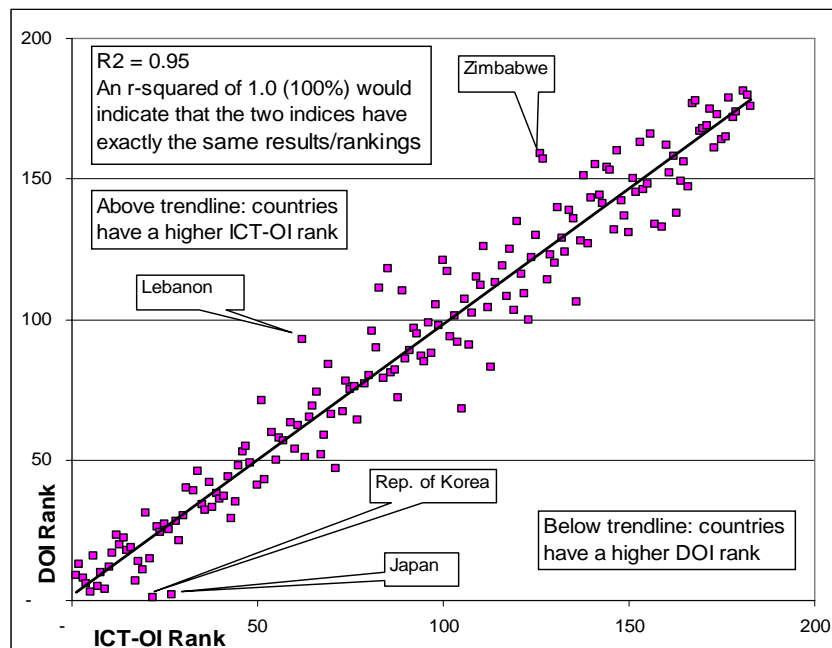
The Key Indices Compared (1)

Index	Main stake-holders	Number of Indicators	Number of Countries	Data years	Sub indices
DAI - Digital Accessibility Index	ITU	8	178	2002	1) **Infrastructure** 2) **Affordability** 3) **Knowledge** 4) **Quality** 5) **Usage**
DOI – Digital Opportunity Index	ITU	11	181	2000-2005	1) **Opportunity** 2) **Infrastructure** 3) **Usage**
Orbicom's DDI - Digital Divide Project Index (also referred to as InfoStates)	Orbicom	17	139	2003	1) **Infodensity** – the sum of all ICT stocks (capital and labour) (networks and skills) and 2) **Info-Use** – consumption flows of ICT over a set period (uptake and intensity) **Infostate** is the aggregation of infodensity and info-use.
ICT-OI – ICT Opportunity Index	ITU	10	183	2001-2005	1) **Infodensity** (networks and skills) and 2) **Info-Use** (uptake and intensity)

The Key Indices Compared (2)

Digital Opportunity Index (DOI) First published in 2005.	Measures the possibility for citizens to benefit from access to information that is "universal, ubiquitous, equitable and affordable". It is a measure of each countries' performance and prospects for progress in building an Information Society
ICT Opportunity Index (ICT-OI) The result of the merger of the Digital Access Index (DAI) and Orbicom's InfoState conceptual framework and model. First published in 2005	The prime objective is to identify the digital divide and to help understand how it has evolved since the beginning of this century. The ICT-OI has an explicit conceptual framework closely linked to economic theory, focusing on the dual nature of ICTs, as a productive asset, as well as a consumable – Infodensity as a country's overall capital and labour stocks and Info-use, which refers to the consumption flows of ICTs.

ICT-OI and the DOI Ranks Compared

The DOI and the ICT-OI Indicators

Digital Opportunity Index (DOI)

Opportunity

1. **Percentage of population covered by mobile telephony (A7)**
2. **Internet access tariffs as a percentage of per capita income (A8)**
3. **Mobile cellular tariffs as a percentage of per capita income (A9)**

Infrastructure

1. *Proportion of households with a fixed-line telephone (HH3)*
2. *Proportion of households with a computer (HH5)*
3. *Proportion of households with Internet access at home (HH7)*
4. ***Mobile cellular** subscribers per 100 inhabitants (A2)*
5. Mobile Internet subscribers per 100 inhabitants

Utilisation

1. *Proportion of individuals that have used the Internet (HH8)*
2. **Ratio of fixed broadband subscribers to total Internet subscribers (A5:A4)**
3. Ratio of mobile broadband subscribers to total mobile subscribers

ICT Opportunity Index (ICT-OI)

Infodensity: Networks

1. **Main telephone lines per 100 inhabitants (A1)**
2. **Mobile cellular subscribers per 100 inhabitants (A2)**
3. **International Internet bandwidth (kbit/s per inhabitant) (A6)**

Infodensity: Skills

1. Adult literacy rate
2. Gross enrolment rates (primary, secondary and tertiary)

Info-use: Uptake

1. Internet users per 100 inhabitants
2. **Proportion of households with a TV (HH2)**
3. **Computers per 100 inhabitants (A3)**

Info-use: Intensity

1. **Total broadband Internet subscribers per 100 inhabitants (A5)**
2. International outgoing international traffic (minutes) per capita

The DOI and the ICT-OI Methodologies

Feature	DOI	ICT-OI
Number of indicators used	11	10
Number of Partnership core ICT indicators	8	6
Framework used	No explicit framework, but sub-indices are sequenced	Economic model framework
Sub-Index category hierarchy levels	1	2
How Digital Divide is measured	Absolute	Relative
Index formula	Arithmetic mean	Geometric mean
Index computation	Can be done easily by the country, since based on absolute values	Depends on average of values included in the study.
Indicator selection focus	Mobile & internet	Skills, basic infrastructure and utilisation
Indicator type emphasis	Household	Individual
Treatment of outliers and large values	Goalposts	Maximum value adjustments/Scalars

Scenarios for a Single Index

1. Adopt one of the two indices already in use – either the ICT-OI or the DOI.
2. Adopt a slightly modified version of either the ICT-OI or DOI by adding or removing some of the indicators currently used, and retaining the same methodology of the chosen index
3. Formulate a revised index that merges the best features of the two existing indices:
   - Build on the body of work already carried out in developing the ICT-OI and the DOI
   - Use a combination of the existing indicators
   - Use the methodologies of the ICT-OI or the DOI or a mix of the two
   - Possibly incorporate some new indicators - better internet metrics and equity factors such as gender

Also, consider the need for a 'second speed index'

Scenarios For A Single Index

Scenario 1 – Use either the ICT-OI or the DOI

This approach has the advantage that the two indices are already well known and extensively analysed. The disadvantage is that the different problems which have been identified with each of the indices suggests that choosing one over the other may be difficult or could lead to even more protracted debate with an unclear outcome.

Scenario 2 – Use a slightly modified ICT-OI or DOI

This option has some of the advantages of Scenario 1 but it may be difficult to make changes to sufficiently address the issues.

The conceptual framework and intricate methodology which is imbedded in the ICT-OI makes it less appropriate for piecemeal modification, while in the DOI it may be possible to simply change, remove or add indicators with little additional effort.

Removing the 'mobile internet subscriber 'indicator and the ratio of 'mobile broadband to total mobile subscribers' indicators from the DOI could make the index less focused on developed countries.

Removing the tariff indicators could focus the index more closely on actual uptake.

But even removing both of these types of measures may not address the other concerns that have been identified, especially the use of household indicators, which are not available through household surveys for the majority of developing countries.

Scenario 3 – Formulate a revised Index

The drawback of this approach (and to some extent the approach of scenario 2) is that it would create yet another (third) index, which has not been tested yet.

Conceptual Framework for Revising the Single Index

- The number and range of ICTs available today has never been greater and a conceptual framework is needed to make sense of them

- A good conceptual framework makes it possible be much more systematic about the process of selecting indicators

Conceptual Framework for A Revised Index
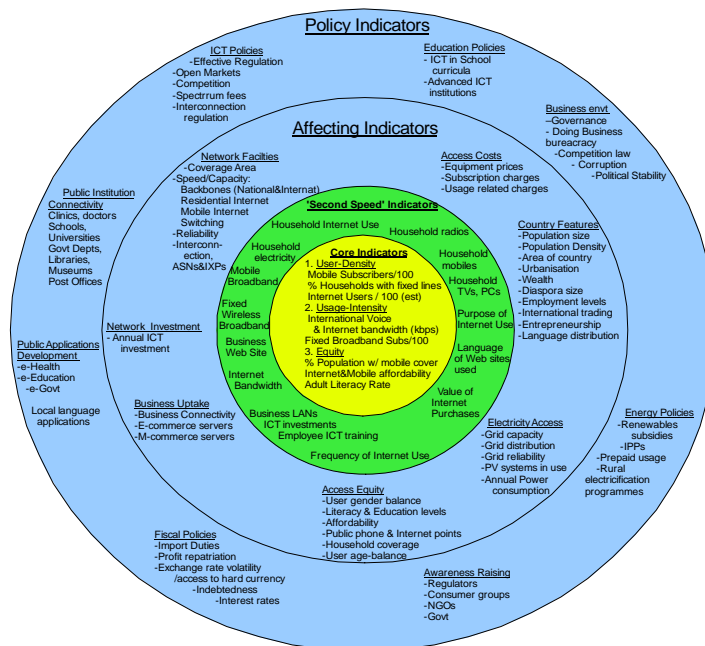
Considerations for Revising the Single Index

- The conceptual model makes clear the separation of influencing factors from measures of demand-led uptake and use. Thus the Indicators are a set of grouped measures of ICT adoption, whose levels are affected by a wide range of factors

- User-Density indicators ideally comprise all demand-side measures of network and equipment uptake such as fixed, mobile and internet subscribers, PCs, TVs and radios per capita. But some of these are inaccurate or of less interest

- Usage-Intensity better implies measures of the extent to which ICT is actually used, and could comprise voice and internet traffic, and broadband subscribers

- The saturation of uptake in some parts of the world forms the rationale for a two-speed element to the new index – where User-Density is of key concern to developing countries, while Usage-Intensity is more important to developed countries.

Considerations for use of Sub-Indices

- The User-Density and Usage-Intensity sub-indexes could be combined as-is but this would not take into account the skills component and other Equity/Opportunity factors
- A separate sub-index is important to measure access-equity – i.e. the extent to which some people are excluded from access to or the use of ICT.
- Average per capita measures of ICT-use obscure the fact that in many countries women do not have as much access to technology, and neither do the illiterate. Also the poor may not be able to afford access to broadband, and networks often do not extend uniformly across the country.
- The Equity sub-index would aim to highlight these problems and create a composite measure of the equitability of access and use of ICT in any given country

User-Density Indicator Considerations

- User-Density is the sub-index aimed at measuring the per capita penetration of ICT and would ideally include fixed, mobile and internet subscribers, PCs, TVs and radios per capita. But because of data accuracy and availability limitations, PCs, TVs and radios could be eliminated

  .
- Also, the definition of what actually constitutes one of these devices is becoming increasingly blurred because of mobile-PC-TV convergence and the embedding of computing devices in other equipment such as cars and fridges

User-Density Indicator Considerations (2)

- Including a fixed-line measure is likely to bias against developing countries - in contrast to fixed lines, mobile phone access is becoming the de facto measure of basic access and this indicator is of particular concern to developing countries where growth is still rapid and has not come close to reaching saturation.

- In addition mobile phones are now being more used for internet access than PCs in some countries

- . But use of fixed lines for delivering broadband in developed countries, suggests this indicator should still be included in the index

Usage-Intensity Indicator Considerations

The Usage-Intensity sub-index would aim to measure the levels of ICT activity:

- international internet bandwidth
- international voice traffic
- broadband-use.

This would aim to provide a sufficient level of detail to allow the more developed countries at the top end of the User-Density scale to make effective national comparisons.

These indicators do not give an ideal picture of usage intensity, but until more widespread national data is available the use of these simple proxy indicators is necessary.

Usage-Intensity Indicators (2)

- Using both voice traffic and internet bandwidth helps to create balance in the move toward NGN infrastructure where voice minutes decrease while internet bandwidth will increase

- Voice traffic is usually measured in minutes, but can be converted to bandwidth equivalents to allow a more direct comparison with internet bandwidth

- In the longer term, as networks move toward an NGN infrastructure the indicator is future-proofed as growth in internet bandwidth compensates for decreases in switched voice minutes

- Although the availability of international voice traffic data is patchy, this could be partially addressed by adding incoming and outgoing minutes together, which is also necessary because there is a tendency for outgoing calls to be replaced with incoming calls.

Equity Indicator Considerations

- An Equity sub-index would aim to introduce a measure for the level of exclusion from ICTs amongst the public

- It could comprise mobile coverage, mobile and internet affordability, and literacy levels

- This may also be the place to bring in the public internet access point indicator that is currently being developed by the ITU

- This has not been the explicit focus of any of the other indices but many of the indexes have used the indicators proposed here - an equity measure can be a way to group the indicators in a more meaningful way to illuminate the equity issue.

Equity Indicators (2)

- Ideally the coverage indicator should include national broadband coverage but as this figure is not available, the index could use the proportion of population covered by mobile networks, which may also give some indication of broadband coverage

- The affordability component could use the cost per Mbps/month for a broadband subscription package as a percentage of average monthly household income. As this is not yet widely available, the OECD defined basket of costs for low-end mobile usage could be used, combined with the estimated costs for 20 hours of dial-up internet access per month.

- Adult literacy levels are a well-represented measure of the extent to which the public can use the internet

Making the Index More User |Friendly

- Software tools and online web-based database systems help make the index more accessible and understandable by tailoring it to the needs of the particular user

- These tools allow selection of countries according to many more categories – neighbouring countries, economic union, levels of indebtedness, small islands, small populations etc, the user is not restricted to using pre-packaged categories which may be of less relevance to their particular interests

- More special ranking categories can also be used, for example, countries that grew the most, countries that grew the least, or countries furthest from the GNI benchmark.

- Grouping countries by rank is also important in measuring and highlighting progress – for example, the top 10 adopters, low adopters, most rapid adopters.

- Similarly the same tools can be used to combine different indicators and essentially allow the user to create their own index, which makes reaching consensus on the use of specific indicators far less necessary

Naming the Revised Index

1. The Integrated ICT Opportunity Index (IIOI)

2. The Digital Inclusion Index (DII)

3. The Interactive ICT Index (III)

4. The Digital Equity Index (DEI)

5. The New Information Opportunity Index (NIOI)

6. The Digital Adoption and Usage Index (DAUI)

7. The ITU ICT Index (ICT-I)

Thank You
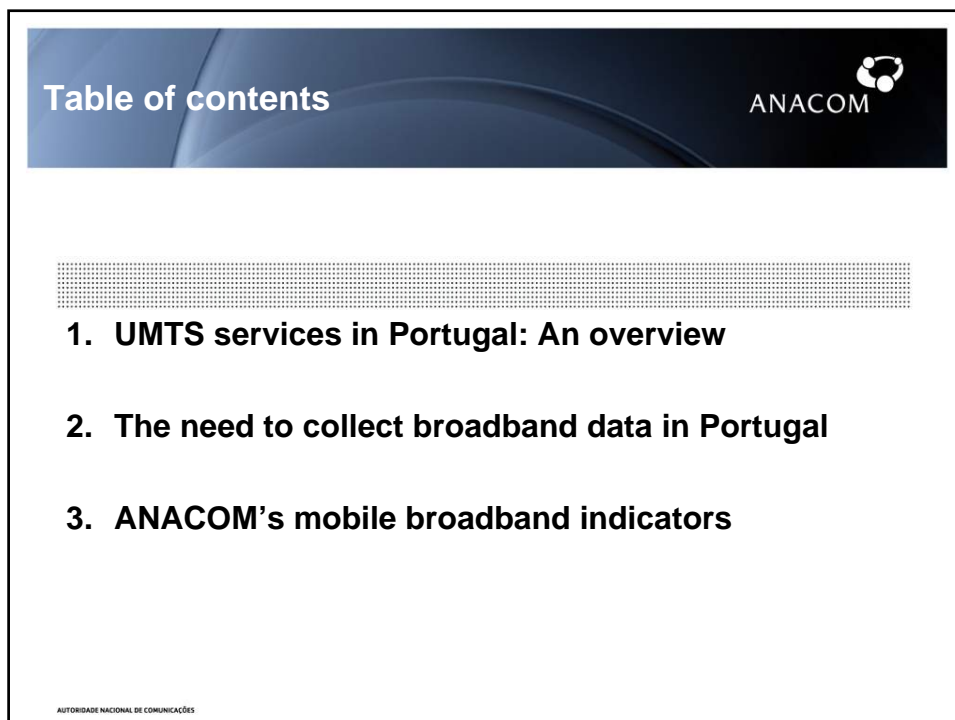
INTERNATIONAL TELECOMMUNICATION UNION

**TELECOMMUNICATION
DEVELOPMENT BUREAU**

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13 December 2007
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6TH WORLD TELECOMMUNICATION/ICT INDICATORS MEETING, GENEVA, 13-15 DECEMBER 2007

SOURCE: ANACOM, Portugal

TITLE: Data collection on broadband mobile services in Portugal

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Data collection on broadband mobile services in Portugal

João Noronha, ICP-ANACOM

6th WORLD TELECOMMUNICATION/ICT INDICATORS MEETING
ITU, GENEVA, 13-15 December 2007

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1. **UMTS services in Portugal: An overview**

2. **The need to collect broadband data in Portugal**

3. **ANACOM's mobile broadband indicators**

1. UMTS services in Portugal: An overview

1. UMTS services in Portugal (II)

ANACOM

Date	Milestone
04/2004	Full commercial launch. Contracted download speeds – up to 384 Kbps.
03/2006	HSDPA upgrade (High Speed Data Packet Access): 1.8 Mbps dpwnload speeds.
09/2006	Network upgrade: 3.6 Mbps dpwnload speeds ... with USB connection
11/2006	Network upgrade: 7.2 Mbps download speeds.
11/2007	Announced: 1,4 Mbps upload speed offers
2007	Coverage: 80% of the population.

2. The need to collect broadband data in Portugal

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2. The need to collect mobile broadband data in Portugal (I)

- **Mobile broadband marketed and advertised as an alternative to fixed broadband connection for desktop PCs (via USB port).**

2. The need to collect mobile broadband data in Portugal (II)

ANACOM

- **Similarities between mobile and fixed broadband offers**

	Fixed broadband	Mobile broadband
Typical tariff models	Connection price, monthly rental, bit cap, price for extra data	Connection price, monthly rental, bit cap, price for extra data
Level of prices	€ 20 – 30 (Residential, 4/8 Mbps, excl. VAT)	€ 19 - 25 (Resid., bit caps 1-6 MB, excl. VAT)
Download Speeds	Up to 24 Mbps Most popular: 4/8 Mbps	Up to 7.2 Mbps
Connection	USB, etc…	PCMCIA and USB

In spite of the fact that there are obvious differences: broadband (mobility, speed…)

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2. The need to collect mobile broadband data in Portugal (IV)

ANACOM

- **Program e.escola**

  - The penetration of broadband in PC-owning households in Portugal is similar to the EU average. But, the % of households which own a computer is lower than average.

  - The government promoted the creation of a fund to develop the information society in Portugal. The fund is financed by the mobile operators under the commitments assumed in their 3G licenses.

  - Program *e.escola* (http://www.eescola.net/)

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2. The need to collect mobile broadband data in Portugal (III)

ANACOM

- Government Program e.escola (http://www.eescola.net/)

e.escola CADA ALUNO UM COMPUTADOR

- The aim is to make available to 500.000 citizens (students, teachers and trainees) a laptop and a mobile broadband connection at subsidized prices.

- Laptop for €150 (or free for low income students).
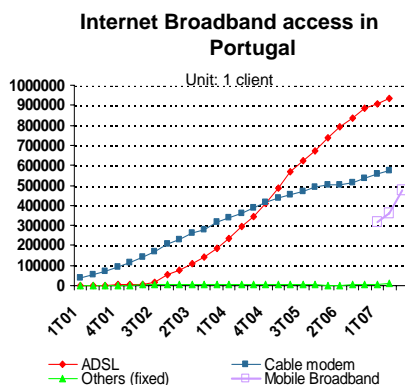- Mobile broadband Internet for € 5 -15 / month (depending on income).

e.professor CADA PROFESSOR UM COMPUTADOR

e.oportunidades CADA FORMANDO UM COMPUTADOR

- 100.000 people have already enrolled in the program.
- (The e.escola program received the "Best European Project Award" from Toshiba.)

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2. The need to collect mobile broadband data in Portugal (III)

ANACOM

- Broadband growth in Portugal

Internet Broadband access in Portugal

Unit: 1 client

(chart with values 0 to 1000000, x-axis: 1T01, 4T01, 3T02, 2T03, 1T04, 4T04, 3T05, 2T06, 1T07)

Legend: ADSL — Cable modem — Others (fixed) — Mobile Broadband

- Market research: Considerable number of active mobile broadband subscribers.

- Apparently, the rate of growth of fixed broadband as slowed-down just as mobile broadband took off.

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2. The need to collect mobile broadband data in Portugal (V)

ANACOM

- **Conclusion:**

  - **Operators behavior**
  - **Public policy**
  - **Apparent consumer behavior**

  ⇒ **Mobile broadband already is and will continue to be a major form of access to the Internet in Portugal.**

- **In order to get an accurate picture of the development of broadband in Portugal we have to take into account mobile broadband.**

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ANACOM

3. ANACOM's mobile Internet broadband indicators

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3. ANACOM's mobile broadband indicators (I)

ANACOM

- **Timeline**

Date	Milestone
09/2005	First data collection attempt: data plans per download speed and device based on operators sales reports
07/2006	Operators objections, doubts & suggestions led to new indicators based on UMTS standards
08-09/2006	Legally mandated public consultation
10/2006	Adoption of the new indicators
4th quarter 2006	Implementation period
April 2007	Operators reported figures for 1st quarter 2007

But it's still work in progress …

3. ANACOM's mobile broadband indicators (II)

ANACOM

- First set of indicators based on sales data were criticised by operators:
  - not feasible: users may buy their PCMCIA cards from a vendor who is not their mobile operator; There are tariff plans that don't charge monthly subscriptions for Internet access. (ex: € 0,99/day or post-paid pay-as-you-go by volume of traffic).

  - comparability issues (not sure what offers other operators were considering);

  $\Rightarrow$ ANACOM cannot use sales data to account for mobile broadband 3G users. Instead we need to rely on UMTS standards in order to make sure the indicators are feasible and comparable.

3. ANACOM's mobile broadband indicators (III)

- **Issue 1:** What is a mobile broadband user ?

  ⇒ ANACOM defined a broadband user as someone who had a SIM/USIM (Subscriber Identity Module/Universal Subscriber Identity Module) card and who had the service in question provisioned.

- **Issue 2:** What is Internet Access ? (Mobile web portals)

  ⇒ ANACOM defined Internet access as one PDP (Packet Data Protocol) session to access the Internet (APN Internet - Internet Access Point Name). We have thus excluded access to operators (WAP) web portals.

3. ANACOM's mobile broadband indicators (V)

- **Definitions**.

  1. **No. of users with mobile broadband internet access:** Number of SIM/USIM (Subscriber Identity Module/Universal Subscriber Identity Module) cards which have established at least one PDP (Packet Data Protocol) session to access the Internet (APN Internet - Internet Access Point Name). Cards deactivated prior to the end of the reported period are excluded. SIM GSM migrations to USIM UMTS, should be considered, where applicable.

  2. **Total of above which were active in the period being reported:** Number of SIM/USIM (Subscriber Identity Module/Universal Subscriber Identity Module) cards which, during period being reported, have established at least one PDP (Packet Data Protocol) session to access the Internet (APN Internet - Internet Access Point Name). Cards deactivated prior to the end of the reported period are excluded. SIM GSM migrations to USIM UMTS, should be considered, where applicable.

ANACOM

- Feasibility and comparability.

  ⇒ Operators can determine the number of broadband mobile users using
  this type of indicators because we relied on the UMTS standards:

    - Each mobile subscriber has a unique IMSI (International Mobile
      Subscriber Identity) which is resident in the HLR (Home location
      Register).
    - Every transaction made in or through the UMTS network produces
      a CDR (Call Detail Record) which includes information on the
      provisioned services and actual use.

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3. ANACOM's mobile broadband
indicators (VI)

ANACOM

- Mobile broadband access in Portugal (users)

Mobile broadband access in Portugal

Unit: 1 user
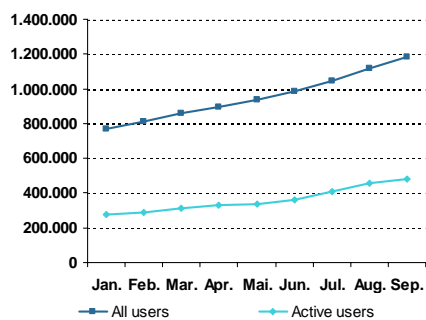
- ▶ 1,1 million users in September.

- ▶ 478 thousand active users in
  September.

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**TELECOMMUNICATION
DEVELOPMENT BUREAU**

**Document 014-E
13 December 2007
Original: English**

6TH WORLD TELECOMMUNICATION/ICT INDICATORS MEETING, GENEVA, 13-15 DECEMBER 2007

SOURCE: ITU/BDT

TITLE: Measuring National Cybersecurity Readiness

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International Telecommunication Union

Measuring National Cybersecurity Readiness

**World Telecommunication/ICT Indicators Meeting
Geneva, Switzerland**

13-15 December 2007

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International Telecommunication Union

Setting the Context

- In 21st century, growing dependency on information and communications technologies (ICTs) that span the globe;
- Rapid growth in ICTs and dependencies led to shift in perception of cybersecurity threats in mid-1990s;
- Growing linkage of cybersecurity and critical information infrastructure protection (CIIP);
- Number of countries began assessment of threats, vulnerabilities and explored mechanisms to redress them;
- But most countries have not formulated or implemented a national strategy for cybersecurity or Critical Information Infrastructure Protection (CIIP) programme;
- Growing awareness of need to address at national policy level
  - ➤ But how do we measure where countries are?

December 2007

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Specific ITU Initiatives

- ITU supports the Framework and national implementation efforts through
  - Reference Material & Training Resources
    - http://www.itu.int/ITU-D/cyb/cybersecurity/
  - ITU National Cybersecurity/CIIP Self-Assessment Toolkit
    - www.itu.int/ITU-D/cyb/cybersecurity/projects/readiness.html
  - Regional Events on Frameworks for Cybersecurity and CIIP
    - http://www.itu.int/ITU-D/cyb/events/

ITU Regional Events on Frameworks for Cybersecurity/CIIP

- 2007
  - Hanoi, Vietnam
  - Buenos Aires, Argentina
  - Praia, Cape Verde
- 2008
  - Oman/Qatar
  - Indonesia
  - LAC
  - Bulgaria
  - Africa

Experiences to Date

- A number of countries have expressed interest in having a national cybersecurity readiness index
  - ➢ Tool to raise political awareness for necessity of developing a national policy
  - ➢ Provides comparative metric where an economy is in implementing a national framework
    - Where are we in this process?

Challenges for Indicators Experts

- How to construct an index against **Framework** elements?
- Some of these are very difficult to measure:
  - ➢ National Strategy
  - ➢ Government - Industry Collaboration
  - ➢ Deterring Cybercrime
  - ➢ National Incident Management Capabilities
  - ➢ Culture of Cybersecurity

Relevant Activities for Such an Index?

- OECD Scoping Study for Measurement Of Trust in the Online Environment
  - http://www.oecd.org/dataoecd/26/15/35792806.pdf
- Korea Information Security Agency Activities
  - Development of National Information Security Index
- National Legislative compliance with Substantive & Procedural Articles of Budapest *Convention on Cybercrime* (2001)
- CERT CSIRT Work on Incident Management Capability Metrics
  - http://www.cert.org/csirts/metrics.html
- Forum for Incident Response and Security Teams (FIRST) CSIRT Recognition Requirements?
- European Network and Information Security Agency (ENISA)
  - Collection of Data on Security Incidents and Consumer Confidence at http://www.enisa.europa.eu/pages/data_collection/

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International Telecommunication Union

Helping the World Communicate

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INTERNATIONAL TELECOMMUNICATION UNION

**TELECOMMUNICATION
DEVELOPMENT BUREAU**

**Document 015-E
13 December 2007
Original: English**

6TH WORLD TELECOMMUNICATION/ICT INDICATORS MEETING, GENEVA, 13-15 DECEMBER 2007
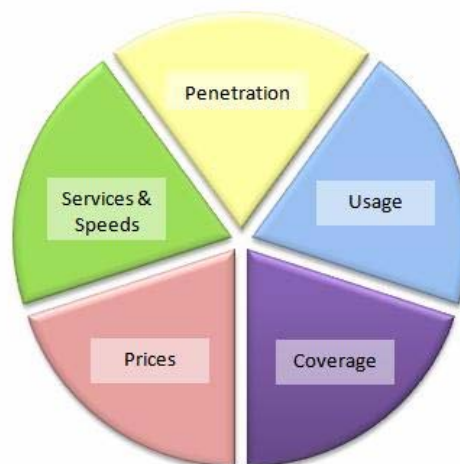
SOURCE: OECD

TITLE: Mobile broadband indicators

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**Mobile broadband
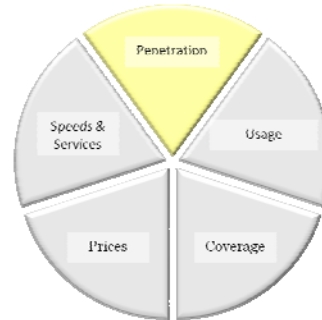indicators**

Geneva, Switzerland
13 December 2007

Taylor REYNOLDS

Broadband portal
http://www.oecd.org/sti/ict/broadband
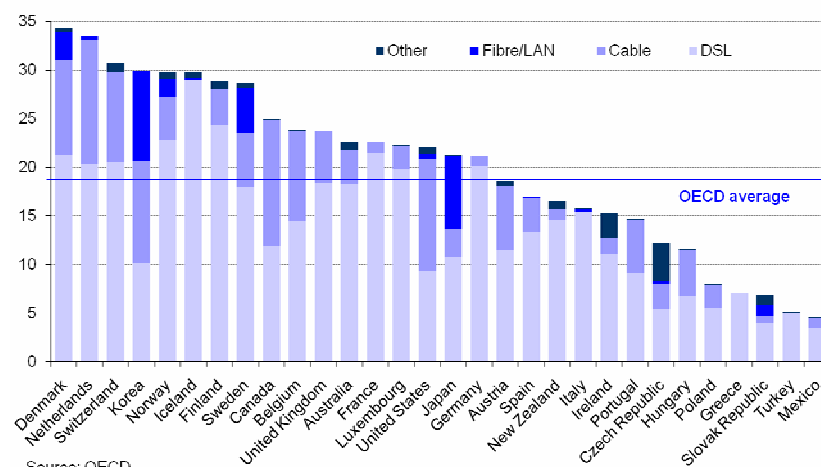
Penetration

- **Subscribers per 100 inhabitants**
  - One of OECD's most popular statistics
  - Collect biannually from governments and carriers
  - Subscribers versus users

- **Potential expansion**
  - Separate measure of wireless broadband
  - Convergence issues
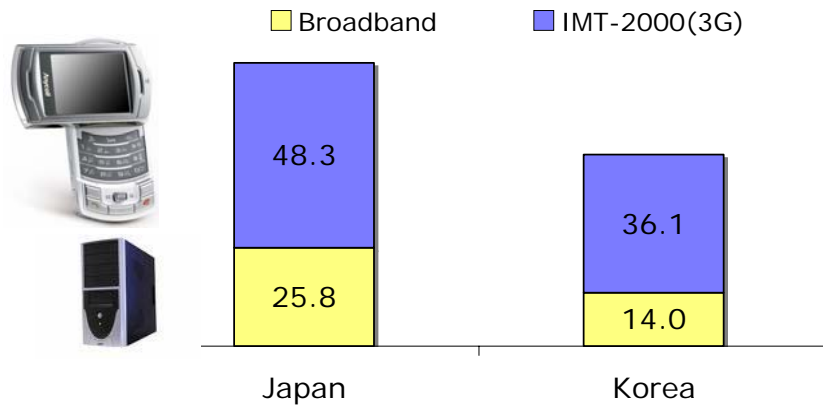

Broadband penetration

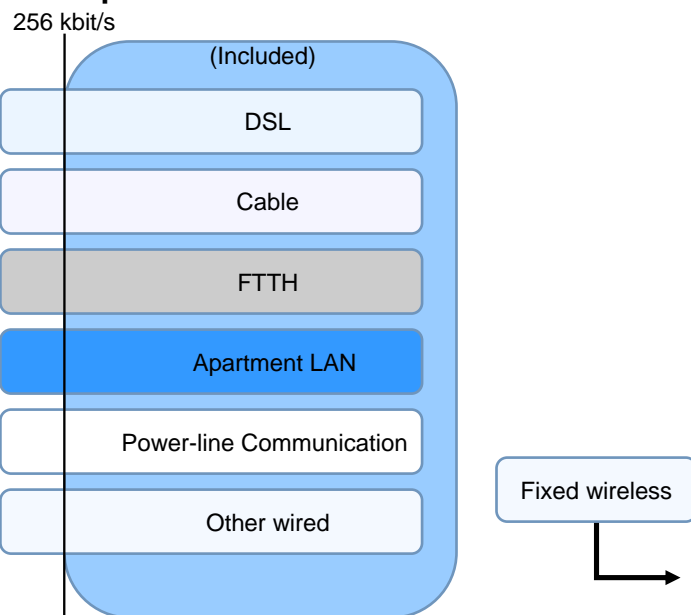OECD Broadband subscribers per 100 inhabitants, by technology, June 2007
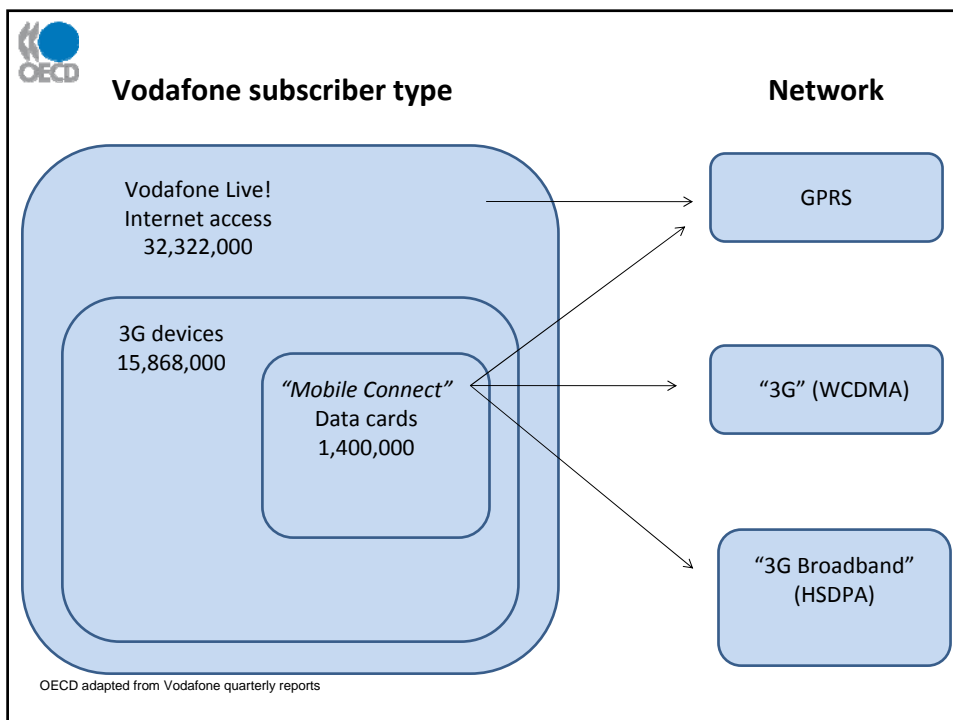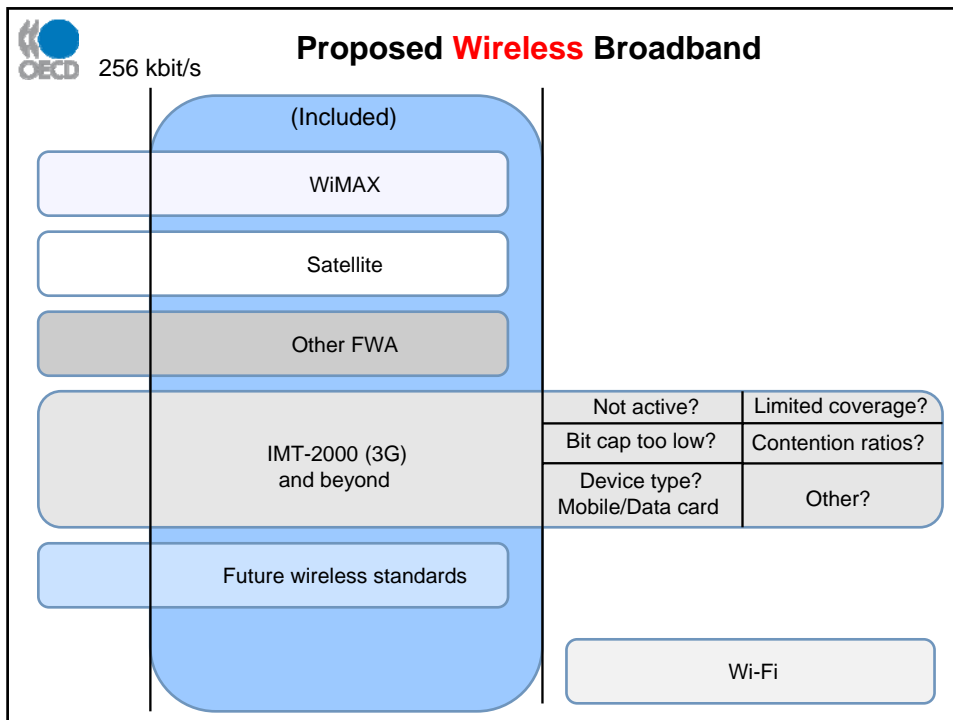
Legend: Other, Fibre/LAN, Cable, DSL

OECD average

Countries (left to right): Denmark, Netherlands, Switzerland, Korea, Norway, Iceland, Finland, Sweden, Canada, Belgium, United Kingdom, Australia, France, Luxembourg, United States, Japan, Germany, Austria, Spain, New Zealand, Italy, Ireland, Portugal, Czech Republic, Hungary, Poland, Greece, Slovak Republic, Turkey, Mexico

Source: OECD

Fixed broadband vs. Mobile

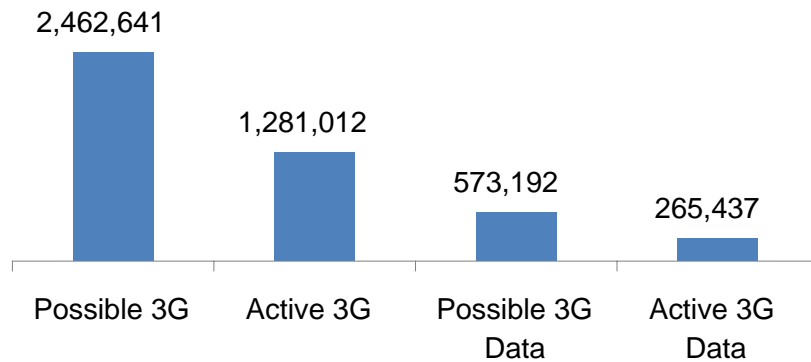**Broadband (2006) and 3G (2005) subscribers, by technology**

☐ Broadband   ☐ IMT-2000(3G)

	Japan	Korea
IMT-2000(3G)	48.3	36.1
Broadband	25.8	14.0

Proposed **Wired** Broadband

256 kbit/s

(Included)

DSL

Cable

FTTH

Apartment LAN

Power-line Communication

Other wired

Fixed wireless

Proposed Wireless Broadband

256 kbit/s

(Included)

WiMAX

Satellite

Other FWA

IMT-2000 (3G)
and beyond

Not active?	Limited coverage?
Bit cap too low?	Contention ratios?
Device type? Mobile/Data card	Other?

Future wireless standards

Wi-Fi

Vodafone subscriber type

Network

Vodafone Live!
Internet access
32,322,000

3G devices
15,868,000

"Mobile Connect"
Data cards
1,400,000

GPRS

"3G" (WCDMA)

"3G Broadband"
(HSDPA)

Portuguese 3G data

Portugal: 3G subscribers, March 2007

Bar chart:
- Possible 3G: 2,462,641
- Active 3G: 1,281,012
- Possible 3G Data: 573,192
- Active 3G Data: 265,437
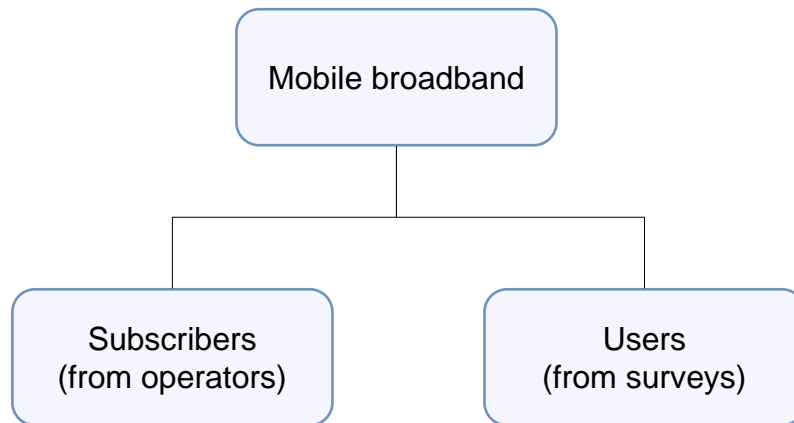

OECD discussions on methodology

- Usage: May impose requirement

- Bit caps: No restrictions
- Access equipment: No restrictions
  - Mobile vs. 3G data cards
- Coverage: No restrictions
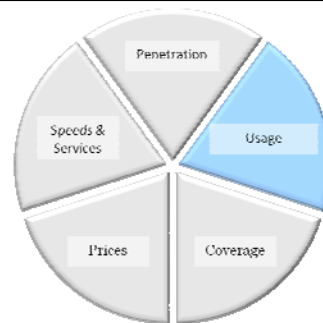- Contention ratios: No restrictions
  - Backhaul or spectrum

Two separate mobile broadband indicators

Mobile broadband

Subscribers
(from operators)
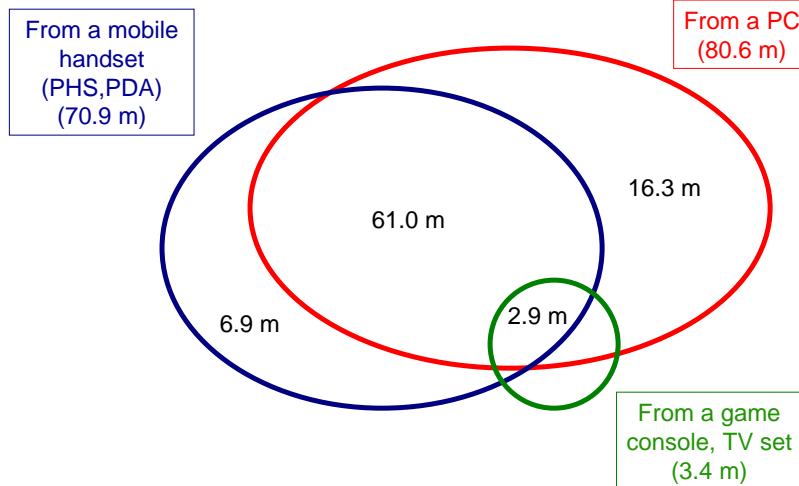
Users
(from surveys)

Usage

- **Current**
  - Mobile broadband usage is not currently collected by the OECD

- **Potential expansion**
  - Expand questions in existing surveys
  - Improve harmonisation
 - Pull together timeframes

Japan: Internet access by device, 2006

From a mobile handset (PHS,PDA) (70.9 m)

From a PC (80.6 m)

16.3 m

61.0 m

6.9 m

2.9 m

From a game console, TV set (3.4 m)

Coverage

- **Current**
  - Percentage of territory/population covered by 3G networks

- **Possible expansion**
  - Need to harmonise the unit of measurement
  - Breakdown of coverage by different wireless technologies
  - Breakdown by capacity (e.g. potential 1,10,100 Mbit/s)

Penetration

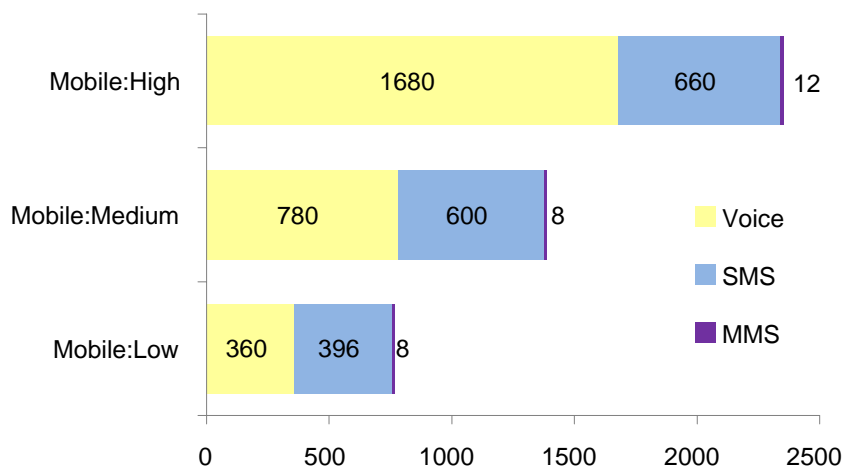Speeds & Services

Usage

Prices

Coverage
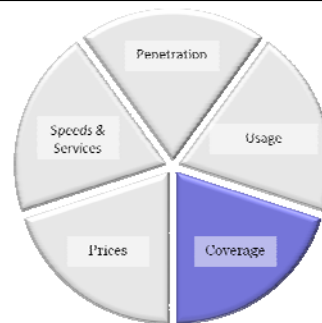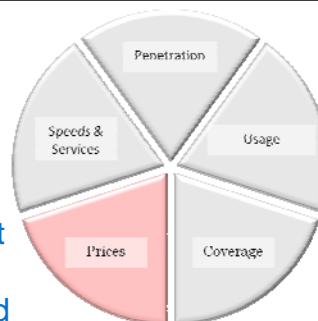
Prices

- Current
  - OECD has gathered data in the past but it is very difficult to compare across countries (e.g. bit caps, timed connections, speeds)

- Possible expansion
  - Create a mobile broadband price basket for low, medium and high usage
  - Like electricity? But problem is variation in speeds - how to classify?

OECD mobile price baskets as a guide

Mobile Basket: breakdown of calls, SMS and MMS, yearly, by basket
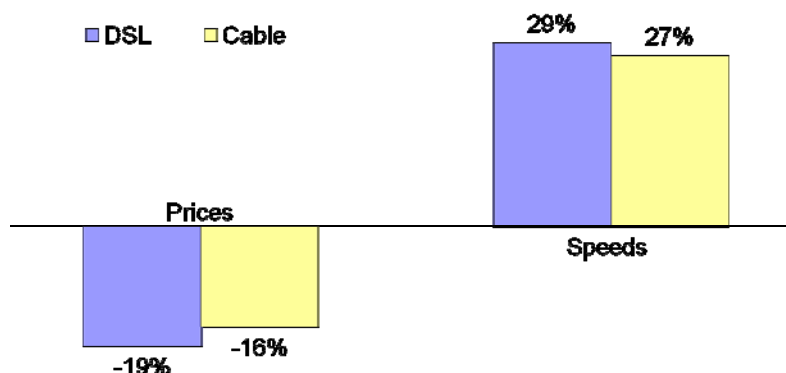
Speeds/Services

- Current
  - Wired: current advertised speeds tied to technology (e.g. 26 Mbit/s for ADSL2+)
  - Wireless: Advertised speeds tied to maximum cell capacity

- Possible expansion
  - Attempt to gauge actual throughput of users
  - Integrate bit/data caps into a basket methodology - complex
  - Measure based on contention (e.g. 14 Mbit/s shared by 200 users on a cell)
  - Examine weighting by number of subscribers

Price and speed changes on wired networks as a guide

Broadband price and speed changes, similar plans, Oct 2006–2007