Ed Richards, Institution of Engineering and Technology Speech, Broadband Britain - Towards the Next Generation, Wednesday 16 April 2008

It's happening in Holland. They are talking about it in Germany. It is underway in Paris and Lyon and in the big American Cities, in much of Japan, Korea, in Hong Kong and in Singapore. It is being piloted by Virgin Media in Ashford and we are told they are rolling out more widely this year and next; BT are bringing it in at Ebbsfleet. And this morning we published proposals to help promote it in new housing and office developments.

The 'it' of course is the deployment of Next Generation, very high bandwidth, super fast access networks, giving people anything from 20 to 100 Mbps and more.

Nielsen's Law, the Bandwidth equivalent of Moore's Law, holds that bandwidth available to the high end customer increases by 50 per cent compound each year, and that the mass market will lag two to three years behind it.

The UK's market-led broadband history matches, almost exactly, that predicted rate of progress. Indeed, most developed European markets broadly follow the path Nielsen predicted. Broadband seems to be one of those rare things that may indeed bear out the saying: 'build it and they will come'.

The big issue, of course, is not 'will they come'? But 'will they pay the toll'?

But if you were to ask me whether in 10 or 15 years' time most developed markets will have very-high bandwidth networks available to many, many households, if not universally: I would say the answer is almost certainly 'yes'.

Super fast broadband – next generation access and networks – are crucial to the UK's future. These networks form part of the critical infrastructure of the country's economy and will be central to the way we live our lives in the future.

I believe that super fast next generation broadband will come to change our perception of communications radically; alongside mobile broadband, they will, in time, have a similar impact upon our society and economy as we have seen with first generation broadband. So we must prepare now.

Clearly one of the biggest issues is the transition over the next few years. It is a question of how, as an industry, we make a paradigm shift. How do we ensure efficient and timely investment alongside competition and choice for the future?

Nielsen's Law holds well in a dial up to LLU environment. But taking next generation access to the mass-market stage requires operators making significant investment in new network deployment.

This is an issue first and foremost for the market, for consumers, for companies and for investors. It is also an issue for the Government - and I warmly welcome the Government's commitment to identify and remove obstacles to next generation networks.

We are delighted to be working closely with Francesco Caio, who is both an experienced businessman and an original thinker. The Caio review will allow us to

ask broader questions which may open up avenues which have hitherto represented obstacles to progress in this area.

But of course it is also a hugely important issue for all of us at Ofcom as well.

The Communications Act charges us with: 'having regard' in performing our main duties, 'to the desirability of encouraging the availability and use of high speed data transfer services throughout the United Kingdom.'

In layman's terms you might take this to mean: "do what you can to help make high speed broadband available and taken up". So in fact, both by duty and by temperament, we are on the side of helping to take things forward.

In doing so, we will need to balance the needs of innovation, investment, competition and the consumer, to all of whom we owe a statutory duty.

We must do so with a real sense of urgency, but not with the kind of undue haste that will lead to mistakes that the UK's citizens and consumers might regret in decades to come.

What I want to do this evening is to summarise what we see as some of the drivers for change to next generation access networks, and the strategic choices and trade-offs that will be involved between those interests of innovation, investment, competition and the consumer.

The drivers of change

In both wireless and fixed-line there are now very significant moves to develop higher and higher bandwidth services. Wireless is, of course, vital for everyone on the move and excellent for nomadic uses.

Technological developments mean that it offers an increasingly attractive alternative not only to fixed voice but also to first generation broadband. Take up of mobile data cards and the bit rates that they deliver is increasingly impressive and will play a more and more important role in the future pattern of connectivity.

It is impossible to separate developments into 'fixed' and 'wireless' as we used to do as if they were unrelated worlds; consumers are increasingly indifferent to that distinction, and packets of data are completely indifferent.

But at present the principal opportunity for what we might call super fast broadband networks will be in fixed line, so it is on fixed line that I will concentrate my remarks tonight.

In the UK today, more than 99 per cent of the population are covered by a broadband-enabled exchange; the highest proportion by some measure of any of the major developed economies. And more than half of all households now have broadband, attracted in part by a fiercely competitive market place.

Speeds are continuing to rise - with typical headline speeds of up to 8 mbps, and prices falling very substantially,

It would be incomplete to leave the story there however. There are also some real challenges to consumer satisfaction.

The evidence, so far, is that this is more to do with the quality of technical help-desk support than with line speeds or usage limits. That may be beginning to change, as more and more users realise that adverts promising ‘up to X’ in headline line-speeds are in fact a far cry from their individual day-to-day experience.

So we would encourage the ISPs to provide more hard information up-front to consumers and is undertaking research which, we hope, will lead to reliable quality of service metrics which will let consumers compare which ISP is most likely to provide the kind of service that consistently matches the individual’s maximum line-speed. In other words a real indicator of quality to complement the more transparent information on price.

The growth in usage of services like the iPlayer is bringing more consumers into contact with their ISP’s policies on restricting bandwidth usage. This is creating tensions with online rebellions against caps and ‘bandwidth throttling’. But in the longer term, it may be that some consumers will be willing to pay a premium for higher download limits and higher speeds.

It is too simplistic to say that these near term capacity and bandwidth constraints arise because we don’t have Next Generation Access. In fact, capacity limitations in backhaul networks may be as significant today. It is fair to say that investment will be needed in all of core, backhaul and access as consumers’ demands on the network expand. But it is the access component of the network where the way ahead is perhaps most challenging.

Technologically, there is still more life left in today’s copper network: ADSL -2, ADSL 2-Plus offer higher and higher speeds. But there are two crucial issues: first, speed over copper degrades rapidly as distance from the exchange increases. This will limit the availability of 10mbps plus speeds probably to between 50 and 60% of the population; speeds significantly over 20 mbps currently require fibre at least to the street cabinet for a clear majority of people. Second, it is still asymmetric; fine today for many uses, but perhaps less so in future with the growth of home working, peer-to-peer traffic and, the needs of small and medium sized businesses.

So, against a backdrop of rising consumer demand and limitations on network capacity to meet that demand, what will it take to persuade industry to make the necessary investment to give the UK fibre access networks and, equally, consumers to pay to justify that investment?

There are both revenue drivers, the creation of new sources of retail and wholesale revenue, and of course scope for cost reduction opportunities.

Let me look at these in turn against international experience.

On the revenue side, there is a range of potential applications. In a number of overseas markets video, including High Definition video, has been seen as one key application that will drive new revenues. In some Far Eastern Markets and in France initial growth in IPTV take-up has been impressive - three quarter of a million users in Hong Kong and over 2 million customers in France.

In the UK, Tiscali and BT among others are putting more than a toe into the water of IPTV.

But what works in one market will not necessarily work in another. Economic conditions differ – customer density in Hong Kong or use of Baron Hausmann's capacious water and sewer network in Paris has reduced the cost to build these networks. Competitive conditions vary too. By comparison with other European markets, the UK multi-channel TV market is already relatively well developed, with established DTT, satellite and cable platforms and nearly 12 million established pay TV subscribers.

As well as new services, operators are experimenting with willingness to pay simply for more bandwidth. Results though are mixed. In the USA, there has been significant interest in Verizon's 20 Mbps symmetric package, even without IPTV applications and despite its premium of $35 a month over copper access. Comcast and Time Warner are experimenting with premiums for use of bandwidth hungry services as well.

But getting customers to pay a premium for something that has been introduced as 'free' or very low cost is a marketeer's nightmare. Most Korea Telecom customers currently remain on their 4mbps service. In Singapore the highest speed SingTel advertises is 10 Mbps. They have ceased to promote their 30 Mbps offering; and in France the fibre access offering is priced at the same level as DSL service. So there are some real challenges on the revenue side.

What of cost savings?

There are three potential sources. First, the capital investment to eke out the copper network's life is no longer needed.

Second, fibre is more reliable than copper, so there should be fewer line faults to repair; and the new network equipment requires fewer expensive manual site visits by engineers.

Third, there are one-off savings from the sale of assets that may no longer be needed.

Indeed these associated cost savings can be very significant indeed. KPN is reducing its workforce by one eighth, with overall Opex savings in excess of £300 million a year. They expect a more than £750 million one-off benefit from the sale of property and other assets no longer needed. Verizon have reported an 80 per cent reduction in failure rates for its fibre access network.

But some caution is due here: first, it is important not to double count opportunities for cost savings. Many of the savings from new electronics and software in some of these examples may already be part of the business case for BT's 21 CN core network upgrade and similar IP network upgrades by competitors in this country. And BT has already taken the benefit of the one-off property sales; its exchanges were covered in a sale and lease-back deal in 2001.

BT, rightly, will do its own assessment of the business case. No doubt there will be some positive items on both the revenue and cost-saving sides of the equation. Uncertainty about the business case for NGA is widely shared by other operators and potential investors.

But as so often when one player kick starts the investment and the competitive position which it enables, then others must or will follow. Here, one large player - Virgin Media – is ahead of the game and has committed to focusing its competitive

positioning on the core characteristics of the cable network itself by offering speeds to residential consumers of up to 50mbps based on further fibre investment deeper into their network.

Other smaller players are also looking at innovative means of fibre deployment and in our consultation we have suggested that, as well as cable, competitive deployment might be expected to involve sub-loop unbundling, that is at the level of the street cabinet, as well as a wholesale 'Active Line Access' product from BT. Shared access to primary infrastructure - ducts and sewers - offers a third potential route to competition.

Duct access is being explored extensively in other markets but in a variety of different contexts and for different purposes. Hitherto the UK industry has expressed limited interest when we have previously raised it.

However, in Paris there is shared duct access to the edge of the apartment blocks, with a well defined reference offer. Spain is similar, though more is left to commercial negotiation. In Germany duct access is seen as a solution to backhaul for sub-loop unbundling. And in the Netherlands, duct access has been available for some years but has been more usually taken up in middle mile backhaul.

One important difference between the UK and some of those other European countries is that, in the latter, at least some of the duct networks are owned by the municipalities, who have an interest in a competitive market and duct rental where practicable for new services for their residents.

In the UK, the ducts are operated by the telcos or the utility companies under way-leaves, so we know that the markets are different, the question is are the incentives different and how significant is that in relation to efficient and timely investment for next generation networks?

In France, our fellow regulator, ARCEP, has stated its intention to use existing powers (powers which we too have) under the European Framework to mandate access to France Telecom's duct network. ARCEP and FT have cooperated on a duct survey which suggests that a remarkably high percentage of ducts - certainly over 50 per cent - could be opened up to competitors' access.

That may not, of course, be the position in the UK. But given the remarkable results from French surveys, we need to establish what the position is here and whether or not duct access has a role to play in the development of competitive next-generation access. So, in cooperation with operators we intend to undertake a sample survey of the existing duct network.

We are well aware that there are significant issues related to this in the broader telecoms market and that careful consideration will need to be given to these, alongside the results of the survey. Clearly, the choice of the remedy can differ here from other EU countries in a way which reflects the different market dynamics and different circumstances. So careful consideration will need to be given to these issues but a duct access survey is an important and timely first step.

And, in collaboration with the Caio Review, we will also be asking whether there is scope to secure commercially viable access for fibre deployment through the primary infrastructure networks of other utilities such as water and energy.

We must be sure we are not missing a big trick here. We know that a lot of the costs for NGA are in the civil engineering and this is civil engineering of a very similar kind.

Let me move now to the range of other strategic choices ahead of us - the trade-offs that will need to be made to secure the best balance of investment, innovation, competition and the consumer interest in the deployment of these networks.

The strategic choices

The first and most fundamental of these choices is how far should the move to next generation access networks be wholly market-led and how far there is a role for government or regulation.

In some Far Eastern markets, there has been substantial direct Government intervention, to help speed the deployment. The deployment is impressive and highly visible. More questionable is whether it has yet been proven to be economically efficient. Our research and discussions with colleagues in East Asia suggest there is exactly the same uncertainty about commercially viable new services on these advanced networks.

In Korea, users in the main remain on DSL speeds. But yet in Japan users are paying DSL prices only - typically £13 a month. Traffic there is growing rapidly, to the point at which the 100 Mbps network is experiencing the same contention ratios as the old DSL network; the traffic driver has been mainly Peer to Peer file sharing.

And in the Korean market, for instance, intervention has not so far delivered the two things which their government explicitly expected of it – a step change in business productivity, and the creation of a vast new Korean after-market of content, devices and applications enabled by these new networks.

That is not to say that it is wrong to ask the question of whether there is a public value over and above the private value alone that the pure market play cannot capture. It is a good question to ask.

This is something that we will need to consider more, especially with our statutory concern for the citizen interest as well as for the consumer. The Broadband Stakeholder's Group is doing work in this area which I hope will illuminate some of these issues; we will take our own view in due course, as no doubt too, will the Government.

The terms for the Caio Review focus primarily on removing potential supply-side obstacles to market investment - whether those be the public sector role in relation to civil works; the treatment of new infrastructure options within the non-domestic rating system; certainty in the wider investment environment and exploration of barriers to collaboration between content providers and network operators which might hinder the development of the most compelling revenue generating propositions for the consumer.

In the USA, by contrast, the focus has been on removing perceived regulatory barriers to investment. This represents a second big strategic choice for the UK – should we insist on competition everywhere or should we follow the Americans and forbear from regulation completely, least in say areas where cable is present?

The US forbearance policy essentially removes access rules requiring incumbents to open up their next generation access networks to other service providers.

The US has certainly seen encouraging levels of deployment of fibre in metropolitan areas. But in mid-town and small-town America, even basic broadband availability appears to still lag other developed countries to the point where there are many concerned Congressional Hearings on that topic.

The question of paying more for better services, whether traffic prioritisation, higher speeds or higher usage limits, has also been caught up in the net neutrality debate in the US. In part this reflects a slightly atavistic sense that the internet ought to be free and egalitarian in all respects. But it is also in part a response of genuine competitive concern about the emerging vertically integrated duopoly in access networks – which is the choice that the FCC, our opposite number in the USA, seems to have made for now.

In Europe we do not have the same limitations on competition. In a more competitive environment, there is less inherent problem with traffic management and prioritisation or with the principle of expecting customers who receive greater benefits to pay more. If network operators get these calculations wrong, consumers will switch to another provider. The shibboleth of net neutrality should not be allowed to become an obstacle or a distraction to investment in next generation networks in the UK.

We need to keep looking at the evidence and balancing the risks on all sides of the argument but from what we have seen so far we remain unpersuaded by a forbearance policy or indeed on the case for major East Asian style government funded roll out.

Indeed, it is worth remembering in setting the terms of reference for the Review of the European Regulatory Framework for telecoms, the European Commission has ruled out the adoption of US-style forbearance and maintained its preference for continuing to promote open and competitive markets.

So far history has been on the side of that approach: it has been competition that has driven innovation and the next stage in service development. It was with the first phase of broadband and it is probable that it will be in this phase as well.

The nature of the transition from copper to fibre is certainly a third strategic choice in which Ofcom is integrally involved. Some of the most bullish assumptions about costs and benefits of next generation deployment rest on an almost overnight transition from copper to fibre. In practice of course that will not happen. Whether it is done as a nationwide overlay network – probably unlikely - or on a more targeted area by area basis, new networks need to be built out before one could even contemplate closing the old ones.

And consumer and competition interests require a period of transition beyond that. No-one would thank us if every consumer was faced with an enforced higher bill for higher bandwidth whether or not they wanted it. A managed migration is needed.

For competition, effective and working wholesale products will be necessary; preferably wholesale products that allow competition at the same or deeper infrastructure level that we see today with LLU. Those in turn will need a period of regulatory certainty to avoid the danger of investment in stranded assets.

Equally, it is not the regulator's job to de-risk investment decisions so far that we sustain inefficient technologies over the medium term.

What I can say today is that we recognise the central importance of the transition issue and we will work swiftly to develop practical and transparent triggers that will allow transition to proceed.

The fourth strategic choice is in how we use regulated prices. We have already made clear that, in so far as components of a next generation access network fall within the basket of regulated assets, we would expect returns to reflect a very different and much greater level of risk than is the case for today's copper network. We fully accept that those who make investments in next generation access need to be sure that they will be able to earn and keep a fair rate of return which reflects the risks they have taken.

The fifth issue is the technology choice. There are essentially four elements in the matrix: fibre to the cabinet or fibre to the home; highly distributed or much less distributed architecture, for example long-range Passive Optical Network (PON) direct from Metro-node to the home; and PON, which may limit scope for unbundling, versus Point to Point approach. Each of these has different implications.

As a regulator, we have no intention of trying to pick winners in that debate. American experience is instructive: two years ago, analysts and the smart money all backed AT&T's strategy of fibre to the cabinet - it was sensible, lower cost, incremental and reflected the uncertainty about demand for higher bandwidth services. By contrast, Verizon's fibre to the home strategy was seen as undesirably risky.

Today, at least some of those same analysts praise Verizon's foresight in future-proofing their network development and criticise AT&T for risking stranded assets when, inevitably, they will have to undertake a future network upgrade. Of course, AT&T and Verizon serve somewhat different customer bases so it may be that different technology strategies may make sense. In any case, two years from now those analysts may have changed their minds yet again.

If the market does not know which end is up, a regulator would have to have extreme hubris to think it knows any better. The one area where regulators do have to look at these technology choices is to assess whether any of them are fundamentally antithetic to competition and that of course we will do.

Conclusion

I hope this has given you some sense of the issues and trade-offs that we have to face. There is no single application, or magic regulatory solution that will guarantee mass deployment and mass migration overnight – unless of course the Government decides it wants to spend many billions on funding roll out which I suspect is very unlikely indeed.

But the direction of travel is clear, towards higher and higher speeds and bandwidths. The questions are 'how?' and 'when?' not 'whether?' In this, market players, the regulator and government all have a part to play.

We are clear that, as regulator, we must be engaged and proactive – which we have been and will continue to be.

Our obligation is to remove as many obstacles as possible to next generation deployment and to ensure that there is a framework against which companies and investors can make decisions that will see next generation access emerge.

We will approach the issue with a sense of urgency but again without losing sight of the need for efficient investment, for competition and above all the consumer's long term interest.

Bear with us if we consult extensively in the months ahead: it is through consultation and people's responses that we will be able to make good judgements on some of these difficult trade-offs. There is no blueprint that tells you how to get this right in any one country – we need to work with many others in the industry and beyond to find our way to the best approach for the UK.

We are keen to secure the right regulatory environment. But remember that, ultimately, the primary investment case for these new networks is one that must be made by the operators and judged in the market.

We have started the journey towards a Britain with super fast broadband. I am confident that in the next few years we will see further deployment and if I am right about the significance of these networks, then in the long run, the momentum will be unstoppable.

Thank you.