Presentation

Telecom Transformation Forum

Le Chatelain Hotel, Brussels, Belgium

Transforming through separation of vertically integrated operations

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Trying to Promote Competition in Smaller Countries
Le Chatelain Hotel Brussels Belgium
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Public Utility Reform

One of the main lessons from public utility reform in last twenty years is the need to have different regulatory rules for infrastructure as opposed to services. Regulators internationally are grappling with rules for rail, electricity, airports, telecommunications, and many other strategic and infrastructural sectors.

Encouraged by the successful partial separation we saw in Hong Kong in 2001, we proposed structural separation of infrastructure and services in Cambodia. It was a way of simplifying regulation in a society with severely limited policy making and regulatory capacity.

Separation was also seen by the Mongolian Government in 2005 as an answer to efficient investment in infrastructure, also achieving competition in services, across long distances to small population communities.

In both places economic considerations led to the conclusion that the scarce investment capital available should not be wasted on unnecessary duplication of infrastructure. However, consumers still needed competition in order to discover long-term sustainable prices.

Since then, we have seen BT's Openreach and similar policies in Australia and New Zealand. It has also become obvious that the proliferation of services, all using a common data delivery platform will drive a technological and ownership separation of networks and service.

Technology and economics are moving in the same direction. New Generation Networks (NGN)s will mean it makes no more sense to bundle networks and services than it is to bundle a notebook PC to a particular LAN or to suggest that Hollywood should be bundled with telecommunications companies.
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Both technology and economics are pointing to a different form of regulation as the solution to the problem of efficient investment in infrastructure and to achieving competition in services as the solution for long-term sustainable price discovery.

We will show how our experience in small economies favours True Open Access Networks as a means to achieve both desirable results as soon as possible.

Current Regulation is a Failure

When telecom companies around the world (including those in Mongolia and New Zealand) were privatised, on the advice of merchant bankers they were sold as a bundled monopoly. The objective was to gain the benefit to the public purse of the monopoly rentals (and a quick sale). Regulators based on the US regulated private monopoly model were set up to look after consumers.

With twenty years of experience of bundled sectors, with a snail pace rollout of broadband and derisory levels of fixed line competition, it is clear the model is not working. The fundamental problem is the asymmetry of information between companies and regulators. Information and access problems in current regulatory regimes are well known.

Vertical integration, local loop unbundling (LLU), behavioural regulation and competition from as yet unavailable or expensive technologies have all been tried to overcome information asymmetries and

found wanting. Acres of academic ink have been spilt trying to suggest incremental improvements (and one by one, companies have found ways round them).

The missing factor in these attempted solutions is analysis of "why" all attempts at regulation have failed to bring about meaningful competition while also providing adequate incentives for efficient investment.

If the current systems are the best we can do, their defenders need to explain why Somalia has the cheapest and best quality mobile calls in Africa[1]! The absence of intrusive regulators, officials to bribe and strong incentives to provide service, may have some relevance.

These are particularly critical questions for low income developing countries (like Mongolia and Cambodia) and for remote developed countries like New Zealand.

Milton Friedman is only one of many economists who say: economics is fundamentally about incentives. Ignoring incentives produces perverse results. Could it be that restructuring the sector to modify incentives is a path to a better approach?

Table 1: Two Businesses: Characteristics

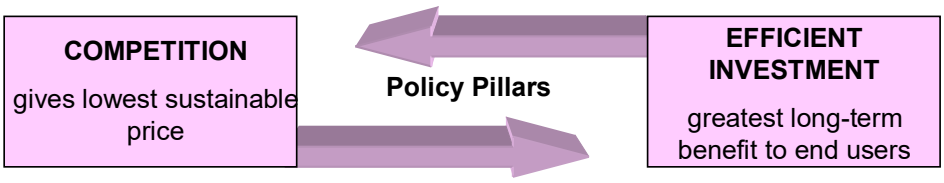
	Network Company	Service Company
Product Life	long	short
Complexity	low	high
Information	public	private
Risk	low	high
Return	low rate	high rate
Best Investor	low risk pension fund	high risk venture fund

Source: GGI

Two Businesses

Telecommunications companies are currently two businesses in one. One is an infrastructure business; the other is a customer services business. Their businesses characteristics are quite different. Table 1 shows the dramatic differences between the network businesses and the services business.

Figure 1: Policy Goals

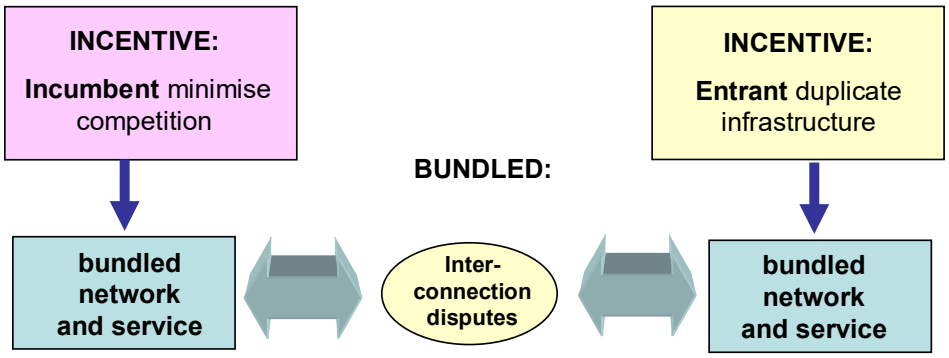


[1] http://news.bbc.co.uk/2/hi/africa/4020259.stm

In any infrastructure business the **policy goal for infrastructure** is **efficient investment**. The **policy goal for services** is **competition** (to ensure good service and economical operation). These policy goals are illustrated in Figure 1.

If two telecommunications businesses are bundled together it is possible to have one or the other, but not both. If there is a bundled (near) monopoly, like Telecom New Zealand's fixed line business, it is possible to have efficient investment. However, it is not possible to have effective fixed line competition. Figure 2 shows that the incentives faced by companies work against harmonisation of policy goals. The incumbent has an incentive to minimise competition. The new entrant has an incentive (is forced to) duplicate infrastructure

Figure 2: Incentives Conflict with Policy

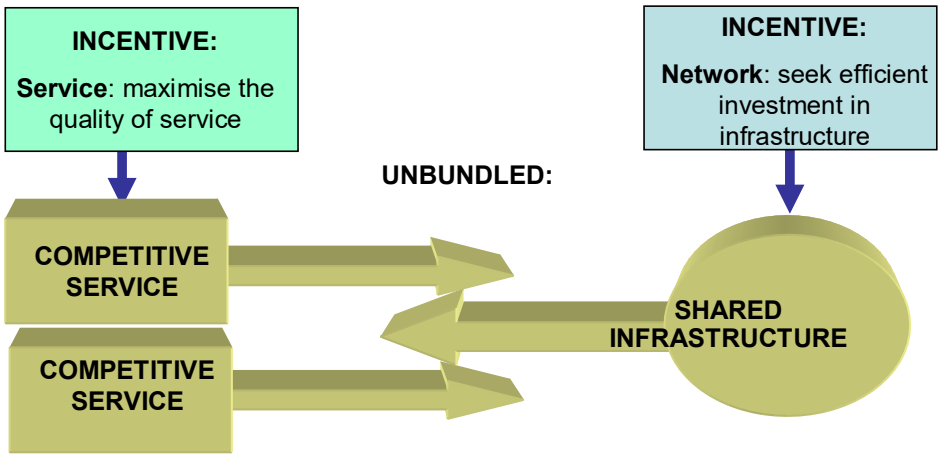


Conflict is illustrated in Figure 2. The conflict comes to the surface during interconnection disputes where the incumbent seeks to use legal and technical devices to keep out the new entrant.

If there is no regulation, the incumbent remains a near monopoly and the policy goals are not achieved, but investment may be efficient. At least there is no duplication. On the other hand, if there is intensive regulation to ensure competition, because infrastructure is duplicated, efficient investment is not achieved.

New Zealand has recently regulated heavily in favour of promoting competition. Academic research purports to show that this is now resulting in slow and inadequate investment[2].

Figure 3: Incentives Harmonised with Policy



[2] *Pendulous Progression: 20 Years of Telecommunications Regulation in New Zealand*. NZISC August 2007, B Howell

With unbundled infrastructure and services, it is possible to harmonise the two policy goals. This option is illustrated in Figure 3.

In Figure 3 it can be seen that the infrastructure owners have an incentive to invest efficiently and to attract as much traffic as possible across their equipment.

The service providers can forget about being protected from competition by the infrastructure departments and have to focus on maximising the quality of service.

Unbundling is a necessary condition for achieving the two policy goals.

Comparison

Comparing telecoms regulation with that of roads, gives insights into why the bundled approach is failing. When Europe ceased to use the Roman roads and allowed them to fall into disrepair, commerce, law, order, social and economic development all suffered.

Eventually, entrepreneurs realised an opportunity and started to build and renovate roads and charge tolls. Before long, governments were forced into taking measures to make roads open to anyone.

Nobody suggested that the first comer to the roading business should be allowed to own the roads, determine access to them and also to operate transport services. Nobody said to new entrants to the transport business to "build your own road" before you can carry goods[3].

It would not be acceptable today if Transit New Zealand (which builds our roads, and has equivalents in other developed countries) were to operate a trucking business in competition with other road users, overcharge the others for using roads and steal their customers by undercutting etc.

These practices are, however, common in telecommunications and certainly not what US Vice-President Al Gore was talking about when he referred to the “Information Superhighway.”

Efficient Investment

The critical achievement in the regulation of roads was when it was realised that there were benefits to the whole community from making roads open to everyone.

The road authority can plan roads with a view to maximising efficiency of investment (i.e., selection of projects based on economic return). The service provider can plan services based on the needs of customers (efficient service at the lowest possible price) knowing that they can use roads by the payment of road user charges, petrol tax or license fees.

It is common ground that in telecommunications regulatory interventions to achieve efficient investment and third-party access have generally not succeeded. To resort to regulation is an admission the market structure cannot both coordinate investment and foster competition.

Experience of the last 20 years is that using a regulator to force changes in behaviour contrary to the incentives coming from the market will not work. After years of Local Loop Unbundling (LLU) Paul W. J. de Bijl and Martin Peitz[4] could not find a single case where it had reached a double figure as a percentage of all lines.

Operators will always have more resources, more and more up to date information, and finally and most importantly more incentive to keep ahead of the regulator. There is an asymmetry of

[3] See Appendix 1 for an illustration of the “build your own road concept”
[4] *Local Loop Unbundling in Europe: Experience, Prospects and Policy Challenges*, MPRA Paper 2441 March 2007 (from March 2005)

information, which means that regulation will always be ineffective. Regulation becomes a cat and mouse affair with all the cards held by the operator.

Competitive Services

Efficient investment is the first policy plank and is essential to maximise welfare. Service competition is not only the second policy plank, but also the means to deliver welfare to final consumers (if that is your policy objective).

In respect of services, earlier attempts at structural separation failed because they were designed by engineers who placed exchanges with the network, discounting the fact that exchanges are the core service provided by service providers.

The means of delivery of differentiated services reside on the exchange or switch. Exchanges are the core of the services company. Exchanges embody the intellectual property of the service provider.

No regulator in the world has yet succeeded in prising out of a telecommunications company the cost providing its switching services. In other words, the exchanges should be in the service company

Cost information is the foundation of effective regulation and the asymmetry of information between the dominant provider and regulator means that meaningful information is expensive and hard to come by.

In most countries, monopoly rentals accrued to bundled networks to such an extent that politicians were called upon to regulate for competition on behalf of the services consumer. Where there is no competition, "regulate prices" was recited almost like a mantra.

Delivering Incentives

Some would argue politicians should not ever regulate and the distribution of the consumers' surplus should not be touched by politicians.

The decision to intervene has been made already in most countries and that is unlikely to change. What we are discussing here are interventions that will harmonise incentives with a policy of ensuring consumers benefit from efficiency, instead of trying to regulate against economic incentives.

Not only do we want to ensure that interventions support the policy objective, we want to see intervention that is less intrusive into the internal workings of businesses than traditional regulation, but also delivers the right incentives.

For a bundled business (road or telecom) the logical market response to incentives faced is vertical integration (what we have also called bundling). Every business facing competition has the objective of winning as much market share as possible and beating competitors.

If you bundle a competitive element with a monopoly element, the life of competition is very limited indeed. Managing the two businesses as a bundled entity creates an incentive to block access by any other party to protect the incumbent entity's revenues from new similarly bundled entities. Competition is reduced, as is the incentive to provide superior services suffers.

Form of Regulation – Network

The OECD has argued that infrastructure needs to be treated differently to services to ensure the incentives of the owners/operators align with the policy to improve welfare of customers[5].

[5] *Structural Separation in Regulated Industries*, Report by the Secretariat, Directorate for Financial, Fiscal and Enterprise Affairs, Committee on Competition Law and Policy, 10 April 2001.

In 2001 it suggested structural separation as a regulatory tool. One reason is that structural separation makes the difference between a network with an incentive to block competition and one with an incentive to maximise use of the capacity available. The latter is most likely to produce efficient investment.

With modern technology any one network can carry virtually all the traffic. If there are three sets of infrastructures where one will do, the capital involved in networks is trebled and the revenue available is potentially divided by 3, therefore the real unit of revenue per unit of capital employed can be one ninth of what is optimal.

If the two businesses are unbundled the incentives change[6]. The infrastructure manager has an incentive to maximise traffic from any source. There is no advantage to block anyone's access.

For an incumbent network only operator (netco), with no legal protection, exposed to the threat, if not actual competition, it must be efficient and customer responsive to ensure all licensed service providers (servcos) connect and all possible traffic flows over their network.

Regulators may want to monitor costs, investigate complaints and require disclosure of the already well-known costs involved in the business of laying cables. This is about the limit of necessary regulation.

The incumbent adds value to the network by focusing management on network asset management. It must work towards making a new, competing network unbankable, by maintaining its own network's capacity, technology and customer responsiveness (note its only customers are the service providers, servcos, 10-25 in total).

The netco has no incentive to treat one customer different to another; all are on the same rate card and the incentive is to maximise the traffic across the network as that is the basis of profits. A simple incentive structure aligned with customer welfare emerges.

This also has the desirable effect of driving network expansion to the extremities rather than wastefully multiplying infrastructure in the urban, high teledensity areas.

Form of Regulation - Services

Separation also has a dramatic effect on telecommunications services. In a separated environment the service operators are confident that they will not be using inferior lines, they will not be overcharged to benefit competitors and their best customers will not be poached.

Again, regulation is greatly simplified. Interconnection disputes will be resolved because the information on the costs of origination, transmission and termination are all transparent. Provided the network is truly open and owned by a third party there is no issue of the network proprietor having an incentive to favour one service provider over another.

There will be difficulties enforcing a split. However, they are fewer and more explicit than the identical difficulties with Local Loop Unbundling (LLU) that is so beloved by European regulators. Communications, service levels, technologies and responsiveness issues should be manageable. There are well developed mechanisms and experience of rules-based markets for access to networks to draw upon.

This is the vital aspect of the model. If the prohibition on networks supplying services is not watertight, operators will never fully trust using the network of an existing bundled service provider.

[6] See **Appendix 2**, this illustrates that the separation should occur at the Main Distribution Frame (MDF)

The case of the Disney Channel in New York (that lost service from its network provider over an unrelated commercial dispute) is instructive.

Further, if the service manager can no longer rely on blocking to protect his business from poor service, the incentive is to ensure superlative service is offered.

To argue the bundled model's capacity to deliver services isn't broken is no longer sustainable. Neither is it appropriate to foist a dysfunctional model onto developing countries like Cambodia and Mongolia as their previous advisers advocated. We now know why the market failed and can address that issue rather than trying to tinker with a failed model.

Unbundling is a bit of a mouth full of words. An alternative can summarise it all in three words: TRUE OPEN ACCESS

True Open Access

The critical difference is making all networks True Open Access Networks. It means one simple thing: the network never, now or in the future, will be allowed to offer services in competition with licensed service providers using the network.

Structural separation and True Open Access achieve:

1. **Competition and efficient investment in Networks:**
   Network competition occurs where the network is inadequate (capacity or technology). Efficient investment occurs where the network keeps up to date and responsive to its customers (service companies).

2. **Competition at the services level:**
   Competition is achieved because open access to infrastructure, lowers entry costs (as new servcos don't have to build the road). It also is a spur to better customer services (this is the only basis for competition as all operators are on the same transparent rate card from the netco),

3. **Simplified Regulation:**
   Regulation is primarily focused on network costs (monitoring can be achieved largely by disclosure of information that is already in the public domain).

Separation not only eases regulation it makes the costs of a sector more transparent eliminating much of the asymmetry of information.

Value Creation

The regulatory benefits of separation are often acknowledged but are countered by the assertion that separation of the two businesses will destroy value.

The True Open Access framework does not rely on an assumption that there will never be a second network. In most countries there is more than one already. There are, however, very strong economic reasons/drivers to avoid multiple, uneconomic networks emerging.

Discouraging uneconomic investment, True Open Access not only ensures welfare flows to customers but makes it totally unnecessary to regulate the number of networks. The new entrants' Bankers will do that for you.

Table 2 shows the results work by John Third and a team of consultants when they analysed the impact of competitive rollouts on the value a fibre ring network in Java costing US$ 2.5 billion. The

value increases progressively from 5.4 to 7.8 billion as the degree of openness (and institutional separation) increases.

Similarly, when we arrived in Mongolia, Mongolia Telecom (MTC) was expected to raise less than US$ 30 million for the government's 55 percent of shares.

Conservative financial modelling showed that unbundled, over five years, it would raise nearly US$ 90 million in taxes, dividends and share sale and the remaining infrastructure business would be worth more than US$ 100 million (delays and inconsistent decisions may reduce these estimates, but the principle remains sound).

Table 2: Value of a Network with Unbundling

Network with revenue $1 billion, costing $ 2.5 billion		
	Probability of another roll out	**NPV $ of Open Access Network**
Proprietary Network	**90 Percent**	**5.4 billion**
Semi-Proprietary Network (e.g. LLU)	**70 percent**	**6.8 billion**
Open Access Network	**20 percent**	**7.8 billion**

Source: GGI

The separation of the two businesses creates value, it does not destroy it. The Indonesian example showed quite clearly that the more explicit the separation of the two businesses the greater the value released from both and the higher the value of the network.

P/E Ratios

Why does separation increase value? If we examine all the characteristics of a network business it is clear that they are the opposite of those of a service business. The answer to the conundrum can be found in the bottom row of Table 1.

An infrastructure business typically has a low rate of return but a PE ration of about 10-15 times. (One South African official I spoke to about this quickly calculated what he had paid for a commercial building and found that the PE was 15.5). By contrast a service business will generally have a higher rate of return, but a PE of 5 (and never one above 7).

If the two businesses are bundled, the risk of the service business will drive down the PE of the infrastructure asset and the low return of the infrastructure will mask the high returns from services.

Expense

Defenders of the status quo raise many other criticisms. Contrary to some suggestions organisational and institutional separation need not be expensive. Experience shows it to be a relatively small technical matter of reprogramming a few computers and changing the names on some papers.

In utilities and companies that already have a customer services division and an operations division it is also a relatively simple management change[7]. However, because it dramatically changes incentives it results in adding and releasing very substantial value to both the network and service components of the business.

[7] See Appendix 2

Property Rights

Another objection raised is the invasion of property rights. It must be acknowledged that if infrastructure and services had been separated before sale or we started with a blank sheet of paper, property rights issues would be easier.

The fact is, we are dealing with dominant privatised incumbents (in Europe, Australia and New Zealand etc) and dominant new mobile entrants (Cambodia, Mongolia and Rwanda etc) so it is more complex.

We believe that there are three simple steps, all far less intrusive than current regulations that may persuade the most reluctant incumbents (and new entrants) to embrace change.

1. **Step one is to require tariff unbundling.**
   Transparent tariffs show that part of the charge for origination, transmission and termination respectively; there is no need for tariff regulation, just unbundling and publication; this will help eliminate interconnection disputes as all information will be public and transparent.

2. **Step Two is to require internal separation of network and services.**
   As it is within the existing businesses (ensuring exchanges are included as service elements) no new property rights issue arises. This should be relatively straightforward as most managers worth their pay will already separate service and infrastructure costs and the regulatory requirement will simply make the existing situation more transparent. The preferred model will probably be internal subsidiary companies.

3. **Step Three, institutional separation:**
   Once the second step is in place internal organisational separation can be transitioned into a full institutional separation.

With these three steps in place the path is open for all companies to offer their networks on a True Open Access, non-discriminatory basis. If all the preliminary steps are in place it may not be necessary for regulators to make it mandatory.

True Open Access

Only half the value-add occurs under LLU unbundling. There remain strong incentives driving unnecessary network roll out or delay in competition and innovation because until the separation is complete, the service company will never completely trust infrastructure owned by a competitor.

While most regulators will consider that they have by this stage reached the 7th day and deserve a rest, it is important that they realise that the promised land will only be realised when all network companies operate on a genuine True Open Access basis with institutional separation of the two businesses into different entities.

Given that LLU, facilities sharing, and mutual roaming are now all familiar if not universal concepts, the final step of complete True Open Access should be relatively small too.

Another factor working for the regulator will quickly be the directors of companies where both separated open networks and services remain under the same umbrella organisation.

Good directors will soon see the inconsistency between a return of 7 percent on millions if not billions of infrastructures and a return of 40 percent on a much smaller sum invested in services.

The only reason they do not make this comparison at present is that their financial people will seldom think of doing the analysis and showing the board. Accounts like businesses, when bundled produce misleading information[8].

Mobile Sites

Critics would suggest that the "first mover privilege" must apply in telecommunications. The first party to erect infrastructure should gain enduring exclusive rights over the infrastructure. As noted before, this principle does not apply to roads and should not apply in telecoms. However, this question can be raised in respect of mobile sites.

There was a vigorous debate in Mongolia over whether mobile sites should be in network or services companies. Our view remains that the siting of a mobile site is an integral part of the service.

However, there is a valid issue in that the network aspects of the site should be open to all. This can be achieved by two principles that are well established in telecommunications:

(1) mandatory facilities sharing (takes care of network aspects) and
(2) mutual roaming.

The roaming charge and facilities site rental imposed by the site owner safeguards the owners' property right.

As a visitor to Europe, I can roam on any available compatible mobile service. Efficiency and good customer service suggest that citizens of each country should be able to roam as well[9]. Industries in many countries are looking at this issue right now.

If this is an important goal, an appropriate approach for a regulator is to announce that mutual, technology compatible, roaming is a policy objective. The industry should then be asked to advise on how it can be done.

Small Leading the Big

The benefits of structural separation were very carefully analysed and accepted by Korea Telecom (KT) in their agreement to accept unbundled model in Mongolia.

Despite many warnings from conventional thinkers, KT are proceeding to purchase the Services only component, following the restructuring of MT into a service only company with True Open Access to the network company (Information Communications Networking Company).

Mongolia has committed itself to True Open Access, and it remains to be seen how well that is carried out. The promise it holds is that even the remotest subscriber will be able to choose the service they want.

Like the internet, the company that takes the first steps to offer access to its network on a True Open Access basis can expect to boost its business very soon as grateful ISPs, VOIP providers and even competing fixed line and mobile companies quit their inadequate facilities for the benefit of paying for only that transmission they actually use.

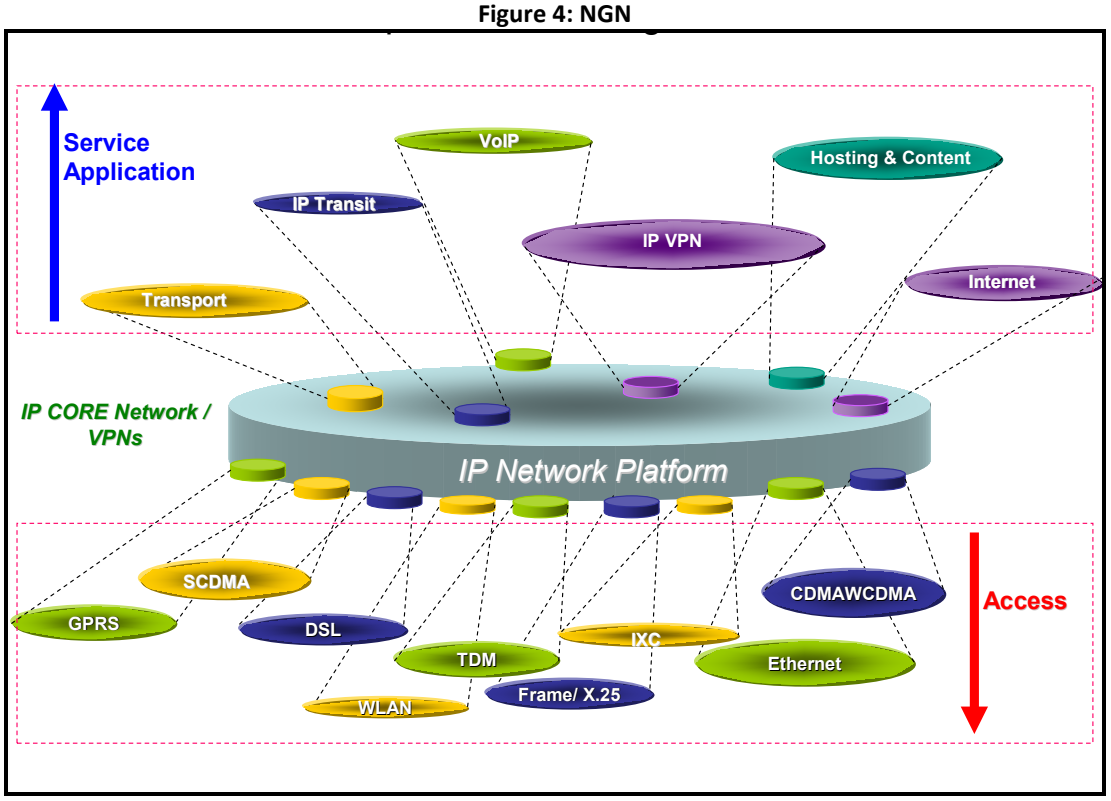
[8] The situation in forestry is almost identical. A first comer to the business will want to own the forest before building a billion-dollar pulp or timber mill. However, when the mill is in operations and the forest in full swing, owning the forest becomes less essential. Provided the mill keeps up to date, offers good service and good prices, it has no fear of competition. Competition will come from remote mills or on the periphery of the business.
[9] See Appendix 2

NGNs

International specialists have confirmed that the Mongolian model will be entirely compatible with Next Generation Networks (NGN)s. NGNs will bring the management of telecommunications networks closer to the management of the internet. Figure 4 shows a diagram of an NGN Network using IP core switching.

NGNs are broadband capable networks, set up to allow transmission of internet protocol (IP) signals that can carry any digitally based telecommunications service to the any final subscriber on any interconnected network.

Figure 4: NGN



Source: Chakrya Moa DDG Telecom Cambodia

As all voice calls transfer to data-based internet protocols (sometimes called Everything on internet protocol - EOIP) they will be a very powerful platform for data transmission. Data will include voice, internet, VOIP and a wide range of new services coming on almost daily.

With NGN's, entry to the telecommunications business will become simply a matter of a contract to plug a new exchange (or one of the new data functions) into the network, much as today we plug a new computer into a LAN. Technology as well as economics is driving the uncoupling the infrastructure from the services.

Our experience in promoting True Open Access Networks has been largely in the relatively small markets of Cambodia, Mongolia, Rwanda and New Zealand. Change is perhaps easier in a smaller society with less institutional inertia. However, NGNs are not far off and big countries must be ready.

Because of their size the rewards are correspondingly larger in Europe and North America where the need to achieve economic investment and better customer service is even greater.

Similarly, the rewards accruing to the first company to go True Open Access will be correspondingly lager.

The challenge will be to find in each jurisdiction, a company with the vision and business sense to be the first one to open up to its lines to its competitors as a genuine Open Access Network.

Conclusion

Our concern is to apply the lessons of utility reform learned at great cost over the last twenty years. We first proposed structural separation as a way of simplifying regulation to match the regulatory capacity of a post conflict society.

It has also been seen by Mongolia as an answer to efficient investment and consumer welfare across long distances to small communities. We are conscious that small and developing countries cannot waste scarce capital available on unnecessary duplication of facilities.

In our view developed countries can benefit too. Since we began our work there are now working models similar to our ideas in several developed countries. These societies will all benefit from a common data delivery platform.

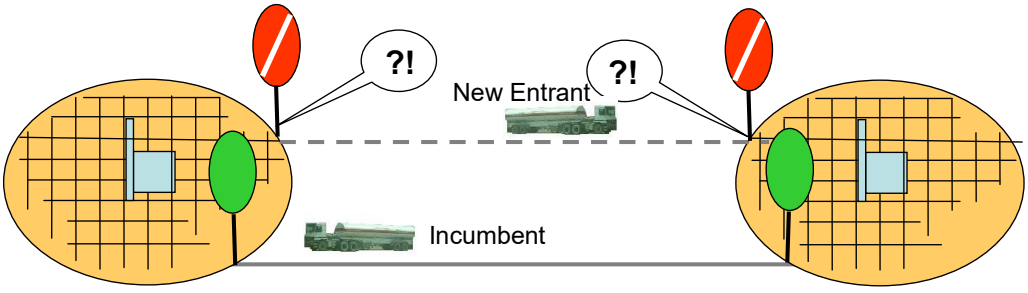
NGNs are but a further push in the same direction. Technology and economics are uniting to deliver efficient investment in infrastructure and to long-term sustainable price discovery.

Our view is that in almost every country, the first company that gains regulatory support to break out of the mould has the opportunity to secure a long-term role as the primary infrastructure manager and to release value from both infrastructure and services.

Competition in Road Transport

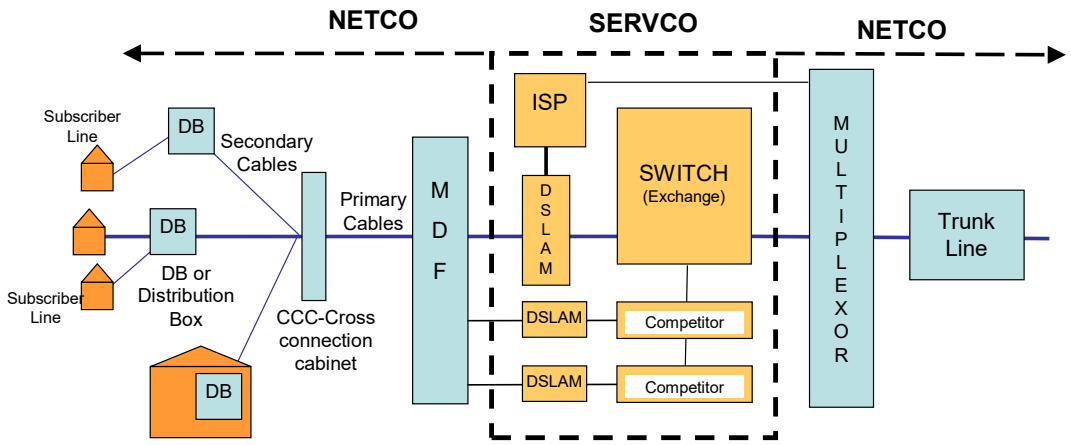
- We hire a truck to carry goods city to city,
- Roads are Open Access
  - **operators have access to main highway and local roads and use them as a platform for competition,**
  - **they pay user fees,**
- If "A" does not provide service customers move to company "B,"
- **"B" is not told: "Build your own Road"**

Apply Telecom Regulation to Roads



- **Incumbent**
  - **currently controls the local loop and the backbone network,**
  - **new companies are told to "build your own road,"**
- **If the new entrant can build a new road, they cannot build their own local loop.**

NETCO – SERVCO Demarcation



Mobile NETCO – SERVCO Demarcation