



**Asia-Pacific
Economic Cooperation**

2009/TEL39/DSG-LSG/WKSP/005

Thoughts on ICT Deployment

Submitted by: Intel



**Workshop on Universal Access to Broadband
Services
Singapore
13 – 14 April 2009**

Thoughts on ICT Deployment APEC Singapore, April 09

Gerry Greeve
Vice President,
Intel, Sales and Marketing Group
Director, Intel World Ahead

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An admission...

Internet is everything

...

To our future



Intel™ technical credentials

- DRAM
- Erasable Non-Volatile Memory
- 1st MicroProcessor (4004)
- Single Board Computer
- USB
- 50% of Top 100 Supercomputers



- Developed Ethernet standard (w Xerox & DEC)
- 99% of the compute power in world on Intel Architecture (IA)
- 500 trillion+ transistors per day
 - 500,000,000,000,000



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Intel's commitment to Education & Developing Markets

- Intel Teach™ =7+ Million teachers trained, 13 million by 2011, 50 countries
- www.skool.com
- PC Basics – 18 languages, 5 million copies
- PC Club Houses,
- Intel Learn™
- 1:1 E-Learning with Classmate PC™
 - 1 million shipped
- Digital Health Initiative
- Intel Science Talent Search & Intel International Science & Engineering Fair
 - 65,000 participants, 550 regional competitions, 1,500 finalists, 50 countries, regions and territories, \$4 million USD in scholarships and prizes
- Intel™ World Ahead Program



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Are we at an inflection point to bringing the benefits of Broadband, Internet, and Compute technology to:

- Our Small and Medium Businesses
- Our Schools and Universities
- Our Health Care Hospitals, Clinics, & Clinicians
- Our Export Industries
- Our Rural/Agrarian Communities
- Our Governments' Services to Citizens
- And our **FAMILIES ???**

WSIS 2015 Targets

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What's needed to cross the DD??

- Affordable clients that deliver adequate capability
- Training and aids to learn how to use the clients
- Applications & Usage models that work
- Investment and committment
- Affordable, reliable, adequate networks
- Secure financial transactions

"...the digital divide between countries with "upper" ICT levels, and those with "medium" and "low" ICT level, is slightly increasing"

**ITU, Measuring the Information Society (IDI),
2009**


Netbook & ULV Notebook Will Drive BB Demand

Netbook

- Device for the Internet
- Purpose built for Internet use
- Web: Learn, Communicate and View
- Compact form factor (7-10.2")
- Internet Companion Device

< \$500 >




Notebook

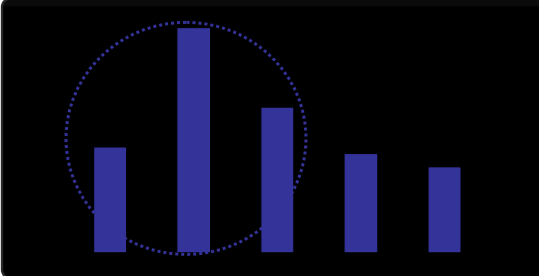
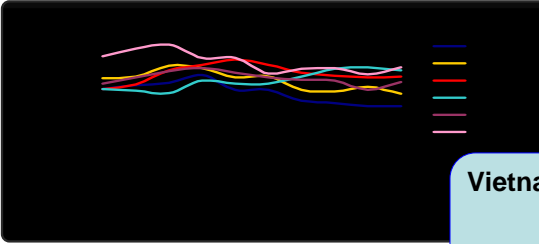
- Multi-purpose PCs
- Business, Productivity, Entertain
- Web 2.0
- Regular, Daily, Serious workloads
- Range of form factors
- < 2.5cm-1", <1.4Kg-3lb, >10.2" screen

Affordable clients

Intel Confidential – For Use By Customers Under NDA Only
*Other names and brands may be claimed as the property of others



Desktop & Netbook Prices driving <\$300

- Affordability is a key attribute to the success of the netbook segment
- Average SPP are coming down and will achieve target SPP's of \$250-\$350*
- Many DT & NB models already available at <\$300
- Carriers offering on subscription for \$30-50 per month

Vietnam MIC-VTF Hinterland program
Desktops (Atom™ based)
\$ 220 USD
with 15.6" LCD monitors

*SPP will vary by geography due to taxes and exchange rate fluctuations

²Source: GfK Retail and Technology January 2009 Report
¹ Source: ABI Research, US Consumer Interest in Netbooks, November 2008. n=708

- Training and aids to learn how to use the clients

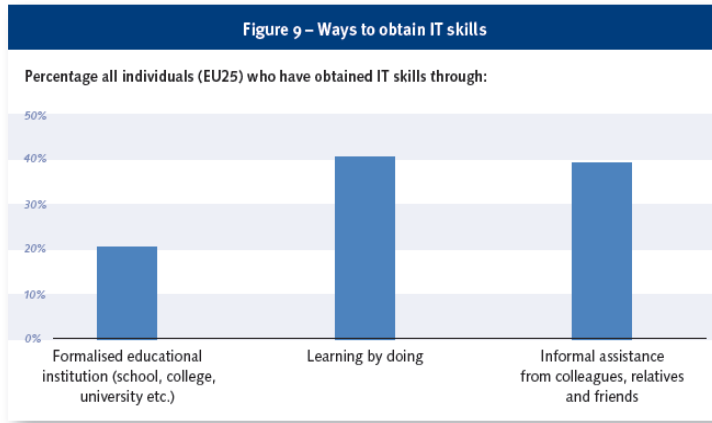
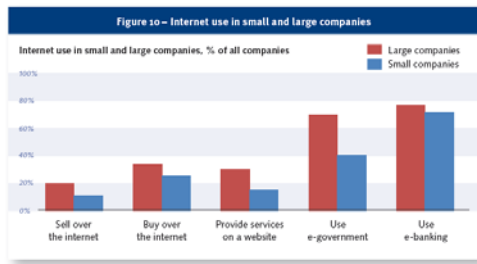
Computer Knowledge and Use is Viral

HEALTH
E-GOV
ENTERPRISE
CSC'S
SME
UNIVERSITY
FAMILY
SCHOOL

AND SO IS THE LOCAL PC-SFTW INDUSTRY!

SMB - MICUS Rural EU study

PC Basics
MS collateral
Intel Teach™



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http://www.nytimes.com - The New York Times > Business > Image > The Road to 200 Million - Microsoft Internet Explorer

Welcome to TimesPeople
What's this?

TimesDaily Late You Show and Hide the Rest of NY

4:58 PM Get Started No, thanks

March 29, 2009

The Road to 200 Million

Facebook began as a private network for colleges and universities, but has grown into an international social networking site with almost 200 million members. Leo Byron, a member of Facebook, says...

Is Facebook.com The Fundamental Definition Of viral?

February 2004 to January 2005 Facebook begins at Harvard, and expands to a few universities at a time.

February 2005 to January 2006 Facebook expands to include most American colleges and high schools.

February 2006 to January 2007 Facebook opens registration to allow anyone to join, which brings in older members.

February 2007 to January 2008 Facebook reaches 50 million users, with Canada and Britain growing fastest.

February 2008 to January 2009 Facebook is translated into more than 40 languages. The fastest-growing group of members is people over 35.



Depend... New York...
8/08: 100M "friends" – 4/09: 200M "friends" = 100M new users in 8 months

And without PC Basics!! ☺

- Emerging Market Usage Models are Developing And Maturing

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PRC: 800K clinics/hospitals; 3.2M doctors target – 5 pc's per clinic




- Lightweight and compact
- Durable drop-proof construction and rugged outer case
- Carrying handle – mobile-friendly design
- Water-resistant keyboard

- Intel® Atom™ Processor N270 at 1.6GHz
- Intel® 945GSE Chipset
- 1.5X system performance*
- ~30% longer battery life*
- 8.9" LCD
- 1024 x 600 resolution support

software stack

- Basic – for a better user experience
 - Hardware optimized applications
 - Chinese handwriting & pen-input
 - Web browser add-on
 - Webcam
 - Quick launcher
 - Image recovery
 - Easy network manager
 - Quick controller
- platform management
 - System backup & restore
 - Provisioning
 - Patching & upgrade
- clinic assistant
 - eForm (for insurance claims, personal records)
 - Doctor education and decision aid tools
 - Drug search database

convertible

Intel-powered convertible classmate PC

- Tablet with a touch screen, makes it easy to use
- When open like a traditional laptop, the screen swivels 180 degrees
- Advanced palm-recognition tech lets workers use full-hand support when writing or drawing
- Built-in camera rotates 180 degrees
- Integrated Accelerometer

Usage models

Intel “Rural Clinical Assistant” Medical Notebook Program¹⁴

www.skool.com

30 countries, 10 languages, 4million+ visitors/yr, WSIS, BETT awards, 250 math & science MM modules, RELPE integrated in LAR
IP FREE OF CHARGE

India CSC's

- Shared Access around for 16 years.
 - Many Failures- Some Success
 - #1 issue is self-sustainability
- Key Learnings
 - Private ownership & investment critical
 - Robust BB network and PC's (virus)
 - National & State Province leadership
 - Organize/drive process
 - Provide "outsourcing" revenue source (30%)
 - mobilize remote e-government/utility service
 - Clear & Real reduction/stop of funding

REVENUE GENERATION

State	No. of CSCs	CSCs Rolled Out
1. Haryana	1159	1159
2. Jharkhand	4562	4562
3. Sikkim	45	45
4. Gujarat	6000	5600
5. Tripura	145	77
6. Assam	4375	540
7. Bihar	8463	2526
8. Meghalaya	225	21
9. Tamil Nadu	5440	382
10. West Bengal	6797	2143
11. MP	9232	804
12. Orissa	8558	355
13. UP	17,409	2206
14. Uttarakhand	2804	78
Total	75,714	20,558

- Government Services
 - Certificates
 - Application to Government Schemes
 - Surveys
- Education , Capacity Building
 - Schooling, Higher Education
 - Vocational
- Healthcare Services
 - Telemedicine – Specialist consultancy

- Agriculture
 - Market linkages & sales: produce, seeds, fertilizers, pesticides
 - Agri consultancy
- Financial Services
 - Loans, Deposits, Insurance
- Commercial Services
 - Retailing
 - Payments

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SME – Export Solution Package



- First joint business bundle:
 - Affordable Intel HP Laptop
 - Local broadband connectivity
 - Accounting package
 - Four training courses
- Scaling strategy
 - Verify initial success
 - Scale via other local commerce organizations
 - Re-use business training materials within and beyond Ghana
 - Case study

Telecom Infrastructure

What we do:

- Provide comprehensive telecom infrastructure solutions for SMEs and large enterprises.
- Offer a wide range of services including network design, installation, maintenance and troubleshooting.
- Provide 24/7 technical support and on-site services.
- Offer a range of financing options to suit your budget.
- Provide a range of training courses for your staff.

eBizBox
connecting business

Wait - your solution here

Laptop Computers • HP 531 Intel Celeron 1.73 GHz • 512 GB HD, 100GB SATA HDD • 16.4 inch Display (1366x768, 16:9) • Windows Vista Home Basic • Canon Office - Additional cost	\$750	<input type="checkbox"/>
Fixed Internet • Broadband, 128 Kbit • 24/7 monitoring • Unlimited monthly service	\$40 per month	<input type="checkbox"/>
Mobile Internet • Burst Mobile • 200 per line included • Pay as you go rate: 100MB	\$150	<input type="checkbox"/>
Accounting Software • Easy to use • General Ledger • Budgeting • Bank Reconciliation • Cost Control and Cost Centres • Financial reports	\$500	<input type="checkbox"/>
Your Own Web Site • www.yourbiz.com, ym@yourbiz.com	\$50 per year	<input type="checkbox"/>
Bonus: Trade Hub Training • 4 courses • Choose at least two options from above to get FREE training		<input type="checkbox"/>

TOTAL COST OF PACKAGE
Choose at least four items to get a FREE CASE FILE

Email to yan@westafrica.com or fax to 021 782231
For assistance call 021 773393

Logos for USAID and Intel are present at the bottom.



PRC “Thousand Villages” Farmer Information and PC Program with China Telecom Ministry of Commerce



- Governments Are “Stepping-up”
With Investment and Support

...Telecommunications Industry is too

Today... Economic Stimulus in the news

A \$586 billion stimulus plan for China's economy
China seeks stimulation
 Nov 10th 2008 | BEIJING
 From Economist.com



Trillion-US-dollar stimulus
now on the radar

December 4, 2008
Page 1 of 2 | [Single page view](#)

The one thing that isn't shrinking in the US economy these days is the size of the stimulus package that

China approves 3G license - \$41B Investment

India Unveils Economic Stimulus Plan

By VOA News
02 January 2009

India has s
stimulus pa
and stave c

Updated Saturday, December 27, 2008 9:52 am TWTN. By Michael Casey, AP

Thai leader proposes US\$8.7 bil. stimulus

UK Government Welcomes EU's EUR200 Billion Stimulus Package

BANG

Wed, Nov 26 2008
<http://www.djnews.com>

UK Governmen

Germany Considers 100 Billion Euro Fund for Ailing Industry

Chancellor Angela Merkel's government is close to agreeing on the details of a €50 billion economic



Columbia, ICT, USO & Schools

- Columbia growing BB connectivity to schools 50% per year
 - By end of 2009 – 45,000 public primary & secondary schools (42%)
 - 22000 government offices
 - Compartel Program \$ 169 M
- Computers for Schools: 100K PCs to public primary schools - \$30 M
- E-Gov Citizen – Digitize & internet-post numerous citizen processes (tax payments, public procurement, etc) - \$ 19M
- Digital Inclusion – Support the province/municipal efforts to adopt technology - \$ 52M

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Similar efforts in Vietnam, India



Portugal's End to End Educational Transformation

Government Objectives

Education focus on 21st Century Skills

PT plan for a knowledge-based society

Every child gets a mobile device for education

500k CMPCs - Elementary
300k – Notebooks Secondary
100K – Notebooks Teachers
100K – vPros for ICT in Schools

Subsidized by 3G license funds (~\$500m)

Local industry : S/W, support, manufacturing

ICT capability of students, parents, teachers

Maximize value through export program to global network of Local Players

Portuguese-speaking countries



Trade Nations



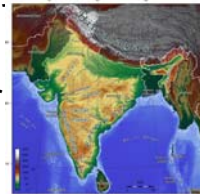
2009 Milestones



- Portugal Gov't providing CMPCs to 10+ countries
- 1:1 Education Workshop delivered to 100% of teachers
- **Local Student/Family Content ISV industry in**

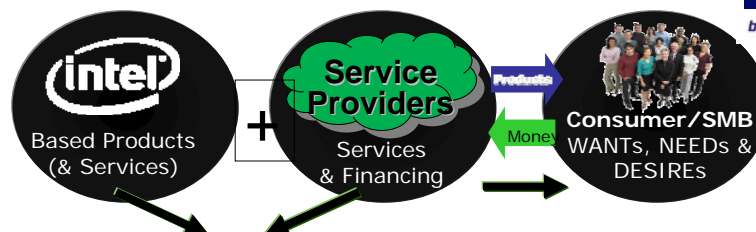
USO usage in India

- Under India USO scheme for provision of broadband connectivity in rural & remote areas – deployed by mid 2010
- BSNL ... India incumbent fixed local loop provider.
 - Driving 30k new DSLAM's for DSL - \$500MUS cost
- Connectivity Cost - 2-3\$ per month
 - 512Kbps-2mbps bandwidth
 - No charge for installation and modem
- PC device rebate - ~ \$100 million US
 - ~ \$100US Subsidy for 1 million PC/NB
 - Allocated by DSLAM



Subscription Computing: PC Industry & Carriers Work Together Worldwide

	EM	MM	Total
Total Carrier Bundles 08	164	117	281
# of Countries	37	18	55
# of Telco's*	119	52	171



A PC/Laptop bundled with BB connectivity
DSL, Wi-Fi, 2.5-3G, WiMAX
financed by a telco w 18-36 month contract
Special BB discounts, install, & training service offerings
purchased through telco stores/websites

*“Telcoms have the upside
to become the primary contributor
to economic recovery...the recovery catalyst”*



**Cesar Alierta – President, Telefonica Group
Mobile World Congress, 2009**

Hard Contributions

- Advertising & Promotional funding
- Special discounts on connectivity
- Hardware bundles
- Content bundles
- Retail stores & RSA's
- “In bill” financing
- Installation & start up
- Hosting, service, & system integration
- Content development (SKOOL)

Soft Contributions

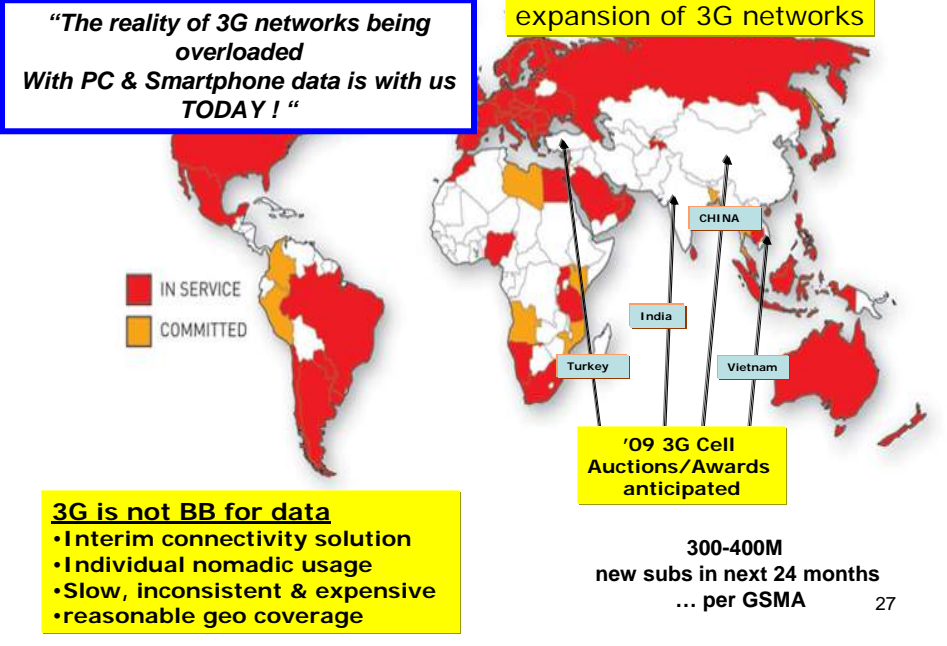
- In-country Reach (including web portal)
- Country Credibility, Brand recognition
- Government influence

SIGNIFICANT BENEFITS

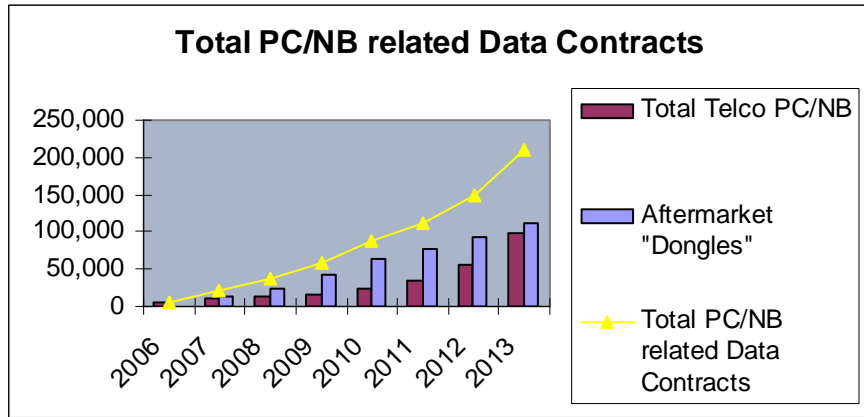
- Bundles drive broadband signup
 - Acquire new customers
 - Added service
- PC's use more bandwidth
 - Increased ARPU
- Financing reduces Churn
 - Brings in new revenue
- Positive Public Press
 - Image of tech leadership
- Differentiates against their competitors
- Positive Government Relations
 - Image of Social Responsibility
- Other revenue sources
 - Hosting revenue
 - System-network integration ²⁵ \$\$

- Affordable, reliable, adequate networks

Wireless Broadband Growth Ignite new PC/NB users



Intel™ **LOVES** 3G PC “Bundling” & Dongles



Market Segment (000 units)	2006	2007	2008	2009	2010	2011	2012	2013
Total Telco PC/NB	6,272	9,753	13,071	16,891	22,659	33,861	55,330	97,930
Aftermarket "Dongles"	160	12,617	25,235	42,899	64,349	77,218	92,662	111,195
Total PC/NB related Data Contracts	6,432	22,370	38,306	59,790	87,008	111,079	147,992	209,125

~ 250 Million PC/NB Data Contracts in Next 36 Months

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Forecast based on ABI Research 4Q08
And Intel Internal data



CISCO™ Forecast Mobile Data (Jan 29, 2009)

- Globally, mobile data traffic will double every year through 2013, increasing 66 times between 2008 and 2013..

- In the 7 years from 2005 to 2012, mobile data traffic will have increased a thousand-fold.

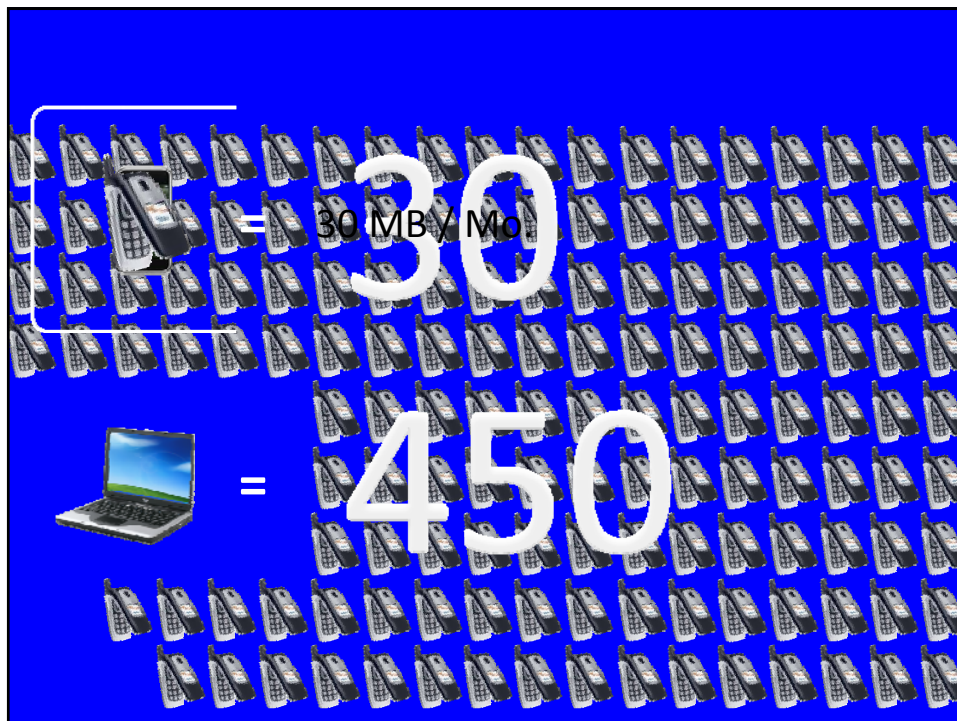
- Almost 64 percent of the world's mobile traffic will be video by 2013.

- Mobile video will grow at a CAGR of 150 percent between 2008 and 2013.
- Mobile video has the highest growth rate of any application category

- Mobile broadband handsets with higher than 3G speeds and laptop aircards will drive over 80 percent of global mobile traffic by 2013.**

A single high-end phone like the iPhone/Blackberry generates more data traffic than 30 basic-feature cell phones.
A laptop aircard generates more data traffic than 450 basic-feature cell phones.

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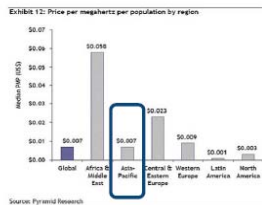
4G Wireless Broadband is Here Today

- 39 countries with significant Commercial Service
- 5 probable '09 ramp
- 6 tbd = 4 ~500M pax in APEC
- USB Dongle Clients ~ \$50
- Network infrastructure
 - < DSL OP/CAPEX
 - ~ = 3G
- Performance today
512kup-6Mdown \$40/mo
- 800M pops covered by 2011

Country	Telco(s)	Launched	Probable	APEC
Korea	KT	yes		yes
Japan	UQ	yes		yes
USA	Clear	yes		yes
Netherlands	WorldMAX	yes		
Pakistan	Wateen	yes		
Philippines	Smart, Globe	yes	yes	yes
Sri Lanka	Dialog	yes		
Malaysia	Packet-1, YTL	yes		yes
India	Tata(VSNL), BSNL		yes	
Australia	Unwired	yes		yes
Singapore	Cmax	yes		yes
China, Taipei	VMAX		yes	yes
Thailand	tbd			yes
Cambodia	Millicom	yes		
Indonesia	tbd			yes
Bangladesh	tbd			yes
Vietnam	tbd			yes
Romania	Orange	yes		
Bulgaria	Max, Nexcom	yes		
Hungary	MobilHungary		yes	
Poland	Netia etc.	yes		
Slovakia	Wimax Telecom	yes		
Croatia	Wimax Telecom	yes		
KSA	STC, ITC	yes		
Turkey	tbd			
Egypt	tbd			
Libya	LTT	yes		
Iraq	Iraq Tel	yes		
Nigeria	Horizon	yes		
Kenya	KDN		yes	
Algeria	AlgTel	yes		
RSA	Vodacom, WBS	yes		
Bahrain	Zain (MTN)	yes		
Jordan	Umniah	yes		
Morocco	Wana	yes		
Kazakhstan	K-tel, AsiaBell	yes		
Ukraine	UHT, Astelit	yes		
Russia	Comstar, Scartel	yes		yes
Colombia	Avantel, Une	yes		
Chile	Telmex, VTR, Entel	yes		yes
Bolivia	VIVA/Novatel	yes		
Argentina	Telmex	yes		
Peru	eMax, Telmex	yes		yes
Mexico	MVSNet	yes		yes
Brazil	Embr-Tmex, TVA(Tel)	yes		
Venezuela	Movimax	yes		
Panama	WIPEL	yes		31
Carib	DIGICel	yes		
DR	WINTEL	yes		
Ireland	IB, Clear	yes		

Our Societies Need Us To Access & Maximise Spectrum Value Now

Economic Implications: No Assignments SEA Estimations - Unrealised Consumer Surplus values



Country	Population '08 estimates	Estimated Consumer Surplus Value (from 2.3MHz band) USD
Indonesia	237m	2.9B
Malaysia	27.7m	350m
Philippines	90.3m	1.14B
Thailand	63m	794m
Vietnam	86m	1.08B

The lack of assignment of 2.3GHz band in SEA - is likely to be costing the region over \$5Billion in economic value.





Are we SERIOUS about bringing the benefits of ICT to:

- Our Small and Medium Businesses
- Our Schools and Universities
- Our Health Care Hospitals, Clinics, & Clinicians
- Our Export Industries
- Our Rural/Agrarian Communities
- Our Governments' Services to Citizens
- And our **FAMILIES?**

IF SO ... Must set PUBLIC & MEASUREABLE goals...suggestion:

- 90% of schools with BB, teacher pc training, very widespread pc proliferation in schools, local education ISV growth
- Secure financial transactions via Internet & cell
- SMB's in towns >2000 pax with AFFORDABLE & RELIABLE BB; tax relief for BB & ICT
- Shared BB access & PC's within 1 hour walk for all
- 100% of medical clinics with BB & pc's
- Internet portal info & service for medicine, agriculture, e-Gov
- True measurement of access (uptime, cost, consistent speed)

- **And: WE NEED TO START BUILDING 4G NETWORKS NOW be broadly operational in 2011-13**

- **8:7:13**

- **and now for something completely different...**

Wall Street Journal,
Friday April 10, Peter Wonacott

- Patna, Bihar state, India
- 2 million “Mushahar” Dalit “untouchables”
- “Mushahar”...Hindi for “Rat Eaters”
- Government program to promote rat farming meets major opposition....

“proposal was ridiculed by the very group it was supposed to benefit...some protested on the streets of Patna shouting:

“We want to learn to use a computer mouse, not catch mice!” ”

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