Information – the ultimate meta-industry

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Only 15 years ago the telecoms industry enjoyed huge profits and massive growth. Today telecoms has become commoditized, and the sector is experiencing the same difficulties the IT industry encountered at least a decade before, but compounded by regulation and fierce competition. The relentless advance of technology has seen almost everything the industry provides devalued to the point where price elasticity has evaporated and customers have become blasé about services and costs.

A telecoms infrastructure can now be provided for communities and countries at <10% of that already established by the incumbents. The introduction of optical fibre, short-range wireless, mobile phones and VOIP has really cut away the underpinning of the industry. So the big question is: what is the telecom sector to do, and where are they to turn for their profits?

The established telecoms industry model is to supply the entire infrastructure, customer equipment and services, and provide all installation, maintenance and support. This is in stark contrast to the world of white and brown goods in the home and office where people purchase washing machines, tumble driers, microwaves, computers, hi-fi, TV and so on, which they install and maintain themselves. If something goes wrong, the customer calls out an engineer or takes the item for repair and then pays. Interestingly, the sophistication of these appliances and goods now overshadows that of telecom products.

Customers have become sensitized by IT costs that have fallen dramatically, with accelerating performance, year on year. Hard drive storage is now <$1/Gbyte, while RAM is <$50/Gbyte, and machines with clock speeds ~3 GHz are ~$1000. Contrast this with the telephone line and broadband offering kbit/s. Telcos have provided no such advances and supply interfaces and facilities that belong to the Stone Age. Customers accustomed to the

complexity of Windows, camcorders and DVDs have been seduced by low-cost systems that they control. Not surprising they baulk at telecom prices when the products are so blatantly simple.

Customers now value mobility, control and self-determination beyond almost anything and it is not unusual to see people making an expensive mobile phone call while standing at the side of a fixed-line phone. Add to these woes the onset of Wi-Fi and VOIP and we have a cauldron of discontent. Customers are looking for a far higher value add, in zero time, under their direct control, at a low price. In the case of the mobile phone, it is the advantage of being able to communicate anywhere with a device that is truly personal, and that stores all contact numbers that would otherwise have to be written down or memorized. And the inclusion of cameras, MP3 players and increasingly intelligent facilities only makes them more attractive.

Despite the public optimism, the telecoms industry is steeped in despair. Will they go the same way as agriculture, textiles and steel? Without a doubt – yes. The unfortunate truth is that they have wasted 20 years and more money avoiding the installation of optical fibre in the local loop than they would have spent deploying it! And now they have rapidly shrinking revenues and rising costs, with no money to do the job. Even worse, this is at a time when customer frustration has prompted a revolution of DIY networks across dispersed communities. So is there an economic way out for telecoms? I think so!

The first question to ask is, where is the money? This turns out to be remarkably simple to answer – just look at the phone bill, asset register and other publicly available data and it is easy to assess the number of $\$/m^2$ in a given neighbourhood. Most likely, optical fibre will be close by. In the UK, for example, 90% of the population live within 1 km of unused fibre, and over 90% of that fibre is still unused. So, supplying fibre to single, or clustered, high net worth households/companies is easy and costs in. Providing fibre or wireless spurs to the surrounding population now becomes low cost too. Having established a significant bandwidth pipe to these customers, and I am talking >100 Mbit and not a DSL-bit dribble, there is now just one key question: what will the customer buy?

At this point it is worth asking what people value and where opportunity might lie. If a property is burgled or burnt down, people are not generally as upset about the loss of goods compared to the loss of business records, and photographs of weddings and children. It is the irreplaceable and emotional bits that hurt! So here is an opportunity to provide a secure networked environment for people's most valued possession – their life bits. If merely plugging in a computer, a camera or any other device ensured that all the data was backed up into a network to be retrievable forever, it would be a service that would pay.

There is an a priori case with white and brown goods: companies make no profit on the sell and pick-up price – the real profit comes from the extended warranty of 2 to 5 years. This is a really smart move as the mean time between purchase and failure is generally ~7+ years, and the likelihood of a claim is slight. For telecoms the situation is more positive, as the loss of our life bits is more likely and evident.

The real money in telecoms is in the meta-information about us and our lives. It is in the information about the information. People will pay more to find something than they will for the intended purchase. Don't believe me? Watch people shopping in the high street, or on the net. The search-and-find operation often costs more than the goods. In a busy world, where time is scarce, people will pay to find things, to save time. Call records, billing, geographic movement and embedded data hold the nuggets of information that allow the pre-tailoring and customization of services for individuals and companies.

Finding people, friends, family and acquaintances can be extremely difficult as they move job and/or country, or become separated by many years. Telecoms can generally track them down with ease, but it is not a service that is provided. When we are at home and our children and their grandparents are out, it would be useful to know where they are and if they have deviated from pre-designated routings or locations. The fixed and mobile operators have the technology to do this, but don't offer such a service. When burglaries and other crimes are committed they often form patterns that can be established and tracked in real time, through the logging and serialization of burglar alarms and camera feeds. Again, such a service is not available. When driving on a freeway, traffic sensors know there is a jam or accident in 12 km, but the GPS never directs you to exits or plans an alternative route.

In an ideal future the really smart network will know who, what and where we are, where we have been and where we are going. It will know what devices we have, the applications we use and our usage patterns. It will be part of an anticipatory support system that will ensure we have a workable schedule, never get lost, keep on track and can access all the information and support we need, and ensure that nothing is ever lost. In the biological sense, it will become the nervous system of our lives and the planet. And, like any nervous system, it will become an essential to life support. The rise of healthcare demand will necessitate the roll-out of virtualized treatment centres and machines. In experiments we already see the deaf, blind, paralysed and heart-, lung- and brain-impaired involved in electronic trials. Virtual, augmented reality and tele-presence examination, consultancy, treatment and surgery have all been proven possibilities in trials. All require extreme reliability of connection and multiple-networked participants beyond the capability of today's phone network and Internet.

Then, of course, there is the provision of entertainment services: music, movies, games and gambling, where a partnership between telecoms and the product supplier would be a marriage made in heaven. Not to mention virtual tours, concerts … the list goes on. But couldn't all of this be provided at the periphery of the network and by-pass the Telcos? Yes, of course! *But*, only the network operators have the ability to do all of it, only they have access to all our life bits at the same time. And this is where the kernel of business growth lies.

In the cycle of short-term change, Telcos could profit by looking to the support of customer-provided equipments and nets. Network-centric firewall and virus protection is an attractive starting area almost totally neglected by individuals and companies. In addition, the broad area of network security is easy for a remote operator to undertake. It has all happened before! In the 1950s, US communities installed their own Community Antenna TV systems. Thirty years on, they became a big business – CABLE. The hole in the market today is for the remote monitoring and support of networks spanning 1–1000 PC + scanner + printer + camera. Tomorrow, this will expand to white and brown goods too.

If we are to realize a Captain Kirk world of supportive intelligence and services, where we can wear little or no technology and access anything and everything on any computer anywhere, by voice or finger, after being automatically scanned, recognized and certified, our networks have to become far more intelligent. Network intelligence started with us; and was then transferred to the switch; it then migrated to our peripheral PC, laptop, PDA and mobile phone; and in the next phase networks will have to get smarter again – in a distributed manner!

There is no limit to the number of imaginative new services that can be dreamt up and could be provided. But if Telcos do not rise to the opportunities, I fear they will go the same way as the canal operators of 17th/18th-century England, who asked of the railway operators, "Why would coal want to travel at 60 miles an hour?"

Cochrane's new book
http://www.wiley.com/WileyCDA/WileyTitle/productCd-184112477X.html

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