
Chapter 13: NGN Strategies for Incumbents

Rents and the value net

In the textbook case of perfectly competitive markets, it is said that economic profits are bid away to zero. A generation of students were then deeply perplexed, believing that they were being told that there were no profits in competitive markets. Not so fast!

As a company, you can buy capital on the market. The cost of capital is what it costs to service the debt. If you succeed in developing your business so that your profits exceed your costs of capital, then you are making economic profits. For example, suppose you have developed the idea for an Internet TV device which connects to your TV at home and allows your local stations to be viewed by yourself on your laptop, wherever in the world you happen to be, provided you can connect to the Internet. A device like this exists and is called a 'slingbox'.

You happen to have \$1 million to create a business to make and sell these boxes. The product proves to be wildly popular, and you make a profit of \$120,000. At least, that's what your accountant tells you. However, if that \$1 million had simply been invested in the bank for a year, then it would have made (say) a 5% return, yielding \$50,000. The economic profit measures the return you get over and above the best alternative you could have chosen, (the opportunity cost you have incurred), and so is only \$70,000. Economic profits are always less than accountancy profits.

The textbooks are telling you that you do not make *economic* profits in perfectly competitive markets, they are bid away by new entrants and the increased competition - you will make returns which are commensurate with putting your money in the bank. If the competitive market is risky, then your expected returns will be equal to bank deposit returns suitably risk-adjusted - multiply the amount expected to be returned by the probability of getting it.

To make economic profits, the enterprise you invest in must have market power. Then, if successful, it can deliver higher real returns than the bank. This is a property of successful patent-holders, monopolies and usually of oligopolies.

That is why it is true that all companies secretly wish to be monopolies, and merely pay PR lip service to competition. It is therefore the objective of business strategy to guide a company to a place where it will have market power, and will therefore make economic profits [1].

The other, and related concept we need is that of rent ([2] p. 284). Again, the economists do it differently. For most people, rent is what they pay to their landlord. For the economist, a company (or individual) obtains rent whenever it can charge more for its product than the lowest price at which it would be prepared to do business.

A classic example is a talented sports person or performing artist. As they develop their skills, they become more and more valuable to their team or recording studio. Initially, their organisation gets the benefit in increased sales. But the talented person is a scarce factor of production and cannot easily be replicated! They are therefore in a position to extract rents from their employers. So we see sport stars charging economic rent as they auction themselves on the transfer market. Entertainment stars rage about their restrictive contracts, which do not allow them to charge the rents which they now feel entitled to.

Rents are also seen in inter-business transactions. For example, suppose the Alpha corporation sells broadband lines on the retail market expensively at \$50 per month. It can do this because it has monopoly ownership of the access network, and therefore controls a scarce resource which its residential customers are prepared to pay for at that price (those of them who can afford it). Alpha currently charges a very high wholesale price of \$45 per month to other ISPs, which makes it uneconomic for them to enter the broadband retail market. The regulator now proposes to set the wholesale price for the product of \$20 per month, the estimated long-run incremental cost to provide. If enacted, the intent is that a competitive retail market would then develop around a price converging to \$20 plus a small amount extra covering sales, marketing and support costs.

Incidentally, Alpha is using a tactic here which regulators call the 'vertical price squeeze', whereby an operator with significant market power can raise its wholesale price to its competitors while capping its own retail price. The operator internally balances its books by revenue transfer or by being vertically-integrated and not caring, while its competitors' margins are squeezed or eliminated.

The Alpha corporation currently makes wholesale rents of around \$25 per line per month, (\$45 - \$20) from any ISP trying to compete with it through its exclusive control of the supply of broadband, rents which it would lose in a regulated market. It therefore lobbies hard with the Government against this

regulatory proposal. Unsurprisingly, this kind of thing is called ‘rent-seeking behaviour’ and public welfare economists tend to frown upon it as it appears to replace investment for genuine innovation with the mere buying of influence to suppress competition.

These concepts have particular force in a value chain, or value network [3]. To deliver the final product to the customer, a number of stages of production are involved, in which different players are linked via market relationships. Some of these players may have significant market power, and will try to use this to extract rents from their partners. In some cases, rent-seeking behaviour will be the catalyst of forwards or backwards integration. A classic case is provided by current developments with the Internet as we will see next.

Rent-seeking behaviour in the Internet

Figure 1 shows the value net for content providers such as Google and Yahoo!, Internet platform providers such as AT&T and Verizon, and broadband customers. How does it work?

As a broadband customer, you pay your monthly subscription for Internet access, and all or most of this fee goes to the provider of the access/core IP transport facilities. In North America, this would be AT&T, Verizon and other carriers with access networks. Internet companies such as Google and Yahoo! need to connect their servers to the Internet, and therefore need to buy high-speed access pipes. Suppose for the sake of argument they intend to buy them from AT&T or Verizon.

Consumer broadband access rates are set either by the market, or more frequently in a process which includes regulation, because companies with access networks tend to have significant market power. Internet access for large companies is a considerably more competitive market, as they buy dedicated fibre links to one or more of the many carriers with high-speed backbones, interconnected to form the public Internet.

However, laid over the market for Internet access is a market for Internet *services*. Google and Yahoo! are very successful businesses. They attract millions of people to their sites, and these visits can be monetised either directly (Yahoo!, for example, sells services such as premium web hosting and email) or through advertisements. Advertisers will pay to have access to so many visitors, and the contextual nature of the web allows advertisements to be more targeted, and so more valuable.

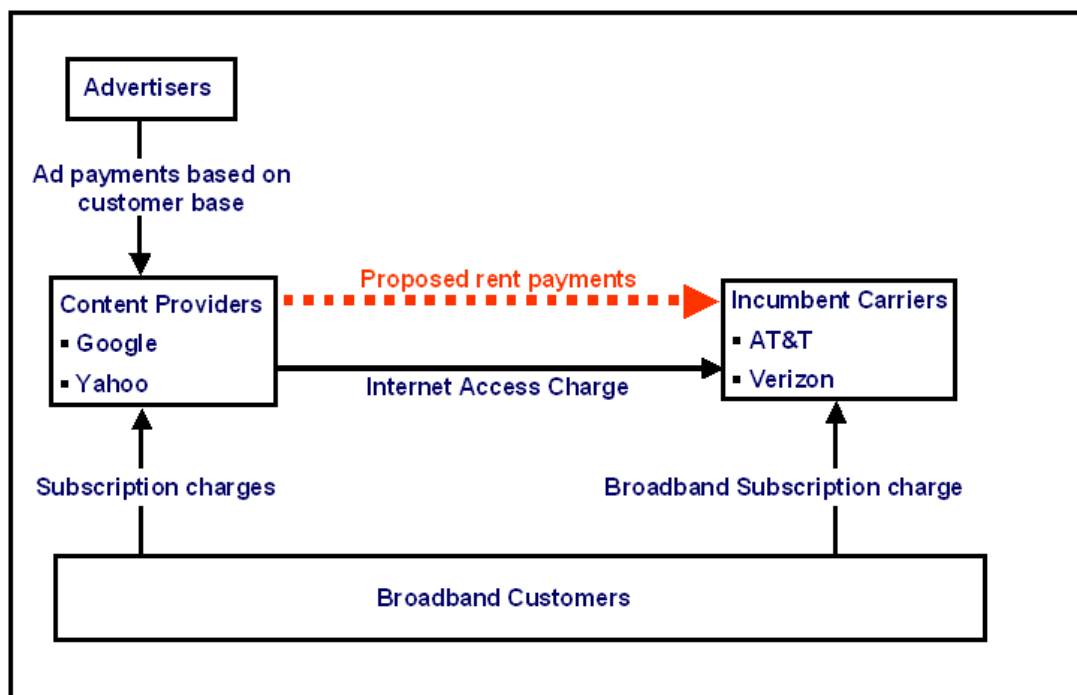


Figure 1. Rent-seeking behaviour on the Internet

So figure 1 is really illustrating two value networks: one for Internet access and another for Internet services. They come together because Google and Yahoo! cannot provide their services without Internet access, and this provides incumbent carriers with a gate-keeping opportunity. As owners of a scarce resource (their consumer broadband access networks), they have the opportunity to charge rents. How do they propose to do so? Actually, carriers have a number of different options at their disposal. They could simply try to price discriminate on a per-customer basis. So ‘rich clients’ trying to connect to their networks would simply be forced to pay more. This kind of extortion brought about the ‘common carriage’ regulations when it was tried by freight companies in the nineteenth century, and it is likely that regulators would be equally harsh today. Or they could simply increase the costs of high-capacity Internet connections disproportionately. However, both these tactics are vulnerable to regulation and competition: there is a more subtle tactic.

At the moment, everyone who connects to the Internet gets a single 'best effort' service, but, due to the massive investment in Internet infrastructure back in 1999-2001, this 'best effort' is actually pretty good. "Too good", the carriers say, as they look for opportunities to segregate traffic into different service classes. The carriers say they will not actively *damage* anyone's traffic as they introduce superior classes of service at various price-points. To admit to anything different of course would be to positively invite regulation.

However, a superior service class *has* to buy something extra, so the most likely scenario is that the carriers will slowly permit utilisation levels on the Internet to rise until the resulting congestion separates out an increasingly tardy 'best-effort' experience from superior 'gold', 'silver' and 'bronze' services.

Suppose AT&T try this. Google says “Fine. We’ll buy our Internet access from one of your competitors who will give us an acceptable best effort service at a competitive rate.”

But AT&T has market power. Much of Google’s traffic transits AT&T’s network, or ends up with AT&T’s own broadband customers. AT&T will therefore develop the following policy. On its own network it will institute different classes of service, which will have measurably different performance against standard latency, jitter and packet-loss metrics. Each service class will have SLAs, and best effort will not be very good. AT&T will then charge its peering partners and connected networks extra to carry any of their incoming IP traffic marked with elevated classes of service.

Suppose Google ended up with a competitive backbone carrier we will call Xcom, who are still on the old agenda of selling best-effort traffic at competitive rates. As soon as Xcom hands best-effort traffic off to AT&T, the quality drops precipitously. AT&T’s broadband customers get a very poor Google experience. How happy does that make Google and its advertisers? Xcom had better start marking its traffic and pay AT&T what it wants if Google’s traffic is going to have a prayer of end-to-end quality. And how will Xcom then get its money back?

AT&T’s market power resides in the fact that its local access monopoly makes it hard for its customers to switch to another supplier of broadband. Clearly any company merely reselling A&T’s broadband service would be at the mercy of AT&T policy here as well, unless regulation was extensive.

The bottom line is that the Internet is finally working as a services platform and real money is being made. The carriers are in a position to charge economic rents for their carriage services, and finally they have a motive to do so - there is money to be made. Their extensive investments in new access networks are real (although they are not doing it to give Google et al. any favours - see below) and these will result in more competition in the wider triple play space, so this is a good argument to use with the regulators. So are the carriers justified therefore in violating the principles of common carriage and net neutrality?

Now, there is nothing wrong in principle with offering a portfolio of products at different price points - train and airline operators do this all the time with their first and second class tickets. The problem is monopolistic pricing - the exploitation of market power.

The best antidote to monopolistic practices is competition rather than regulation. Recall that the key bottleneck is the broadband access network (there is plenty of fibre backbone out there). If the wholesale price of the access network was held low by regulation, then Xcom, in the example above, could just go round AT&T and offer an end-to-end service at rates below AT&T's proposed new prices - the power to extract rents would be broken. This is unlikely to occur, however, because AT&T, Verizon et al will not invest in the new access networks unless they get some guarantees that they will be free of such regulation - and they have a point, the new service revenues which would justify these investments are still speculative.

Another alternative is new wireless access networks, WiFi and WiMAX, where costs can be shared, perhaps, with municipal authorities. Google, for example, appears to be buying up dark fibre and is investing in municipal WiFi networks in North America. It is also investing in broadband access through electric power lines. This is a classic example of forward integration by a content provider into the carrier space to avoid being 'held-up' by incumbents bent on extracting rents.

Reasons for access network investment

Carriers worldwide are investing heavily in upgrading their access networks to support higher bandwidth services. Some are very expensively taking fibre all the way to the home, others are taking fibre to distribution points very close to groups of homes, and then connecting to short copper loops into individual houses, on which they can run VDSL at rates up to 100 Mbps.

The dominant rationale for this carrier investment is competition from cable and satellite companies who today monopolise revenues streams associated with TV content, and who are increasingly expanding into the triple play portfolio of TV, high-speed Internet access and voice services. With their new access infrastructures, the carriers hope they can match, and perhaps even exceed the capabilities of their competitors' networks. However, the future market success of carrier triple play services is far from assured, as we will see in chapter 15.

A 21st Century Network

It is not just the access networks which are receiving major investment. Across the world, carriers are contemplating the replacement of their existing voice, leased line and data networks by an IP/MPLS platform with SIP-based session services layered on top. BT was the first incumbent carrier to commit to a complete transformation programme with its '21st Century Network' (21CN). A schematic architecture of 21CN is shown in figure 2.

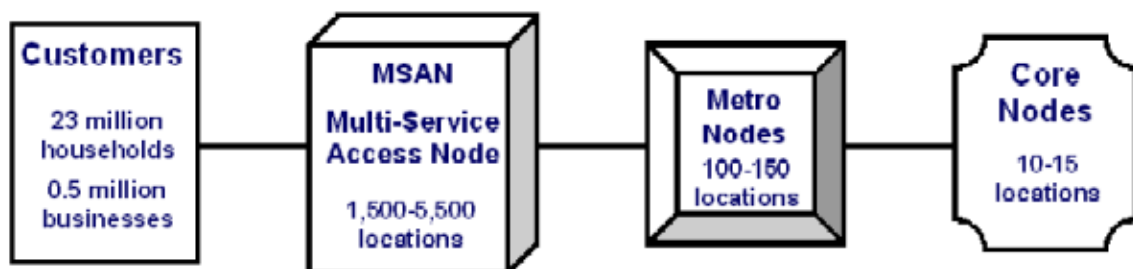


Figure 2: Schematic view of BT's 21st Century Network architecture

Like most carriers, BT offers a wide range of consumer and business voice and data products including:

- Switched voice (POTS) and premium voice services
- Transmission services (64 kbps - 2.5 Gbps: fibre, with some copper)
- Data services (X.25, Frame Relay, ATM - on copper and fibre)
- IP services (Broadband over copper, fibre, Internet, VPN).

These are today supplied by a number of separate physical networks, The basic approach of 21CN is to retire these separate networks, replacing them with one unified IP/MPLS network (although BT is pushing hard on new Ethernet standards such as PBT, discussed in chapter 2, which could allow Ethernet to replace MPLS).

The product portfolio will also be developed, with so-called 'new wave' services being introduced, but BT sees a need to retain many legacy services for a period. That means that these will somehow have to be adapted at the edge of the new network to be carried across the new core. This adaptation, aggregation and consolidation function is to be carried out by a new kind of device called a Multi-Service Access Node (MSAN) - a functionally-extended version of today's Broadband DSLAM (Digital Subscriber Line Access Multiplexer). The MSAN will support the following functions:

- Broadband IP delivery (ADSL2+, SDSL and forward evolution)
- Data services (ATM, Ethernet)
- Analogue and ISDN voice conversion to/from VoIP
- Media and Signaling Gateway
- Low-rate transmission cross-connection
- SDH multiplexing and cross-connection
- Wave-division multiplexing.

The MSAN connects to a Metro Node. In fact there is quite a large fan-in from hundreds of MSANs, some daisy-chained, into one Metro Node. If the MSAN is a multi-service layer-2 traffic adaptation and aggregation point, then the Metro Node is where the heavy lifting on service processing occurs. The functions here include:

- Routing (Internet traffic) and GGSN (mobile routing)
- IP VPN Provider Edge VRF functions
- Firewall, NAT and security
- BRAS functionality for Broadband connection management
- Bandwidth management (policy enforcement)
- VoIP media and signalling gateway functions
- Layer 2 switching (Frame Relay, ATM, Ethernet)
- Cross-connection (PDH, SDH)
- Optical cross-connection.

The Metro Node manages the following service adaptations:

- Analogue/ISDN voice is converted to VoIP (also an MSAN function).
- PDH/SDH services are encapsulated within MPLS pseudowires.
- Frame Relay and ATM are encapsulated within MPLS pseudowires.

The Metro Node is also BT's preferred location for interconnect with other carriers.

Long distance traffic is forwarded to the high-performance core. BT envisages 10-15 core nodes, containing very large routers specialised for brute-force forwarding, the so-called 'P' routers in the RFC 2547 architecture. These core routers will also be positioned at Metro Nodes. The core will also comprise switching at the optical layer, and for a certain period SDH cross-connection (VC-4 level) while SDH remains in the network.

Above the transport layer just described, BT will implement further functions:

- Session signalling
- Security
- Authentication, authorisation and accounting (AAA)
- Application services based on Java EE/.NET
- Bandwidth management and QoS assurance
- Billing
- Re-engineered BSS and OSS.

IMS provides standard interfaces and functional components for most of the above.

The carrier concept of the next-generation network is being standardised in bodies such as the ETSI TISPAN group which will flow into a global ITU-T process. The NGN specification will go through a series of releases in which different NGN sub-systems will be standardised. These include

- Network Attachment Subsystem (NASS) - IP address allocation, AAA functions, and location management at layer 3.
- Resource and Admission Control Subsystem (RACS) for call admission control and bandwidth management
- The IMS itself (IP Multimedia Subsystem) enhanced for DSL, WiFi, WiMAX.
- A PSTN/ISDN emulation subsystem, permitting TDM equipment replacement, while keeping legacy terminals in place.

See portal.etsi.org/tispan/ for more details.

Assessing the Programme

BT have claimed that 21CN will deliver both enormous cost-savings and the most advanced network in the world for new services. They point to the consolidation of equipment, the simplification resulting from the removal of numerous legacy networks, and the flexibility and degree of automation enabled by 21CN.

Critics have pointed out that 21CN is pushing the state-of-the-art in a number of key areas. In some key layers, such as legacy service adaptation to MPLS, only IETF Internet drafts have been available and BT's requirements have been a significant driver. Might it not have been better to wait a couple of years, they ask, for standards to mature?

I was interested in Bob Partridge's view. Bob was a colleague of mine at the Mentor consultancy, and had previously worked for BT as Director, Network Policy, Planning & Performance. Back in 2001, when BT were first considering a fundamental network transformation, they had turned to Mentor and Bob to produce the initial concept and plan. I asked him what he thought of the way BT were going about their next-generation network transition programme.

“The last really big replacement programme BT did was the analogue-to-digital switch conversion. This was when they threw out their old Strowger, Crossbar and Reed Electronic analogue switches and put in the new digital System-X and AXE10 switches. The last Strowger was replaced in June 1995 and the analogue replacement programme completed in March 1998.

“Once a factory-like process was going, BT was able to modernise four exchanges per day, achieving a peak of around 3m lines of replacement per annum. However, establishing such a factory process took considerable time as techniques and tools were streamlined and improved to increase the cutover rate.

“A key feature of the analogue-to-digital conversion was that all customers saw massive immediate improvement in their service with touch tone signalling, reduced line noise, shorter post-dialling delay and the availability of supplementary services. All these are now taken for granted but 21CN does not appear to offer any similar direct customer improvements, merely a promise of new, as yet undefined, services.

“The new digital exchanges were complemented by a completely new operations support system which has subsequently been developed over the years with links to the CRM and other systems to provide a high degree of automation of basic functions like number allocation, service initiation and line test.

“The operational and changeover challenges faced by 21CN are therefore very different to those faced in the analogue to digital conversion, with many more internal system interfaces and processes to be accommodated. Additionally, much more complex and larger scale interconnection with other carriers has to be handled and this presents a commercial as well as technical minefield for BT. “

“Are you saying that 21CN is too forced?” I asked.

“Well, BT talk about 21CN as their passport to a world of ‘new wave’ service revenues and lower operational costs. But a large part of the reason for urgency is the desire to cut operating costs by reducing the number of discrete networks (e.g. ATM, Frame, Digital Switch, Private Circuit), which each carry their own support contract, maintenance, spares, repair, OSS and inventory management costs.

“Although their existing digital switch infrastructure is considered obsolescent with suppliers not wanting to continue to support it, it remains very reliable. Inevitably it will start to suffer increasing levels of hardware failures, but predicting when this will become a major liability is difficult.

“Our recommendation in the study we did was to adopt a phased approach, concentrating on the most commercially critical areas first and milking the digital exchange asset base for as long as possible in the other areas. However, BT was not enthusiastic about operating parallel legacy voice and new networks for any length of time, so they decided to go for broke with the shortest inter-max period.”

“Inter-max?” I had not met the term before.

“Inter-max is the period when BT would be paying to operate both legacy networks and the new network in parallel. They would have the workload of running the business on the old networks, whilst building and transferring customers to the new one. It is the maximum cost period which occurs until all the legacy is closed and the benefits of cost reduction can be taken.”

“So do you think the cost savings will materialise as BT have argued?”

“I would love to see their current business case! You have to remember that there is little scope for savings on duct, fibre and copper, and for various reasons neither is the scope for economies in buildings and other physical facilities enormous. Many of the digital switches are significantly depreciated and their general maintenance costs are quite low. Additionally, there are all the DSLAMs they have put in as part of the Broadband rollout. These are mostly very new, but they are not conformant to the 21CN MSAN requirements. They don’t support VoIP and Media Gateway functions, for example. Are they going to put them all in the skip?”

“Well, I guess not. What about other carriers in the UK, do you think they will all make a similar transition to next-generation networks?”

“Their first major problem is that they are cash-strapped and their network cost reduction opportunities are so much less than BT’s because they don’t have so much legacy or geographic coverage.

“Secondly, the new revenue implications of NGN are not particularly attractive. For example, for a major customer, it is unlikely that an all-IP tailored network solution will generate as much revenue as, say, a legacy package comprising discrete frame, private circuit and ATM products. Potential new incremental revenue also looks to be thin on the ground and the current vicious price competition seems unlikely to disappear.

“Thirdly, many of the alternative carriers have been unable to invest as much as they wanted to keep their existing systems and processes effective and efficient. To gain full benefit from the NGN transition they would need to radically overhaul their associated processes and systems just as BT are doing. Inevitably this will take considerable time and money and as a result, despite the need, the NGN business case is unlikely to be really compelling.

“Finally, consider interconnect. For every non-BT carrier, a major part of their business is interconnection with BT. Most of the traffic they carry will originate or terminate on BT’s network. This is due to BT’s sheer market penetration. Most competing carriers have tried to connect to BT as low as possible in the switch hierarchy - at local exchanges rather than at the transit layer - thus minimising BT’s backhaul charges. You end up with hundreds of interconnect points, though.”

“So will 21CN change things?”

“Well, our recommendation to BT for NGN was interconnection at as few locations as possible to try and reduce the costs of managing hundreds of points of interconnect. They eventually opted for interconnection at the Metro Nodes which are where the large Provider Edge routers are placed, and where they have scale and functionality to provide secure interconnection.”

I nodded to myself. The problems of interconnect in a next-generation network are complex, spawning a new industry of ‘Session Border Controllers’ managing firewall functions, protocol conversion, session proxying and topology-hiding. Add in the billing, surveillance and performance management functions and this was not a constellation of functionality you would wish to replicate too widely.

“Finally, Bob, what do you think the big issues will be for BT over the coming years of the programme?”

“I have no doubt that BT will get 21CN to work. There may be issues of standards maturity, timing, operational problems and payback period, but there seem to be no obvious mega show-stoppers. I also think that they will have their fair share of issues on security, authentication and authorisation for the emerging new services. This is very much unknown territory on the scale BT is attempting. It will also be interesting to look at their billing strategy, especially for voice. They are haemorrhaging voice revenues to the service providers like Tesco and Carphone Warehouse and to the mobile companies: I wonder whether the ‘new wave’ services can possibly compensate and I wonder how they can survive as a major player without a large scale mobile business.”

I then asked about NGN scale issues: “People argue that the transition to a next-generation network involves an enormous one-time capital cost, perhaps beyond the abilities of any carrier in the UK apart from BT. But why would this be true? Surely, it’s just a matter of extending the IP network - which all carriers have anyway - and simply buying new technologies like IMS, as they come along, as part of normal CAPEX?”

“That might be true for a genuinely new carrier, one without legacy, but most current alt-net carriers are struggling already. The problem is that running a truly national network with a minimum of useful services while retaining enough financial resources to innovate is so expensive that a country of 50 million people can probably support only one such player. Even the United States seems to be emerging as a duopoly, with AT&T squaring up against Verizon. Admittedly they have the new-look cable companies as competitors.

“Logically Europe does have the market size to support genuine competition between viable players, perhaps France Telecom, Deutsche Telekom and BT, with Telefonica in there somewhere. However, the constraints of ‘National Champions’, national security, and civil-service style employee contracts act strongly against consolidation.”

The business case for a next-generation network

I had met Mick Reeve, BT’s chief architect, at various events over the last few years. We had attended the odd conference together, and participated in negotiations between BT and Cable & Wireless back in 2002. Mick’s responsibilities in BT included 21CN and I was interested in his views on the business case for NGNs. Mick started with his views on services pricing.

"Everyone is facing a tough dilemma on 'new wave' services. Take SMS, the 'short message service'. This is a significant revenue stream for the mobile guys who make, say, 10p (18 cents) for sending only a few hundred bytes. VoIP is, say, a megabyte every two minutes, while sending MPEG-4 video is around 15 Megabytes per minute. If we charged people by bandwidth at the SMS rate, then a 2 hour video would cost £600,000 (about \$1 million). Not many takers!"

I recalled that one of the stated drivers for IMS was the ability to link sophisticated charging mechanisms to service management, so that charges could relate directly to services, not to bandwidth or bits per second. Mick supported that but pointed out a caveat.

"This works provided we do charge for the service and don't end up providing the bandwidth in a way that it could be re-used for lower bit-rate services. That is essentially why you see the great debates on net-neutrality right now."

What about business models? Did Mick accept that the fate of carriers was, over time, to be relegated to pure bit carriers, a utility business, while the real margins were made by systems integrators in the business space, and content providers in the consumer space?

“I think the value chain is a bit more complicated than that, and also rather service dependent. Take the speaking clock - an example you may think is amusing, or even frivolous. Over the years you would be surprised at how much that has paid for in BT. So with the speaking clock, we are the content provider, but that won’t be the norm going forwards. There will be a business model where we do everything for the content provider bar providing the content. We will provide the platform, the ingestion, play-out and

management systems, and the billing. And then there is a further business model where the content platform is provided by our upstream customer, and we provide the transport network.”

“And the NGN provides you with the capabilities for each and every one of those business models?”

“Exactly! But I would take issue with you that all the value is in content, and everything else is just a utility business. That’s certainly the talk at the moment, but the historical evidence is against it. I think you will find that in a steady-state situation, revenues for two-way session services will be three to four times the size of pure content revenues [4]. Don’t write us off yet!”

This, of course, is the key contribution which IMS is meant to make in the next-generation network. People think IMS is mostly about person-to-person services such as video-telephony and push-to-talk, but IMS could equally well be the selection, session-management and charging engine for a video-on-demand service. This could be a powerful package to offer the content-aggregation sector, particularly if there was a way to tie a conditional access system into IMS (chapter 3).

Mick was keen to move the discussion to the access network.

“The future is clearly fibre to the home, or fibre to the curb and then VDSL to the home. This would then give us dedicated two-way bandwidth into each home at speeds in excess of 100 Mbps. None of our competitors could match it. The cable companies have the benefit of coax to the home, which gives them an initial bandwidth advantage, but it’s shared, so sooner or later we could beat them.

“In fact - personal opinion - what would really help us are some very popular, very high-bandwidth two-way services which people would leave on all day.”

“You mean, like the science-fiction idea of ‘soft-walls’, or picture walls which are showing an audio-visual scene piped in from a long way away? Maybe that Hawaiian beach?”

“Perhaps, if it was sufficiently personalised. That would certainly play to our strengths, and would not be easy for our cable and satellite competitors to replicate!”

I wondered if pushing fibre deep into the access network was finally becoming affordable.

“Not at current prices. There’s an old network planning rule of thumb which says that the network cost is 20% in the core, 30% in the OSS and 50% in the access. If we just rely on current broadband prices to fund it, it will never happen, or at best take a long time.

“This explains why AT&T and Verizon are pushing so hard to charge for the value-added services enabled by their new network builds. They really have no alternative to trying to ‘internalise the positive network externalities’. And if people like Google and Yahoo! think that it’s so easy to develop an alternative end-to-end network, then they should reflect on that 20 - 30 - 50 ratio. Buying up fibre in the backbone is not so hard: the real expense is duplicating an access network, and the cost factors are much the same whether it’s fibre or wireless.”

I asked Mick whether he was optimistic or pessimistic about the impact of NGN on BT.

“Completely optimistic. It will certainly lower our costs, but the main thing is that it allows us to engage with many new service providers and service opportunities. We can provide integrated services at many points in the resulting value chains and I am convinced that there’s a lot of value there for us. I already mentioned the various business models the NGN opens up, and the importance of new two-way services. If you want to look at us as a pipes business, then fine! The kinds of pipes the NGN will give us promise a very good business going forwards!”

Conclusions

The next-generation network is usually thought of in terms of its technology and service capabilities. However, from the point of view of business strategy, the relevant context is that of the value net.

The current-generation network predominantly supports business and residential communications services, both fixed and mobile. The next-generation network will both support and extend these communication services within the existing value net, but it will also serve as a new IP-based *content* distribution platform.

This new platform will be contended territory between carriers, and content providers and aggregators such as Internet portals, and satellite and cable companies, who have grown used to the idea that distribution platforms are a subordinate component of the value chain which they can control. The carriers will not wish or expect to be commoditized so easily, as Mick Reeve pointed out. Expect both forward

and backward integration moves to deal with ‘hold-up’ problems and drive innovation, and plenty of attempts to extract rents between the various players.

References.

[1]. Moore, G. A., *Living on the fault line*, revised edition, Collins, 2002.

[2] Kay, J., *The Truth About Markets*, Penguin, 2004.

[3]. Kaplinsky, R, and Morris, M., A handbook of value chain research, Institute of Development Studies, University of Sussex, 2002. <http://www.ids.ac.uk/ids/global/pdfs/VchNov01.pdf>

[4]. Odlyzko, A., Content is not king, *First Monday*, volume 6, number 2 (February 2001).
http://www.firstmonday.org/issues/issue6_2/odlyzko/

Recommended Reading

John Kay’s book ‘The Truth About Markets’ [2] has a detailed discussion about economic rents in chapter 24. Overall, the book emphasises the roles of ‘disciplined pluralism’ and ‘incentive compatibility’ in the operation of effective market economies - broadly speaking, effective competition, and the alignment of agent interests with desired social outcomes. Many of his points illuminate the issues discussed throughout this book: market structure, the problems of effective competition, bureaucratisation and impediments to change.