Community FTTH Networks – Structural Options

Objectives

Community fibre network initiatives generally arise when there is a sense that the development of the community is being held back because of an infrastructure deficit. The ultimate objective is therefore to ensure that the infrastructure is both provided and used to the benefit of the community.

Measures of success

A commercial investor looks for a return in the form of cash flows from operations enabled by the investment. At an operating level a fibre network offering retail broadband services (especially services superior to the alternatives) is a viable business that warrants commercial interest.

At an investment level however there is a large outlay associated with the deployment of the network and the payback period may be beyond the expectations of a commercially motivated investor.

Public investment, on the other hand, recognises returns to the wider community in the form of economic stimulus. A city council may consider spending money on a public asset if it thinks that by doing so it will stimulate economic activity significantly larger than the "investment", even if the council doesn't directly receive any cash return. The council is investing in order to secure a return to the community.

Investment in fibre networks generates both types of return which is why many communities look to public private partnerships as a way of structuring fibre network initiatives.

Both commercial and "community" returns are maximised by driving:

1. uptake on the network
2. application and use of the connections (ARPU)

A commercial investor sees these as driving revenue and the public investor sees them as driving productivity and innovation. Another way of saying this is that nobody wants to build a network that isn't used to its potential.

Open Access

In general open access principals are applied, as a condition of public investment, with two objectives:

1. To protect against future monopolistic behaviours
2. To stimulate participation and innovation on the network.

Because there are so many variables and options in determining the definition of open access, there are nearly as many models as there are open access networks. Some of the different dimensions of open-access are:

1. Network level

2. Separation Models
3. Participation models
4. Commercial constraints

Different definitions of open access can address the level at which access to the network is granted:

Layer 0	Access to poles and duct
Layer 1	Dark fibre
Layer 2	Managed bandwidth (Ethernet)
Layer 3	Managed network (IP)
Wholesale services e.g. Whitebox IPTV or VOIP	
Retail services	

Examples of participation models are listed below. Note that different models are often applied at the different network layers (discussed above) even in the same network.

Open market
Grant of operator licenses
Exclusive supply

For example in Singapore and in the Netherlands (Amsterdam) the government ran tenders to select exclusive partners for the fibre build and licensed a small number of network operators who were obligated to wholesale managed bandwidth products to an open market of retail service providers.

Open-access is more and more being established through the horizontal separation of players. In New Zealand the incumbent has been forced through legislation to separate into a network unit, a wholesale unit and one or more retail units. This is an operational separation and although there is common shareholding there are strictly enforced rules of engagement and non-discrimination between the units and other industry players. This follows a model developed in the UK to split up British Telecom. Many government initiated large scale fibre roll-out embed separation in from the beginning e.g. Amsterdam, Singapore and NZ.

Operational separation	Rules of engagement
Structural separation	Separate ownership

Open-access obligations may be embodied in the commercial constraints imposed on products offered by the network owner or other players.

Regulated price and terms
Non-discrimination obligations
Freedom to negotiate specials and exclusives

To a commercial investor an open access model holds risks and constraints that can make an already marginal business case for FTTH much more difficult. The risks fall in two areas:

1. The business case may rely on retail revenues which they are obliged to expose to competition
2. In a wholesale only model they are dependent on partners (with very different motivations) to drive uptake and ARPU

The first risk is probably more widely recognised but should be relatively easy to mitigate with a well structured wholesale proposition. In fact such a proposition should be a key component of a market penetration strategy.

The second risk is more threatening. It is easy to conceive (and to find real cases) of good network roll-outs that languish for lack of effective retail strategies or partners. UTOPIA is probably a good example of this.

This issue has probably best been articulated by Timothy Nulty (Burlington Telecom) in this recent interview with Benoit Felton.

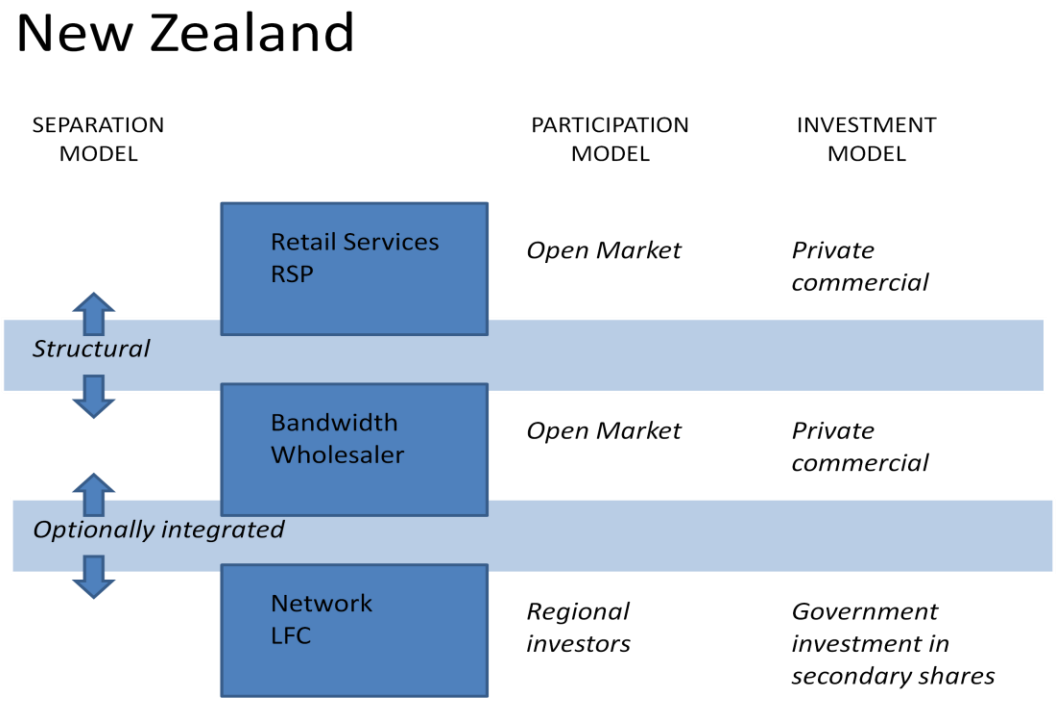
http://www.convergenceconversation.com/posts/benoit.felten/interview-tim-nulty

Large scale commercial investments in fibre networks have been secured through regulatory concession (e.g. Verizon FIOS) or take or pay anchor tenancies (Axia).

The New Zealand Model

The New Zealand government has recently released, in draft, its proposal for the investment of $NZ1.5billion. It is seeking to form partnerships at a local level to build FTTP networks. Its goal is to reach 75% of New Zealand's population.

Local Fibre Companies (LFCs)will be established in partnership with a crown-owned entity and will be obligated to provide dark fibre on an open market. They may also provide managed bandwidth wholesale services but may not retail any services. The government will invest up to 50% in an LFC through the purchase of secondary shares with lowered or deferred dividend expectations. That means that the return for partner investors will be a bit higher in the initial years.



While it remains to be seen whether this scheme will attract commercial investors, there are parties that also have a community interest at heart that may be interested. In particular many power utilities in New Zealand are owned by public trusts. As well as having assets and capabilities that could be leveraged in a roll-out ,many of these utilities have strong cash flows and a mandate for re-investing in the community that owns them.

http://www.med.govt.nz/upload/63958/Final-broadband-initiative-consultation-document.pdf

The Australian Model

The Australian government has just announced that it will invest in a new national fibre network company that will spend up to $43 billion to connect 90% of premises in Australia with 100Mbit/s. While

many of the details are yet to emerge deep levels of open access will be a feature and the government will be heavily invested for at least the first five years.

http://www.pm.gov.au/media/Release/2009/media_release_0903.cfm

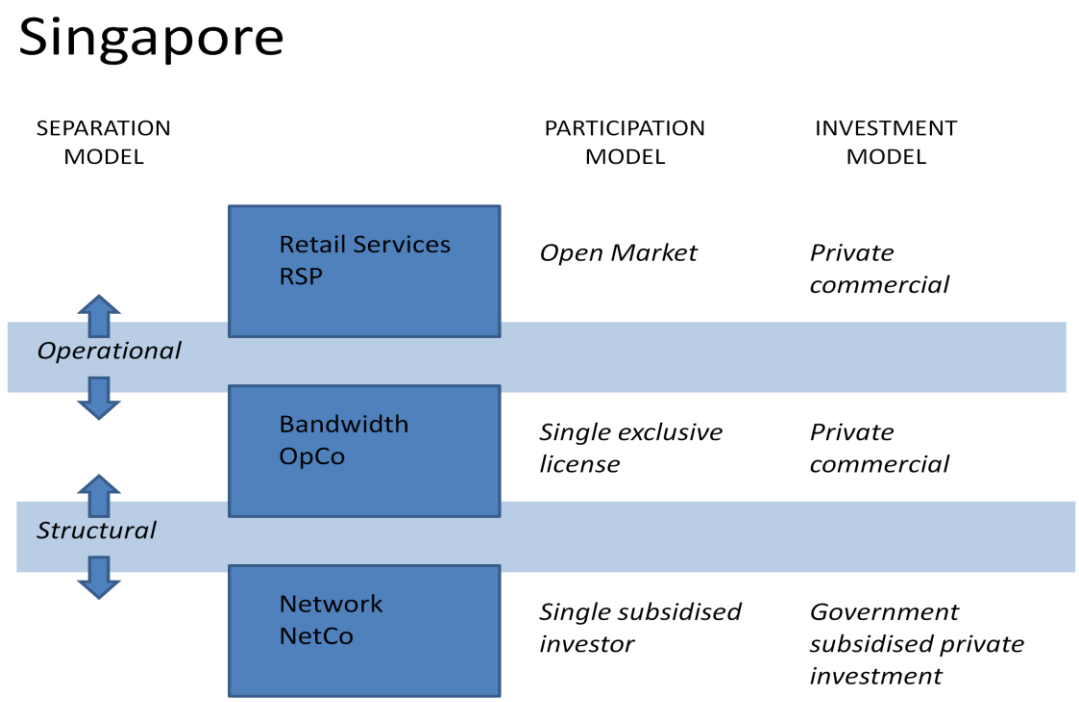
The Singapore Model

Singapore has created a three-layered model: a "NetCo," to design, build, and operate the passive infrastructure; a "OpCo," to deploy network infrastructure (routers, switches) and act as a wholesaler of broadband capacity; and multiple retail service providers that will all use the same underlying physical infrastructure.

To help attract bidders, the government pays a grant of up to 750 million Singaporean dollars (US$520 million) to the "NetCo," which will design, build and operate the passive infrastructure.

The government will then choose an Operating Company “OpCo” to deploy network infrastructure (routers, switches) and act as a wholesaler of broadband capacity, which will then be sold to multiple retail service providers.

That three-layered model -- network, operations, services -- is similar to Amsterdam's municipal network rollout.



http://www.ida.gov.sg/News%20and%20Events/20071211184512.aspx?getPagetype=20

Burlington Telecom

Burlington Telecom is an interesting project from the point of view that under Timothy Nulty they have taken a very pragmatic and commercial approach. Nulty has been quoted as saying “wholesale fibre is a

recipe for financial disaster" and has established a full service vertically integrated enterprise to build fibre and deliver services to Burlington (a city of 40,000) in Vermont.

However as is clear from the interview referenced above Burlington does offer wholesale bandwidth to other service providers and expresses the view that their interest in service provision is solely to drive uptake and revenues in the early stages of deployment. They would welcome any service provider that could win retail business from them with a better customer proposition – because in the end a better service to customers is the prime objective.

Burlington is fully funded with debt secured over the network assets only. The council has no debt liability.

TransACT Australia

TransACT is a community network established around 5 years ago in Canberra Australia, by the local power and water distribution company. Established in 2003 they now appear to have continued to move forward with reasonable success.

TransACT have always been open access at a services level – although in practice this has only played out for Internet access services where TransACT customers can access high speed internet from approx 10 independent ISPs. TransACT does not itself provide internet access only the pipe to the ISPs.

TransACT established one of the first commercial IPTV/VOD platforms and build their own IP video headend. They did at one stage also carry a package from the largest pay TV operator in Australia (Fox) however it no longer appears to feature on their web site. They have also always provided telephone services after initially approaching and being rejected by the incumbents at the time.

E+ Broadband by Jackson Energy Authority (Tennessee)

This is a great example of a successful community network instigated by a municipal utility. They installed a EPON network supplied by Wave 7 Optics an Atlanta based equipment developer now owned by Canadian company Enablence.

E+ have been very successful in leveraging the goodwill enjoyed by parent JEA, and turned this into high levels of take-up despite vigorous competition from the local cable company (Comcast(?)). E+ has very much focused on competing with traditional cable (which is the background of their founders).

E+ has dabbled with open-access at a services layer. Its not clear from their web site (http://www.jaxenergy.com/broadband) whether they've continued down this path however.

E+ raised debt to finance the build and is focused on achieving good commercial outcomes with E+.

Sollentuna Energi (Stockholm Sweden)

Sollentuna is another example of a modest community network initiated by a local utility. It is fairly well described in this vendor case study:
http://broadband.cti.gr/download/Case%20study%20Sollentuna.pdf