NGA Business Models: The Singapore case
5th international conference of EETT

Next Generation Access Networks

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Web Services
Google, eBay, Facebook, MySpace, Skype, MSN, YouTube, Yahoo, Salesforce.com, VOIP, IPTV…

Application Enabling Services and Real Broadband

Transport Services
- Natural monopoly
- Excellent economies of scale
- Regulation ensures economies of scale are passed through to customers

Fibre

75% $ Ownership Separation

25% $

> Sustained competition and diversity provides end user choice
Customer No Longer Needs To Be The “Technology Integrator”

Axia NGN Solution 2.0
• Smart Transport Connectivity
• Community Interconnect Grid
• FTTP; Optics; Routing; Switching
  • Wireless Towers
  • Global Gateway

Software as a Service (SaaS)
Data Processing as a Service

Licensed Wireless Players
• 3G; 4G; WiMax

“Fixed” Net Device

“Mobile” Net Device

Software as a Service provides a compelling value proposition for common / interactive communication / information requirements.
  > Share costs with many others; managed by professionals at Fit for Purpose Facilities.
  > Access common information any time / anywhere.
  > Enabled by Axia NGN Solution.

Data Processing as a Service provides “manufacturing plant”-style quality reliability and efficiency of scale.
  > CPU utilization very high; drives costs per unit down.
  > Virtual computing provides Customer performance in a competitive environment.
  > Power costs and cooling costs per processing unit are less.

Axia NGN Solution Delivers Economies of Scale through Fibre Grid available to anyone through “Fixed” Net Devices or via Wireless players through “Mobile” Net Devices.
  > Digital Transport Utility with appropriate governance and ownership.
  > Economies of Scale passed through to users through Rates.
  > Creates sustained competition between all other value chain Participants.

Licensed Wireless Players provide “Mobile” connectivity and fixed device connectivity where no FTTP.
> Level of competition created by Government through the issue of licenses and wireless competing with FTTP.
OAN enables a new high-performance ICT Services Sector

**Character**
- This is what the customer experiences.
- Customer is no longer the technology integrator.
  - Software / hosting orientated.
  - Infinite opportunity for digital service. Broad to niche.
  - Complex and changing.

**Optimal Governance**
- Cultural Governance.
- Free market.
- Open competition.
- Entrepreneurial.

**Optimal Governance**
- “Partnership” more than simple supplier.
- Limitations on participation in Marketplace to eliminate conflicts and create OAN.
- Align private sector performance with Government policy objectives.

**Players**
- Google; eBay; Yahoo, MSN...
- Skype; YouTube; My Space...
  - VoIP; IPTV; IP Video...
- Broad to niche; entertainment to knowledge...
- Culturally local or international.
  - No limit.
- Axia is the only proven truly OAN “no conflicts” provider.
  - Utility approach.
- Telco “wholesale” approach.

**Application Services**
- (The large, lasting market)

**Application Enabling Services**

**Real Broadband (Active / Smart)**

**Fibre Wireless Transport**

- Enable ASP developer to create any digital experience without network limitations.
  - Enable customized network performance and value.
  - Enable economies of scale for “plug and play” communicating services that any ASP can use.
- Enable full interoperability / network neutrality.
  - Must be standards based and amortized over large market.
  - Great economies of scale.
  - Complex and changing. 7 X 24.

- Capital intensive; long life.
- Civil, fixed, tangible asset centric.
  - Monopoly character.
- Fibre has “No capacity limitation”.

- Government retains long-term ownership / strategic control rights to manage “monopoly” character.
Alberta SuperNet - Delivering Steady Growth

> World’s largest rural/regional IP network

> Real Broadband™, a superior solution

> High performance/low cost value proposition

> SuperNet - A Community Interconnect Network:
  - The geographic area of Alberta is 661,848 km²
  - 15,000 km network
  - Connecting all 429 communities
  - 2,211 learning facilities
  - 338 library facilities
  - 515 health facilities
  - 1,429 government facilities
  - 73 specialty local access service providers services the retail/commercial market.
Covage - Establishing A National Network

13 early stage active networks
1 planning/construction phase

Covage’s national network:
- 14 public initiative networks
- 3,100 km backbone linking DSPs
- 7,450 km of fibre
- 125 wireless stations
- 40 national and local service providers

Available 400 Gbps bandwidth that can be expanded to 800 Gbps

4.77 million people
> 1,809 communities
~ 34,000 businesses

* Covage is a French company jointly owned by Axia and VINCI Networks
Singapore

- Fibre to every premise
- Geographic area 693 km$^2$
- Population of 4.8 million
- 1.12 million residential premises
- 152,000 other premises
- Modern metropolitan city state
- Secure, reliable, future proof, affordable
- Ownership separation between passive infrastructure and any telecom licensee
- Access rates of S$15/$50 per month
- Singapore is now the standard for any metropolitan centre that wants to compete in the Digital/Knowledge Economy
> OpenNet owns only passive fibre grid services for Singapore’s NGNBN

> Axia led consortium through RFP/contract phase

> Axia has 30 percent ownership. Other owners:
  - Singapore Telecommunications Limited (30%)
  - Singapore Press Holdings (25%)
  - SP Telecommunications Pte Ltd (15%)

> Axia capital commitment over construction/commissioning period should not exceed S$38.2 million
OpenNet - Metropolitan Fibre to the Premise

- All new fibre build while utilizing other existing passive infrastructure
- 60% connected by 2010
- 95% connected by 2012
- Commercial services offered incrementally as grid rolled
- First services available by the first half of calendar 2011
- StarHub, as IDA-selected OpCo, will be one of authorized customers of OpenNet
A preview of Next Gen Services

**Fast Upload and Download Speeds**
With Next Gen NBN’s scalable speeds of up to 1Gbps and beyond, uploading and downloading of files will now be significantly faster. The consumer will now be able to download content in minutes rather than hours while utilising several high-bandwidth applications simultaneously. Among the many applications that could arise are Software-as-a-Service (SaaS), remote data backup and file restoration, and a richer online gaming experience.

**High-Definition Video Conferencing**
From telecommuting to keeping in touch with loved ones, the way people communicate from home and office will be transformed with the emergence of high-definition (HD) video conferencing enabled by the Next Gen NBN. With HD video, voice and data communication running on the same broadband bandwidth, users will be able to conduct video conferences that are as real as can be, without the need for heavy investments and bulky set ups.

**Interactive Internet Protocol Television (Interactive IPTV)**
Next Gen NBN will transform television with Interactive IPTV, increasing the flexibility of TV viewing with exciting and enhanced features, such as interactivity and on-demand viewing. Consumers will now be able to watch their favourite high-definition TV programmes enriched with interactive features such as polling, time-shifting and electronic programming guides, while on-demand TV will suit the busy individual’s schedule.
A preview of Next Gen Services

**Telemedicine**
Next Gen NBN will enable the seamless and secure exchange of information among major hospitals, clinics and patients at home, improving home medical care through services such as remote medical consultation. This will ensure healthcare continuity by eliminating the need for patients to be physically present at consultations, reducing frequency of visits to clinics. It is foreseen that these innovations will give much sought after relief to patients with chronic diseases and the elderly.

**Grid Services**
Grid computing services, delivered seamlessly via Next Gen NBN, offer enterprises and consumers access to huge computing power, software and data storage on a pay-as-you-use, on-demand basis. Businesses, especially SMEs, can save by tapping on these services without having to incur heavy upfront capital costs in equipment and software licences, and yet enjoy the flexibility of scaling the applications to support the business growth.

**Interactive Digital Signage**
Imagine being able to deploy high-resolution, high quality content over a network without having to worry about bandwidth limitations. Combine this with a digital authoring software and touch-screen technology to enhance interactivity, and the result is a platform for rolling out highly engaging, interactive, high quality digital signages that can be updated in real-time via Next Gen NBN and with customised content to suit different purposes or target audiences.