

# **The Broadband Revolution: New Policies, Planning and Development ASEAN Trends**

Malaysia Broadband Conference  
Kuala Lumpur Convention Centre  
28th October 2008

John Ure

Director TRPC Pte Ltd (Singapore)

Associate Professor and Director

Telecom Research Project

University of Hong Kong

<http://www.trpc.biz>



# The Broadband Revolution

## Supply Side Revolution

- Access: from BB (> 128/144Kbps) to HSBN
  - Intra-modal: **ADSL** (1, 2, etc) vs **MetroEthernet** vs **FTTH** ...  
1.5Mbps...100 Mbps.... 1Gbps.... etc, etc
  - Inter-modal: **Cable** TV.... **Wireless** (WiMax, cellular LTE, ... etc)
- Applications: Web 2.0, software-as-a-service (SAAS), rich-media content for download *and upload*, etc, etc....

## Demand Side Revolution

- Consumer: fast Internet, gaming, e-commerce, social websites, etc, etc.... *for uploading as well as downloading*
- Enterprise: collaborative working, SAAS, SOA (Service-Oriented Architecture) linked to Web 2.0 applications, e-training, etc, etc....

# Policy & Regulation

- **Policy**

- NII, economic development (investment, jobs) and national competitiveness (innovation, cost efficiency)
- Role of the state: private vs hybrid; e-Govt, etc.
- Licensing: facilities vs. services competition?
- USO: include BB?

- **Regulation**

- Is BB (investment risk) essentially different from narrowband (legacy network)?
- Local loop unbundling vs. essential facilities? Open access PON (Passive Optical Network) vs. Bitstream?
- Structural vs accounting separations?
- Interconnection: SKA (BAK) vs LRAIC? Capacity vs. cost-based pricing? Interconnect through the “cloud” via “plug-’n play” ?

# Different Views

- Broadband = new departure from narrowband ISO 7-layered stack = breakup of the vertical teleco?
  - 1. Transport layer... PON (= dark fibre) vs FSAN (Full Service Access Network = active electronic elements )?... Who operates? (**OpCo?**)
  - 2. Control layer ..... NGN? IMS? etc.... Who controls? (**Netco?**)
  - 3. Applications layer ..... Who provides? (**Telco?**) Who gets the revenues? (Telco, content distributors, authors,...)

*(NB. Malaysia's licensing categories anticipated this development as early as 1998)*
- Internet and the Web – “plug `n play” threatens telco’s “ownership” of the customer?
- Therefore, do narrowband policies (already controversial) carry over into a broadband world (even more controversial)?

# Aron and Crandall

'Investment in NGN and Wholesale Telecommunications'

<http://www.lecg.com/files/upload/ingnwtr.pdf>

- 'Deploying new, very high speed networks requires massive investment in a risky market environment'
- 'Among the most important potential threats to the economic viability of next generation networks is the prospect that regulators will require unbundling of these networks at regulated wholesale prices. Such regulation would be extremely damaging to investment incentives'' (p.42)
- Essential facilities doctrine is NOT inconsistent with NOT unbundling
- Aron and Crandal see benefits in facilities-based competition

# Lee & Brown

'Examining BB adoption factors: an empirical analysis between countries'  
(2008, *Info*, v.10.1)

- Lee and Brown (2008) find the following key factors were positive and *statistically relevant at 1% level*
  - **Factors**
    - 1. "ICT" = PCs per 100 population
    - 2. "Speed" = download speeds in kbps
    - 3. "Content" = Internet hosts per 100 population (*at 5% level*)
    - 4. "Platform" competition = [100 – (market share of dominant technology – market share of non-dominant technology)]
  - **LLU**
    - 106 countries with LLU = **mean average 10.38 penetration rate**
    - 53 countries without LLU = **mean average 3.25 penetration rate**
- Conclusions
  - Supply-side: competition (platforms, LLU) + speed all important
  - Demand-side: demand from PC users and users of Internet important

# Ure

'Competition in the Local Loop: unbundling or unbungling?'

2003, Info [http://www.trp.hku.hk/tif/papers/2003/jul/briefing\\_030708.pdf](http://www.trp.hku.hk/tif/papers/2003/jul/briefing_030708.pdf)

- 'Experience from around the world suggests there is no clear cut evidence one way or the other that unbundling encourages facilities competition, or that it encourages investment in broadband networks in particular.'
- Unbundling may prove more relevant to narrowband networks (where the local loop already exists) than to broadband networks
- BB co-location is preferable to the new entrants than bit-stream
- Structural separation (network-wholesale-retail) is one possible answer, e.g. BT, Singapore, possibly New Zealand
- Policy emphasis should be on demand as much as upon supply-side
  - In developing economies this includes community support programmes, backward linkages, etc



# Singapore

- 2008 NGNB awarded to the **OpenNet** Consortium led by SingTel and Axia NetMedia (Canada) + Singapore Press Holdings Ltd, SP Telecommunications
  - 2010: aim = 60% homes and offices connected to “ultra high speed” BB via fibre; nationwide by 2012
  - **OpenNet** (selected as the “**NetCo**”) will use the ducts, manholes and exchange facilities of SingTel to provide a *passive* infrastructure
  - Wholesale dark fibre prices = S\$25 p/m residential fibre; \$50 p/m business; retail market will remain competitive
  - Singapore Govt will subsidize S\$750m (>US\$500m)
  - SingTel will transfer facilities assets to **Asset Co** one year of the start of the contract
  - USO will apply from 2013 onwards



# Singapore

- Singapore has a history of “developmentalism”
  - Singapore ONE launched 1998 = fibre, DSL and cable combinations for the last mile
  - Intelligent Nation 2015 (iN2015) master plan – includes >7,000 hotspots and seaport WiMax + NGN... see above
- But initially take-up (usage) was slow = “supply creates its own demand” (Says Law) not always true!
  - Market being led not the leader ? Cf. Hong Kong where the market was the leader and supply adjusted to demand
- Competition muted
  - Fixed line “oligopolistic competition” = SingTel (DSL), Starhub (cable) and Pacific Internet (DSL, cable)
  - Mobile (3G) “monopolistic competition” = SingTel, Starhub and M-One

# Malaysia

- 2008: National Broadband Initiative = High Speed Broadband Network (HSBN) awarded to Telekom Malaysia
  - Govt to fund R2.4 billion (US\$727m) or 21% of R11.3 billion (US\$3.4 billion) project
- Inherited weaknesses stem from lack of fixed line facilities competition
  - TM dominance in part due to crossed lines between Finance Ministry, MEWC and MCMC?
  - TM's copper local loop is inadequate to support BB
  - Outside KL, Klang Valley and Penang, few economies of density
  - Low rural incomes and low PC penetration

# Malaysia

- Initiatives include WiMax licences, Last Mile initiative, community Internet projects, MSC, etc
  - Problem is one of uneven development between urban and rural, and between rich and poor even within urban communities
  - Solution (*in my humble opinion!*) are policies that build the backward linkages between these types of initiative and community and economic development
- MEWC and MCMC have greatly assisted Malaysia in becoming more transparent over the years (e.g. in licensing and spectrum management)
  - Ease of entry and exit of new investment needs to increase

# Indonesia

- Private-sector led
  - No economies of density outside major cities
- Low fixed line penetration and low penetration of PCs
  - < 1% BB penetration [PT Telkom reported <300,000 subscribers 2008 Q1]
  - 8.5 million computers
- High concentration of telecom facilities in Jakarta and larger cities
  - 100 million cellphone SIMs – but maybe only 30-40 million subs?
  - Several cable co-axial BB services, such as Kabelvision (58,000 subs in Jakarta, Surabaya and Bali)
- Wireless is making the headway, but price wars squeeze margins
  - 2006 launched 3G services (>16 million subs by March 2008)
  - August 2007: PT Telkom announced a shift of focus from highly competitive wireless to fixed line BB services (opposite of PLDT!)

# Philippines

- Fast take-up, but low starting base (11% penetration?)
- Problems
  - Low fixed line take-up, so BB mostly wireless (e.g. SmartBro)
  - National Broadband Network (NBN) to be Govt sponsored US\$329m suspended due to corruption allegations with foreign vendor
- Rapid 'low-end' mobile growth (c.60% penetration)
- PLDT/Smart and Globe rapidly deploying 3G+ cells across > 100 towns and cities
  - 3G licences require facilities built out to non-urban areas
  - PLDT shifting focus to wireless (except for CBDs)
- BB seen as important to Philippines' development as a BPO centre

# Thailand

- Two parallel regulatory regimes
  - Narrowband BTOs owned by TOT and CAT
  - Broadband licences issued by new NTC
- BB growing fast but still c.5% penetration
- 3G (three licences issued by auction) is another escape route from BTOs, but delayed by spectrum management issues
  - NTC needs joint agreement with NCB which has been in legal suspension
  - NTC by-passed the issue by treating 2.5GHz and 3.5GHz as unlicensed spectrum for WiMax BB Internet services
  - 2G = >80% penetration and >50 million subs

# What conclusions?

- ASEAN (ex-Singapore) = development obstacles include low demand as well as supply-side cost problems
  - Low density, low income rural poor
  - Low levels of home PC ownership in the consumer market and of usage in business markets
  - Low economies of density
  - Low levels of fixed line teledensity
  - Often inadequate backhaul capacity and non-competitive prices
- PSTN is often poor quality in the local loop, so options are
  - (i) overlay – cheaper/low risk (PON an option)
  - (ii) NGBN – expensive/high risk
  - (iii) wireless/satellite – technology is helping, but how cost effective in semi-urban and rural areas?
  - (iv) cable – a real option for urban areas



# What conclusions?

- Policy choices
  - Incumbent PSTN carrier has legacy issues... but also owns ducts, towers, etc
    - 80% of costs in UK consist of ducts, poles, towers, etc (Caio Report)
  - Impose BB USO upon incumbent? Subsidize incumbent to invest in HSBN? As PON (open access) or as FSAN?
  - Unbundled vs. "immunity" subject to performance?
  - Focus on facilities or service competition? Does PON overcome this dilemma?
  - Flexibility in spectrum management (licensed/unlicensed, charges, trading, etc), licensing (new entrants and FDI) and "convergence" (boundary issues for service providers and regulators) and inter-modal competition

# 2020 Vision?

- Telecoms sector will share the fallout of the global financial crisis = raise the risk factor/availability of funds for NGBNs
- World financial crisis = era of state capitalism? (who mentioned socialism – people's money to bale out capitalism!) ... but will states have the funds to give NGBN priority?
- Banking systems and telecom systems have much in common
  - Networked industries – require interconnection
  - De-regulated re-regulated sectors
  - Competitive pressures (and falling arpu's) lead them into non-core business
  - Internet has changed the economics of both and opened entry for third party service providers
- Demand for telecoms, like banking, is business cycle dependent; but long-term utility/commodity = both require VAS to raise revenues hence the commercial necessity of HSBN  $\approx$  NGBN???

Thank You

