



Commission for
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Submissions on Discussion Document

Next Generation Broadband in Ireland

Submissions Received from Respondents

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An Coimisiún um Rialáil Cumarsáide
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1. Alto

ALTO Response to the ComReg discussion document on
Next Generation Broadband in Ireland

ComReg 09/56

ALTO welcomes this consultation / discussion document in relation to Next Generation Broadband in Ireland.

ALTO recognises ComReg's efforts in the facilitation of recent industry groups in relation to the subject of NGN in Ireland, namely the Next Generation Network Industry Steering Group - NISG¹.

During the NISG and the two workshops which were extant under the steering group (namely the NGN Core and NGA groups), ALTO constructed a Statement of Requirements – SOR, which we believe still represents the vast majority of the new entrant industry's interests today and in fact had high level approval or buy-in from Vodafone and O2 at that time.

The SOR covered the following areas:

- Time line and Plan;
- Commercial Model;
- Changes to Existing Services;
- Changes to Infrastructure;
- NGN Voice Services;
- NGN Bitstream;
- Broadcast and Video;
- Delivery Performance;
- Trials;
- Customer Migration; and
- Billing.

ALTO is willing to discuss and re-circulate the SOR at any point and also to have detailed engagements with ComReg in advance of any future industry working group.

ALTO, through its association with ECTA in Brussels has been engaged in various initiatives on the subjects of NGN and NGA and we intend to continue to engage in this fashion both for NGN and NGA framework and policy developments. There are certain obvious aspects of emerging EU NGA modelling and regulatory framework trends which may not be suitable for the Irish market.

ALTO's view is that the ComReg discussion document is transparent and methodical. However, we believe that until some form of: regulatory facilitation; industry intervention; collective engagement; proper planning and the renewed fiscal stability of certain key stakeholders is defined (all of which are the required precursors to the progression of the NGN Broadband debate), the subject may remain in practical abeyance. We recognise this

¹ We also recognise the input of Mr Joe Gantly (who sadly is no longer with us) as NISG Chairman, may he rest in peace.

discussion document is a positive step in facilitating and endeavouring to move the process forward from ComReg's position as a key stakeholder.

ALTO will not address the specific questions in the discussion document 09/56, but instead allow individual members and operators contribute as they deem fit.

ALTO remains committed to assisting ComReg in facilitating competition and development in this area and in the wider market.

21 August 2009

2. BT



BT Communications Ireland Limited Response to ComReg Discussion Document 09/56

Next Generation Broadband in Ireland

Promoting the timely and efficient development of high speed broadband infrastructure and services

1. Introduction

BT welcomes this ComReg discussion document. We agree and advocate the need for serious and considered debate on a subject that will give Ireland the tools it needs in the economy of the future.

The objective has to be the creation of Next Generation Broadband (NGB) that enables Ireland to have a European class digital economy embracing aspects such as; infrastructure, consistent and national availability, e-state and e-citizens, high levels of sustainable competition all overarched by appropriate regulation.

Whilst we agree with much of the debate and analysis in the discussion document we note ComReg's proposed definition NGB is at access speeds above 25Mbit/s which rules out current single pair, as opposed to bonded pair, copper access solutions. We would question whether this approach is entirely helpful in the current economic climate and point to the development of access competition in Ireland.

To date Ireland has experienced relatively low levels of competition in the broadband market with eircom retaining significant retail and wholesale shares. It is generally recognised that innovation comes from competition.

Local Loop Unbundling (LLU) has to date failed to create the impact that it has had on the competitive environment in such countries as Germany, France

and the UK. The reasons why LLU has failed to make peer progress in Ireland are well documented. We believe that with the current substantive price reductions that ComReg has started to announce for LLU the situation could be reversed. Annex A provides some recent public domain observations in this regard.

It would in this context seem inappropriate to appear to rule out enabling NGB opportunities such as LLU and their subsequent evolution to fibre based higher speed opportunities. LLU has in our view a number of years of shelf life and has the opportunity to create high speed broadband opportunities.

We would put forward the view that without a dynamic competitive market then one of the key conditions for the creation of NBN is missing; that is unless the State wishes to be the primary funder.

Such a competitive environment is created through a number of factors; regulation, behaviour of the incumbent and its timeliness, quality and price of wholesale offerings and growth of alternative platforms (cable and wireless).

Modern communications networks are vital to the economic and social well-being of nations in the 21st century. They provide the conditions for countries to be competitive in the global economy and they provide the framework within which competition and innovation can provide customers, both businesses and consumers, with real benefit in terms new services and value for money.

We note that the European Commission concluded the second public consultation on the Recommendation on Next Generation Access regulation.

The Recommendation is to give guidance to National Regulatory Authorities (NRAs) on how to apply existing EU telecoms rules to market reviews in an NGA world. It aims to ensure a consistent approach to remedies, and though not binding, NRAs must take 'utmost account'.

However in our opinion the draft raises a number of concerns and questions, both about the overall direction, and the detail, with its focus on Fibre to the premises (FTTP) and multiple fibre provision.

We note that final adoption will take place towards the end of 2009 or early 2010. BT responded to the formal consultation, supporting more emphasis on active wholesale access remedies, questioning the Commission's belief in infrastructure competition, and calling for a balanced approach to competition and investment.

In addition to the above we would remark that if bottlenecks truly did not exist and if the incumbent were to provide equivalence of inputs then the regulatory aspect of the debate would take on an entirely different light.

All of the above leads one to the conclusion that the ComReg discussion paper is extremely timely and relevant to Ireland.

2. Response to ComReg Questions

We have set out below our response to the ComReg questions raised which we believe provide a good starting point for discussion.

Section 2: Next Generation Broadband – What is it and why does it matter?

Question 1: What speeds and other quality of service parameters will be demanded by businesses and consumers over the next 3 to 5 years? Please explain your reasoning. Do you believe the market itself will deliver these capabilities, and within what timeframe?

BT Response

We attach a summary of current superfast broadband progress by BT in the UK at Annex B. It is worth mentioning that the DETI tender in Northern Ireland guaranteed 2Mbit/s to 85% of rural businesses and 10Mbit/s to 85% of urban business by March 2011. This is on top of the Digital Britain report commitment of 2 Meg to 'virtually' everyone in the UK by 2012.

Speeds and other quality of service parameters for both business and consumer.

Video based services and particularly High Definition Video are the most obvious applications that are likely to drive demand, particularly where the content is owned or controlled by the network operator. There are services we know about today that have the potential to develop and take-off, in which case customer demand for super-fast broadband will grow, potentially very rapidly. History tells us that other services, as yet unknown, will emerge in the future. But even without these new services, there will be growing demands developing from existing services, particularly in competitive markets such that will fuel customer expectations and drive network investment.

To a large degree speed and quality of service parameters are a function of the service applications to which they are put. Business generally requires "business grade" services and quality of service without which they cannot function. Consumers require lesser levels but that is also to a degree influenced by the price that consumers are prepared to pay. It is important to note that at the wholesale level both business grade and consumer grade services and quality of services must be provided if effective competition is to take place.

Consumer - The growing number of internet enabled devices is driving greater and more simultaneous internet use within households e.g. laptops, games consoles, mobile phones, iPhone, Blackberry and TVs (Apple and other manufacturers are incorporating the internet through 'widgets'). This contributes to increased broadband demand – initially through multiple simultaneous internet sessions and then through an enlarged personal digital footprint (to store, move and share content with others).

The current generation of Social Networking has scratched the surface of this – but the volume will explode with the introduction of Personal Broadcast services, Video Conferencing and Web TV which will move content between people, devices and locations seamlessly.

The top drivers of interest in super-fast broadband are downloading movies, games, blogging, high tech communications such as VoIP and webcams and frequent use of the internet.

Business

SMEs are increasingly pushing the limits of their current broadband services and with the increase in remote and flexible working and unified communications (both voice and video), demand for bandwidth (especially upstream) is likely to increase significantly.

New technology such as thin client/Software as a Service and cloud computing will result in new business models that will dramatically alter business costs from hardware and software purchases to an integrated fully managed service package.

Healthcare - in Sweden, the 'Nurse Gudrun' community service allows patients to make appointments online, renew prescriptions and get medical information, through their TV. Healthcare services are being developed in Italy and Japan by telcos: the patient or the health centre initiates the online consultation, and then the patient sees the doctor or nurse on the television and communicates using a webcam and microphone.

Education - enhanced online education and training gives access to a wider range of richer content services and new ideas. Virtual class rooms enable learning to continue when outside of the traditional school building. These public service applications are typical of relatively small scale, community-based services, but are symptomatic of national needs and can be replicated almost anywhere.

Large business and Government are often already served by direct high speed fibre links already with capabilities and hence for these it will be more about the applications, reliability and price. We visualise these links running at speeds of 100s of Megabit/s and are in the period in question more likely to be in Gigabit/s

Will the market deliver the above and in what timeframe?

It is unlikely that the market alone would deliver the above outside of the core population areas and certainly not to the more rural areas of Ireland. The commercial realities of demand, price, cost and rollout timescales in a global economic downturn tend to mitigate against that.

With regards to consumers we believe that LLU has significant potential in the short and medium term to help drive competition and speeds up to 24Mbit/s for a large number of consumers.

For speeds above this level, with today's technology, it looks likely that increasing use of fibre to the cabinet and in some cases fibre to the home solutions will become more widespread.

However, fibre in the local loop poses new regulatory and economic challenges as it is unlikely that sub loop unbundling will be taken up in Ireland. This is true even if all the regulatory issues could be solved simply because the economics of multiple access networks in many parts of Ireland will simply not work for a competitive access market thus access to such services will have to be via active wholesale services rather than passive ones.

Passive access, such as duct sharing, may have some part to play in the provision of fibre to major business and government sites, however, significant practical difficulties arise with such approaches.

Question 2: Do you agree that NGB network deployments can provide a socio-economic benefit? If so, who are likely to be the greatest beneficiaries and why? Should the policy framework explicitly favour the development of NGB in Ireland, and with what specific socio-economic goals in mind?

BT response

There are currently three main categories of end-user benefits that can be derived from high speed broadband:

- doing what people do now more productively' (the value of time savings);
- an expansion of existing things people do' (the value of higher volumes); and
- new things and transformations' (e.g. HD video distribution and two-way HD video communication, and a progressive move to cloud computing - a general term for anything that involves delivering hosted services over the internet).

Multiple, simultaneous high-bandwidth applications will be the major driver for next generation access speeds. For example, one user running iPlayer HD, P2P file sharing and HD video conferencing, or a number of users in the same household, each running applications in different rooms, such as HD multiplayer gaming, streaming HD IPTV, online shopping and music downloading.

Video will continue to enhance the experience (moving to HD) as will new interface devices. Applications will work on today's broadband – but the experience will be significantly enhanced.

Gaming will drive early adoption and upgrades to the RTE Player for HD streaming, full screen and multi-room will create demand for faster broadband – but using familiar applications.

Thus:

- Super-fast broadband and the increasing number of network-connected devices will move the internet beyond the bedroom or study and into the main living spaces.
- Modern communications are vital for economic and social reasons.
- Video, in particular HD video, is a key application, requiring increased bandwidth for multiple, concurrent users in the home to simultaneously see, hear, and share high quality content.
- Community and social networking will become quicker, richer and more inclusive.
- There is already good social acceptance of new media and communications.
- IPTV (streaming and on-demand) is likely to be another primary application driver, particularly when premium content (i.e. sport) is unavailable from other platforms.
- Can Ireland afford not to have NGB? The fact is that Ireland has limited natural resources, it's manufacturing base is in decline, it is an Island nation on the periphery of Europe and it has a high level of software and technology skills - hence driving the information economy is key to stimulating innovation and the skills base. Ireland needs to be well connected to the World for its future trading and NGB is therefore essential.

Section 3: Broadband Developments in Ireland

Question 3: How important will cross-platform competition be to the development of NGB Networks? Do you consider that all broadband platforms are capable of supporting NGB? In what circumstances might some such platforms be more suitable than others in providing timely and efficient NGB?

BT Response

Operators around the world are investing in 'super-fast broadband' – usually fibre to provide speeds in tens or even hundreds of Megabits per second.

Operators and Governments around the world are investing or considering investing billions of Euro in fibre-based, super-fast broadband, delivering services with top speeds up to 100Mb with the potential for even higher speeds in the future.

The desire is to extend the coverage as far and as fast as possible, but the commercial case for doing so at present is difficult to make. Identifying the services that will drive demand for super-fast broadband is, therefore, important and as these develop then the commercial case will become easier. So, what are the services that will drive this demand?

Operators in Korea (KT), Japan (NTT) and Sweden (TeliaSonera) quote High Definition Internet Protocol TV (HD IPTV), online gaming, online storage, video telephony and increasingly HD-TV broadcasting as the key applications. These same operators and other analysts suggest that future applications could develop from these including ultra-HD TV, HD video conferencing, 3D TV, online multiplayer gaming, telemedicine, distance learning, electronic home monitoring and online work collaboration applications.

In Japan, the government strategy is to establish a ubiquitous network society, where the population appreciate communications technology in resolving social problems and feel comfortable that it will provide them with easy access to medical support, government services, education and jobs. The success of this depends on the provision of ultra-high speed networks, but the government has assumed an implicit value to the consumer for such services

Most international Next Generation Access (NGA) operators offer triple play bundles (phone, high speed broadband and IPTV), sometimes with mobile as well ("quad play"). Others offer additional consumer packages, including hardware, for home security, surveillance and alarms which can be managed through their IPTV, web and mobile portals. Revenues from these bundles, particularly Video elements, are fuelling many of the current fibre investments in other countries.

All platforms will have a part to play; cable, wireless, satellite and fixed. However, whilst it may not always be the case it would seem that wireless and satellite solutions have greater resource constraints (spectrum and technology) that tend to result in lower speed outcomes.

For high speed reliability at fixed locations fibre is the obvious answer whereas increased mobility will drive the need for high speed (everywhere) access.

There is therefore going to be a need for a fibre access operator with a ubiquitous network open to all players so applications can compete over such a network. In addition mobile NGA networks will also be needed, and similar levels of competitive access will be required to these networks. It is the definition and effectiveness of this competitive access to the ubiquitous networks that is therefore likely to be key to the provision of beneficial, effective and efficient services going forward.

Question 4: Do you consider that substantial (both in cost and coverage terms) private sector led investment in the development of NGB networks is likely over the next 3-5 years? If not, and should a gap occur in comparison to other European countries, what will be needed to encourage such private sector investment in Ireland?

BT Response

It is relatively unlikely that substantial private sector led investment in Ireland will occur in the next 3-5 years for a number of reasons including:

- The cable industry is not sufficiently advanced to give the incumbent the necessary spur,
- The costs involved with uncertain returns,
- The level of debt that the incumbent has to service and
- Capital investment as a percentage of revenue is likely to reduce as all providers see current revenues decline
- Lack of regulatory certainty around access arrangements for OAOs.

It is difficult to know whether a gap occurs or not. The objectives of any government are generally not in line with frank admissions that Ireland has a gap in this crucial area with respect to the rest of Europe.

It is often quite difficult to know what actual progress is being made in other European countries.

What is true is that initiatives are taking place across Europe and Ireland should not be left behind at this stage.

Private sector investment falls into a number of categories:

- **Competitors with their own network and access platforms independent of eircom.** Investment in such cases will generally be on the basis of likely return on investment. Where uncertainty exists as to

the likely demand for services and the prices that will be paid then investment decisions will be delayed and / or scaled back.

- **Competitors with some of the above but who have a greater reliance on access supply from eircom.** Where wholesale access is dependent on eircom then the level of regulatory intervention to ensure that such access is provided on appropriate terms, including price and service and in non discriminatory ways is somewhat fundamental as to whether an investment would be made or not. Clearly if it is suspected that one would be discriminated against in some form or another then this creates a significant barrier to investment.
- **Eircom.** There is little clarity as to eircom's NGB investment plans and thus, in the current economic climate and changing environment for eircom itself, one must conclude that investment plans are modest.
- **UPC.** UPC have made some recent announcements around 120Mbps NGB through the upgrade of their platform to DOCSIS 3.0 – however, the timelines and coverage plans are unclear.

Much discussion is taking place in Europe and across the globe as to the role of co-investment NGB decisions where in return for the creation of open access networks involving at least four parties, each having a significant say, then lighter touch regulation might be applied.

Such approaches may warrant further investigation but there are few if any successful examples to choose from thus new ground will have to be forged.

In conclusion what will be needed is “confidence”:

- Confidence that open access, non discriminatory conditions will be created that foster competition,
- Confidence that consumers and businesses want and will pay for the services
- Confidence that government will create the dynamics for an e-society.

Section 4: International Approaches on Next Generation Broadband

Question 5: In what circumstances would any of the above (or other) approaches be appropriate in stimulating NGB roll-out in Ireland? How might such interventions safeguard the development of competition?

BT response

The creation of NGB in Ireland should be done with best practice in mind and tailored to suit the national environment. However, great care is always needed in seeking to adopt international experiences drawn from countries outside Europe which are not subject to strict rules on State Aid.

A general theme in all international approaches is the concern over digital divides and how to minimise those. Perhaps through broadband USO type obligations with necessary open access infrastructure funded through some form of taxation with open tendering. States see the imperatives of being at the table in world class digital economies both from an industrial perspective and an e-state perspective as mentioned above.

A general theme that can be drawn from international experiences is that they all seek to address, in a way appropriate to their individual markets;

- A change to incumbent behaviour or its control of NGB infrastructure,
- Focus on regulation,
- Recognition that passive and active wholesale access to NGB both play a part,
- Open access NGB network,
- Open and transparent competitive process,
- Collaboration with the retention of competition.
- Different regulatory thinking.

Section 5: Next Generation Broadband Enablers and Inhibitors

Question 6: Do you consider that the issues identified are the main enablers and inhibitors of NGB developments or are other issues of greater relevance? Who are the key stakeholders who might be in a position to influence these issues and how might they best do so?

Question 6 BT Response

BT acknowledges that a number of practical initiatives have already been taken by the DCENR with the view of facilitating investment in infrastructure such as the Metropolitan Area Networks (MANs) and the targeted Government actions detailed in the DCENR 2009 Report “Next Generation Broadband Gateway to a Knowledge Ireland”, and these will be helpful in facilitating Next Generation Broadband. However, a step change is now required and the following enablers and inhibitors need to be addressed.

Digital Divide

The issue of the digital divide needs to be addressed from the outset and recognised that it presents both different commercial, political and engineering challenges to the development of Next generation Broadband in urban areas. Experience from the current generation broadband clearly suggests that the case for investment in rural areas will require a Governmental initiative to progress. The recent digital Britain report issued in June 2009 provides one suggestion by applying a six pounds sterling tax per year to all broadband lines to build a fund to address this issue.

Two key points emerge, firstly recognising the digital divide is a different problem to addressing NGB, and secondly actions need to be taken from the outset to bring services to rural areas in a timely way, rather than as a tail once urban developments have been completed. BT therefore suggests that a separate project is established to embark on removing the digital divide from the outset.

Ubiquitous Access and eircom

Realistically only one operator has ubiquitous access to customers in Ireland for high speed NGB at this time, and that is eircom. eircom therefore can be both an enabler and an inhibitor. Whilst the cable company UPC is continuing to invest and roll-out high speed services it only has limited coverage at this time although this may grow further over the coming years. The mobile world has proven itself capable of offering current generation broadband services, however it will need to evolve further technologically to support next generation broadband and that will take some time. Rolling out a new duct and wired access platform is not economic particularly in the current financial climate and environmentally is a poor use of resource. Therefore realistically we need to be looking at the eircom access platform as a base.

eircom as an Inhibitor

The perception to many in industry and in particular the LLU providers is that eircom has robustly defended open access to its copper pairs to the extent that Ireland is now significantly lagging Europe in the roll-out of LLU services. Recent experience concerning the lack of access to Wholesale Ethernet Services from eircom (whilst offering 1Gbps services at a retail level) also demonstrates that eircom has not been minded to provide essential open access services in the Wholesale market. This behaviour significantly undermines eircom's ability to generate confidence for other operators to invest in services delivered over the eircom network. Given eircom's ubiquitous access this is a significant inhibitor to the development of NGB in Ireland at this time. Currently the perception is that eircom investment in NGA would be for the preferential benefit of their downstream retail business. It is also recognised that the behaviour of eircom is driven from the top hence only a senior level engagement could address the behavioural issues.

Telstra in Australia appeared to adopt a similar position to eircom and it was only when the Australian Government decided not use the Telstra network for their NGB did Telstra change their behaviour. Its unlikely that a new physical wired network will be built in Ireland in the current climate, however the Australian example does illustrate the importance of behaviour in NGB.

eircom as an Enabler

BT respects that all operators are entitled to a fair return for their investment, and as discussed in the ComReg discussion document there are various ways commitments to invest such as providing volume forecasts etc can be made. However, a key to this is that eircom are going to have to show initiative and openness from the top down. One such approach was adopted in the UK with the Equivalence of Access Board (EAB) where senior

representatives of the access provider (Openreach); independent representatives including one nominated by the regulator now oversee at close quarters that the provider is treating all downstream providers equally. If eircom were to adopt a more open approach as discussed, this would be a significant enabler for NGB.

Co-ordination as an enabler

If the industry were to become co-operative (within the bounds of the law) an independent and respected body or individual with reporting to the DCENR would be required that would have direct CEO access and the ability resolve working level issues. This body or person would both agree a project plan with the industry and track progress and report on regular basis to the Minister.

Section 6: The Role of Regulation in Facilitating Next Generation Broadband Development in the Irish Market

Question 7: Are the areas identified the relevant tools available to ComReg for accelerating NGB investment in Ireland, or could other regulatory levers be as or more effective? What might be the impact of these activities on both the level and timing of NGB developments?

BT Response

Regulation as an enabler

As ComReg themselves acknowledge in the consultation, a cooperative approach by eircom and industry (within the bounds of competition law) would be more productive and could bring about an environment where operators could make commitments to eircom, and eircom would have the confidence to start updating its access network for NGB. The role of ComReg would then be more to look after the interests of the consumer.

The European Commission has identified that many of the issues facing Ireland to stimulate investment in NGB are common to many European States and is consulting on a regulatory regime to aid the stimulation of investment whilst protecting competition. Although these guidelines are still in draft and are being discussed robustly, once finalised it is anticipated that these will provide a balanced and proportionate set of guidelines.

Alternative Regulatory Levers

A number of regulatory levers are currently available to the regulator however generally the stronger the regulatory remedy the higher the level of evidence and test of proportionality that has to be undertaken by regulators (not just ComReg), and this generally means the longer it will take to deploy (usually years). A co-operative approach is thus the most productive way forward, but in the absence of this a clear aim must be to establish fairly straight forward exAnte regulation around the areas of transparency and discrimination through Internal Reference Offers (IROs).

Internal reference Offers (IROs)

BT would strongly advocate the introduction on eircom of the publication of Internal Reference Offers (IROs) so that eircom are obliged to inform the industry of the services they are offering themselves in regulated markets, hence discrimination can be quickly identified and existing non-discrimination regulation becomes immediately effective. Transparency and Non-discrimination regulations are already a corner stone of the existing regulation, but the current transparency rules are very limited and don't catch the biggest potential abuse; the incumbent offering itself preferential treatment. A simple change to the exAnte regulations to force Internal Reference Offers to be published will have a major beneficial impact.

Question 8: Do you see a role for collaborative industry approaches in seeking to agree wholesale models for open access to SMP operator NGB networks? Will infrastructure sharing be critical for early deployment of NGB in Ireland? What do you see as being the appropriate regulatory response in such circumstances, particularly in light of the need to promote effective competition, innovation and incentivise investment?

BT Response

The issue is whether a collaborative approach will be all inclusive, This now seems unlikely as there are three diverse market segments, fixed, cable and mobile now investing in high speed access and will seek returns on their investment. Hence to focus on one platform such as eircom's access risks distorting competition. However, by not having some focus will the market miss out? Probably yes as the market will develop more slowly if left to pure competition in recessionary times. Hence the regulatory response needs to stimulate investment whilst ensuring open access to the various access technologies.

Question 9: What role has the regulation of investment incentives such as wholesale pricing to play in stimulating the development of NGB networks?

BT Response

The regulation of wholesale pricing will become critical for the downstream markets to survive. The correct pricing should stimulate usage and thus investment in access technologies.

Question 10: Is there a case for allowing a differentiated regulated rate of return for Eircom in relation to risky NGA investments, and would this in fact

be effective in encouraging early and widespread development of NGB fixed line networks?

BT Response

The issue is whether eircom would pass on the prices in a non-discriminatory way rather than the actual price. If there were confidence that eircom was acting in a non-discriminatory way greater trust would be established and support would emerge for them updating their network and seeking a fair return. Perhaps there is a case for eircom to consider voluntary “equivalence of input” obligations in return for differentiated rate of returns.

End

Annex A

Recent Public Domain Commentary on LLU

A new beginning for Ireland's last-mile broadband hopes? (Irish Independent and siliconrepublic)

30.07.2009

Last week, two global telcos, BT and Vodafone, with a significant presence in the Irish market forged a joint venture on broadband. The question is: will it advance Ireland's so far poor performance in the realm of local loop unbundling (LLU)? LLU effectively means an operator gains access to a local exchange and by being able to put in their own equipment they can offer higher speeds and newer services such as TV via broadband.

However, after more than 10 years since deregulation of the Irish telecoms market began, LLU can be seen as a market failure, with 96pc of copper DSL lines sold in Ireland originating with incumbent operator Eircom either directly or as 'resold' services.

Under last week's deal, which is still subject to approval from the Irish Competition Authority, BT will transfer its consumer, small business broadband and voice customer base to Vodafone. This will involve the transfer of some €4.8m worth of assets.

The CEOs of BT and Vodafone, Chris Clark and Charles Butterworth, say the aim of the plan is to address the lack of competition in the Irish LLU market, while also playing to each of the company's respective strengths.

The lynchpin of the plan is a price reduction proposed by ComReg in May, whereby the cost of accessing Eircom's network may fall from €16.24 to €12.18, making investment in LLU more viable.

For Vodafone, the deal means not only will it be able to access BT's 22 unbundled local exchanges around Ireland, but it will also gain BT's consumer telephone and broadband base of 84,000 consumers, as well as 3,000 small businesses.

The significance of the new alliance is it will enable both companies to build an alternative LLU infrastructure that will grow access to local loop infrastructure from 20pc today to two thirds in the coming years.

The companies will focus on building a LLU-enabled network that will deliver up to 24Mbps, growing the network from 22 exchanges today to 58 exchanges over the next few years.

"The logic is compelling," explains Vodafone's Butterworth. "We realised that on our own neither company could make a business case for increasing Ireland's infrastructure to the level we are suggesting. But, combined, we have 2.1 million customers and a fixed-line business. It is about economy of scale."

BT's Clark agrees: "This joint venture creates the economies of scale to enable Ireland to get the broadband coverage and quality it sorely deserves." He says the recent ComReg process to enable greater LLU access is really the first step to achieving a faster broadband network for the country.

According to Butterworth: "Now we have a regulator that is actively engaged in looking at wholesale pricing." Clark adds that not enough has been invested in broadband-enabling Ireland to date. "It's not just capital spend, but developing the services that will create the compelling business propositions to make use of higher speed. LLU investment in Ireland has really only been to a small scale." Another investor in LLU is Magnet Networks, which has unbundled 40 exchanges around the country, involving an investment of over €80m and an addressable market of 600,000 potential subscribers.

CEO Mark Kellett says LLU is vital for competition as it enables telcos to do far more for customers than a resold 'bitstream' connection. "With LLU you can get true broadband speeds of up to 24Mbps. Is there a future for LLU? Absolutely. Bitstream simply cannot compete against a fully unbundled local line.

"But because 96pc of DSL lines are sold via the incumbent and more than half of those are bitstream, operators don't have the capacity to innovate. This is something we have been at pains to impress on ComReg and the Government." Kellett points out that the new prices ComReg proposes, while welcome, could still be challenged by Eircom. He says what's really needed is a similar agreement to that of BT and Ofcom in 2005 where BT agreed not to compete with bitstream until the UK had 1.5 billion LLU subscribers. "If you were to do that on an Irish scale, you would be allowing the market to grow to 150,000 full LLU subscribers. At present, Ireland has only 16,500 LLU subscribers despite the millions invested by Smart, Magnet and BT. Aggressive competition has so far destroyed the incentive to invest in LLU. "The Irish broadband market is four years behind the US and three years behind the UK. Ireland is playing catch-up and subscribers will want better and more innovative services," Kellett concludes.

By John Kennedy

BT and Vodafone CEOs plan a broadband network 'of scale' (siliconrepublic)

23.07.2009

BT chief executive Chris Clark and Vodafone chief executive Charles Butterworth plan to grow their combined local loop infrastructure from 20pc of today's market to two-thirds and create one of the most progressive wholesale broadband operations in Europe.

Speaking with *siliconrepublic.com* yesterday after announcing their broadband joint venture, Clarke and Butterworth said the aim of the plan was to address the lack of competition in the Irish local loop unbundling (LLU) market and effectively play to each of the company's respective strengths.

Under the deal – which is still subject to approval from the Irish Competition Authority – BT will transfer its consumer, small business broadband and voice customer base to Vodafone. This will involve the transfer of some €4.8m worth of assets.

BT will, however, retain its lucrative enterprise and network divisions, which include corporates, the public sector and other communications providers for whom it builds and manages networks. The company recently recorded £800m sterling in revenues North and South, largely from managed services and corporate technology services. For Vodafone, the deal means not only will it be able to access BT's 22 unbundled local exchanges around Ireland, but it will gain BT's consumer telephone and broadband base of 84,000 consumers, as well as 3,000 small businesses.

The significance of the move could easily be hidden by the movement of customers from one operator to another. The real importance of what BT and Vodafone are doing is arresting the clear market failure of LLU in Ireland.

Operators such as BT, Magnet and Smart Telecoms have all invested millions in enabling copper networks in Ireland to be able to carry broadband via digital subscriber loop (DSL).

However, aggressive competition from incumbent operator Eircom and the lack of a regulatory remedy has resulted in a situation whereby eight years after most operators began unbundling local exchanges 96pc of DSL broadband in Ireland is still sold through Eircom's network.

In the past year, the Commission for Communications Regulation (ComReg) has moved to reduce LLU access prices and, according to Clarke, this was the spark that allowed Vodafone and BT to pool their resources.

Last year, Vodafone acquired Perlico for €80m. However, while it gained 62,000 customers, it still had no fixed line infrastructure. BT, on the other hand, realised it was gaining more by focusing on corporate and public-sector work, as well as its expertise in network building. The latest deal with BT will make Vodafone the clear No 2 in the Irish fixed line market with 170,000 fixed customers and 15pc share of the fixed broadband market.

The significance of the new alliance is it will enable both companies to build an alternative LLU infrastructure that will grow access to local loop infrastructure from 20pc today to two-thirds in the coming years.

The companies will focus on building a LLU-enabled network that will deliver up to 24Mbps to two-thirds of the Irish population, growing the network from 22 exchanges today to 58 exchanges over the next few years.

"The logic is compelling," said Vodafone's Butterworth. "When we both looked at our operations we realised that on our own neither company could make a business case for increasing Ireland's infrastructure to the level we are suggesting. But combined we have 2.1 million customers and a fixed-line business. It is about economy of scale, and with that scale comes the fact that we can build the infrastructure that will drive the market in a positive direction."

BT's Clark agreed: "Most people would accept that Ireland needs to see growth in terms of broadband coverage and speed. The economic challenges we face to achieve the smart economy are critical. The challenges so far have been immense in terms of population, geography, regulation and economics. This joint venture between BT and Vodafone creates the economies of scale to enable Ireland to get the broadband coverage and quality it sorely deserves."

Clark agreed that the recent ComReg progress to enable greater LLU access is really the first step to achieving a faster broadband network for the country. "We are committed to increasing our LLU footprint in terms of exchanges and aim to reach two-thirds of available lines."

According to Butterworth: "Now we have a regulator that is actively engaged in looking at wholesale pricing. The prices have been too high to date, but now we are on a progressive path and look forward to further developments. But what Ireland needs is parties with enough scale to see this through."

Clark added that not enough has been invested in broadband-enabling Ireland to date. "It's not just capital spend but developing the services that will create the compelling business propositions that will make use of higher speed. LLU investment in Ireland has really only been to a small scale. "Where we have invested in LLU we have experienced a massive competitive take-up. This partnership allows BT and Vodafone to get serious about broadband coverage." Butterworth added: "This is about taking the game further. Vodafone's aim in the retail space is to go to any customer and ask them how they want their broadband – mobile, fixed or any other way? When we bought Perlico we bought a customer base and an IT capability, but not an infrastructure. But when you look at BT, it has one of the most progressive wholesale operations in Europe and there's no reason why Ireland shouldn't benefit from that." Clark explained: "We have a strong wholesale business in the Republic of Ireland and Vodafone is an important customer of ours, along with a number of other providers. "But in terms of access, it is in everyone's interest to have an open access network. This is what will drive innovation, competition and services." Butterworth said that what has been missing in Ireland is alternative infrastructure, and this will mean that future next-generation networks will have to be built with open access in mind. "If we want to have next-generation networks, you need to have competition in the market. We've got to build the networks and then we've got to be rational. This is about a competitive ecosystem. We want to be able to drive a stable competitive framework in Ireland and then what we'll do is take our chances at a retail level. We're determined that with our brand and our customer base we'll be successful."

By John Kennedy

Annex B

Superfast Broadband Progress by BT in the UK



Super>fast broadband update

July 2009

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Please see the attached presentation of BT's GB and NI Superfast Broadband Rollout plans.

Also included below are a number of recent press releases to support the GB and NI rollout.

BT Press Releases

DC09-221

July, 9 2009

Lisburn named in BT's superfast broadband rollout plans

- Superfast speeds available to close to 14,000 customers in Lisburn

Belfast, Thursday 9th July 2009: BT today announced an acceleration of its £1.5bn investment programme to bring fibre-based broadband to the UK, and has named Lisburn as one of the 69 exchange areas that will be upgraded with fibre-based access services.

The acceleration of BT's investment programme will make superfast services available to up to 14,000 homes and businesses in the Lisburn area by next Spring. Unlike other companies, BT will offer access to all other service providers on an open, wholesale basis thereby supporting a competitive market.

Chris Clark, CEO, BT in Northern Ireland said: "We're really delighted today that we are able to rapidly build on our first announcement in March when BT selected the Balmoral Exchange in Belfast in phase one of its UK-wide roll out plans."

"Fibre-based broadband is the future for Northern Ireland so we're accelerating the pace of our investment programme to support such services. A world class network infrastructure brings immense opportunities and benefits to Northern Ireland – helping to enrich the lives of consumers and communities, giving our businesses a competitive edge as well as supporting the public sector's Programme for Government."

"BT is committed to offering other services providers in Northern Ireland equal access to its network to help consumers and businesses to benefit from a highly competitive market," he added.

The technology that will be deployed in Northern Ireland by BT is called 'fibre to the cabinet' (FTTC). This will enable BT and all other communications providers to deliver broadband speeds of up to 40Mbit/s, potentially rising to 60Mbit/s in the future. The technology will also deliver the fastest "upstream" speeds available in Northern Ireland today, boasting speeds of up to 10Mbit/s. These speeds are crucial for consumers and businesses who want to upload large files such as video and complex graphics over broadband.

The faster download speeds will give customers more than enough speed to run multiple bandwidth-hungry applications at the same time. For example, some members of a family could be watching different HD movies while others were gaming or working on complex graphics or video projects.

This new technology will allow small businesses in the Lisburn area to access affordable super fast broadband speeds currently being used by very large companies. It will facilitate greater collaboration across locations between customers and suppliers, as well as improving the flexibility for remote and home working.

Welcoming the announcement, Ann McGregor, Chief Executive of the Northern Ireland Chamber of Commerce said: "It is great to see continued investment in a world class communications infrastructure in Northern Ireland, particularly in the tough economic conditions in which we now operate. High speed broadband services will bring tremendous benefits to our business community and I welcome BT's efforts to ensure that Northern Ireland remains at the leading edge of the communications revolution."

Brian Hutchinson, Director of Roadside Motors, who is based in Lisburn, is excited about the prospect of increased broadband speeds in the area. "Broadband now underpins my business as we have become increasingly web-based in recent years. All communication with manufacturers is handled via the internet from ordering parts to organising finance so internet speed and reliability is business critical."

BT will deliver FTTC services by installing fibre between local exchanges and the street cabinets that sit between those exchanges and the premises served by them. The fibre will transform the speeds

available even though the last link in the chain – from the street cabinet to the premise – will remain copper. BT is aware there are some premises that will not be able to be served by this technology and so they are currently looking at alternative solutions for those.

BT Press Releases

DC09-

099

March 23, 2009

Belfast among the first to benefit from largest ever UK investment in super-fast broadband

- Super-fast speeds available to close to 30,000 customers in Balmoral Exchange area of Belfast

BT today took the next step on its broadband journey by revealing the first set of locations where, from early 2010, substantial numbers of customers will have access to fibre-based superfast broadband via BT's network.

The Balmoral exchange area of Belfast is one of 29 exchanges in the UK that has been selected in the first phase of the largest investment in superfast broadband ever seen in the UK. The company today announced that it will install fibre-based broadband in that exchange early next year as part of the £1.5 billion project.

The 'fibre to the cabinet' (FTTC) technology will offer initial speeds of up to 40Mb/s to nearly 30,000 households and businesses in the exchange area with the prospect of those rising to up to 60Mb/s. These speeds are more than ten times those experienced now by most UK households. The next phase of deployment will be announced in the Autumn.

Chris Clark, CEO, BT said: "Super-fast broadband is essential to Northern Ireland's future as a knowledge based economy so it is excellent to announce Balmoral exchange in this initial set of 29 locations. Once again, Northern Ireland is at the forefront of one of the most important projects to take place in recent years and this investment programme offers us the prospect of joining the world super league for broadband speeds."

"The wider industry will now be able to plan ahead as we will be making our services available on a wholesale basis to other Communications Providers," he added.

The initial speeds of up to 40Mb/s will give customers enough speed to run multiple bandwidth-hungry applications. For example, some members of a family could be watching different HD movies while others were gaming or working on complex graphics or video projects.

As well as being able to download graphics and data much more quickly, users will benefit from substantially improved “upstream” speeds of up to 10Mb/s – the highest in the UK. Customers will be able to post videos, experience hi-definition video conferencing and enjoy interactive hi-definition gaming to the full.

This major investment in fibre forms part of BT’s wider strategy of delivering next generation broadband services. Frank McManus, Head of Wholesale Service & Sales, BT said: “Broadband has been a vital part of the success story of Northern Ireland. Businesses are using it to boost their competitiveness and find new customers, whilst households are benefiting from new entertainment and educational opportunities. But we are still only at the start of a very fast journey – a journey in which super-fast broadband will play an ever more important role.”

BT will install fibre between local exchanges and the street cabinets that sit between those exchanges and the premises served by them. The fibre will transform the speeds available even though the last link in the chain – from the street cabinet to the premise – will remain copper. BT is aware there are some premises that will not be able to be served by this technology and so they are currently looking at alternative solutions for those.

BT Press Releases

DC09-222

09 July, 2009

BT speeds up fibre plans in Edinburgh and Glasgow

Another 25,000 homes to have access by early summer 2010

Another 25,000 homes and businesses in Edinburgh and Glasgow could benefit from superfast broadband after BT today revealed the next locations where it will make fibre broadband services available.

Edinburgh’s Craiglockhart and Corstorphine exchanges plus Giffnock and Bridgeton in the east side of Glasgow – a key location in the Clyde Gateway Regeneration project and for the 2014 Commonwealth Games in the city – are added to the 34,000 premises announced in March.

The new locations will take the number of superfast lines in Scotland to almost 70,000. -

The acceleration of BT’s plans means 1.5 million UK homes have access to fibre broadband by early summer 2010. A million of those homes will have access by March, doubling the original pace of deployment.

The plan is the first chapter in BT's longer-term programme to make fibre broadband available to 40 per cent of the UK – or some 10 million homes – by 2012. The company has pledged to spend £1.5 billion – the UK's biggest single commercial investment in fibre broadband – on this programme.

Unlike other companies, BT will offer access to service providers on an open, wholesale basis thereby supporting a competitive market.

Bob Downes, director of Openreach in Scotland, the division of BT responsible for the roll-out, said: "This builds rapidly on the announcement three months ago when we named the first exchanges in Edinburgh and Glasgow to deliver superfast broadband on 34,000 lines by early 2010. This latest addition takes that to around 70,000 and is great news for Scotland now and in the long term.

"Glasgow Bridgeton has a key role to play for the city in one of the biggest regeneration programmes in Europe and will be vital for the Commonwealth Games".

Steve Robertson, CEO of Openreach, said: "Fibre is the future and so we're speeding up the pace of our plans. We had aimed to get fibre to half a million homes by next March but we're now being far more ambitious. We've received a tremendous response to date and so we're keen to get on with the job.

"BT has invested billions in creating Broadband Britain yet it has done so whilst offering others equal access to its network – demonstrating once again that competition doesn't have to be a barrier to investment."

Sixty nine locations across England, Scotland, Northern Ireland and Wales will benefit from this latest phase of BT's investment programme. The pilots of the technology went live this week in Muswell Hill, London and Whitchurch, Cardiff. Sixteen service providers are participating in the pilots.

In March, Openreach announced it would be making fibre based services available to more than 30,000 homes and businesses from exchanges serving the areas around Glasgow University and the arts galleries and in the Hillington Park innovation centre and business park development. In Edinburgh, super-fast broadband will become available to 4,000 customers in Stockbridge and the New Town.

This investment falls within BT's current capital expenditure plans.

Questions and Answers:

Q. Will you be rolling out FTTP or FTTC to these areas?

A. BT will be rolling out a mix of the two technologies but we expect that FTTC will be the most widely deployed.

Q. What is FTTP?

A. Fibre to the premise (FTTP) is a solution whereby fibre-optic cable is deployed from the exchange

directly into the customer premise supporting super-fast broadband. It delivers downstream speeds of up to 100Mb/s – and potentially up to 1000Mb/s in the future - and upstream speeds of up to 40Mb/s.

Q. What is FTTC?

A. Fibre to the cabinet (FTTC) is a solution whereby fibre optic cable is deployed from the exchange to the street cabinet with the remainder of the connection - from the cabinet to the premise - using copper wiring. This combination of fibre and copper can be used to support super-fast broadband with speeds of up to 40mb/s initially, potentially rising to 60Mb/s in the future. Initial upstream speeds will be between 5 and 10Mbit/s rising to 15Mb/s.

Q. What criteria has BT used to select the latest locations to benefit from fibre-based broadband?

A. BT has consulted closely with its communications provider and service provider customers and with local and national government agencies to agree this next set of locations.

Q. How is BT making its fibre-based broadband technology available to consumers, businesses and service providers?

A. BT will offer access on an open, wholesale basis through both Openreach and BT Wholesale.

Q. When will these services be commercially available to consumer and businesses? How much will these services cost?

A. BT has already made these services available in Muswell Hill and Whitchurch and will be making the service available in further areas from March. It will be up to the individual providers to decide the timescales for offering these services to their end customers and to set the pricing.

Q. What does the Government's Digital Britain Report and the NGA Fund mean for BT?

A. BT believes there is no commercial case at present to extend fibre-based broadband much beyond 50 per cent of the UK, so we welcome the creation of an NGA Fund – as proposed in the Government's Digital Britain Report - as a creative and pragmatic solution for extending fibre-based broadband to parts of the country where otherwise it would not be economical to do so. BT is alone in having an open network that hundreds of other companies can and do access and we believe that funding should only be available to companies that are prepared to open their networks. BT looks forward to participating in the industry consultation on the NGA fund which opens in the Autumn.

BT Press Releases

DC09-220

July 9, 2009

BT speeds up super-fast broadband plans in the Nuneaton

More than 110,000 homes and businesses in the West Midlands to have access by early summer 2010

BT today revealed that more than 18,000 homes and businesses in Nuneaton will benefit from it speeding up plans for super-fast broadband.

It is one of eight BT exchanges in the West Midlands – along with Fallings Park, Great Barr, Leamore, Northern (Birmingham), Tettenhall, Walsall and Wednesbury, serving a total of more than 110,000 homes and businesses – to be among the latest UK locations due to be upgraded next year with super-fast fibre broadband.

The acceleration of BT's plans will see 1.5 million UK homes have access to fibre broadband by early summer 2010 . A million of those homes will have access by March, which is a doubling of the original pace of deployment.

The plan is the first chapter in BT's longer-term programme to make super-fast fibre broadband available to 40 per cent of the UK – or some 10 million homes - by 2012. The company has pledged to spend £1.5 billion, the UK's biggest single commercial investment in fibre broadband, on this programme.

John Dovey, BT's West Midlands regional director, said: "This is excellent news for Nuneaton and continues our tradition of being a leader in the provision and adoption of broadband technologies. The West Midlands is an enterprising and innovative region, which will obtain maximum benefit from this latest major investment.

"We are working closely with regional authorities, agencies and partners across the region to ensure that we remain at the leading edge of the communications revolution.

"Broadband has played a vital part in the success story of the region. Businesses are using it to boost their competitiveness and find new customers, whilst households are benefiting from new entertainment and educational opportunities."

Unlike other companies, BT will offer access to service providers on an open, wholesale basis thereby supporting a competitive market.

Steve Robertson, chief executive of Openreach, the division of BT responsible for the roll-out, said: "Fibre is the future and so we're speeding up the pace of our plans. We had aimed to get fibre to half a million homes by next March but we're now being far more ambitious. We've received a tremendous response to date and so we're keen to get on with the job.

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2.1 BT Annex 1



Super>fast broadband

Super>fast broadband update

July 2009

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Super>fast broadband strategy



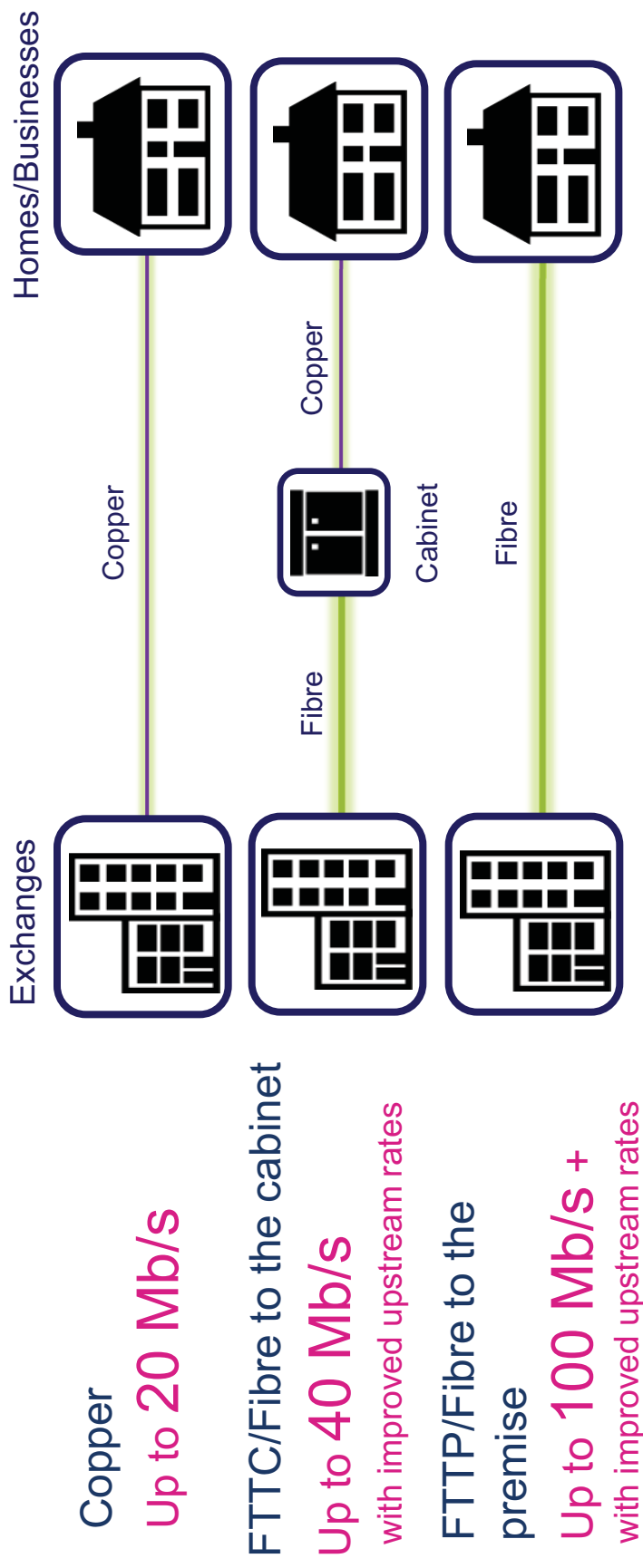
- BT plans the biggest ever UK investment in fibre-based super>fast broadband
 - Subject to the right regulatory environment
- In July 2008, BT announced its plans to rollout fibre-based, super>fast broadband to end users
 - Up to 10million UK homes by December 2012
 - Up to £1.5billion investment
 - Mixed economy strategy
- At Q4 results (May 2009), BT announced the acceleration of its plans
 - FTTC in reach of more than one million homes & businesses by Spring 2010
- BT will offer fibre access on an open, wholesale basis



Super>fast broadband

Next Generation Broadband

- 'Mixed economy' access blend



Super > fast broadband

Next Generation Broadband

- Rising end user expectations

Today

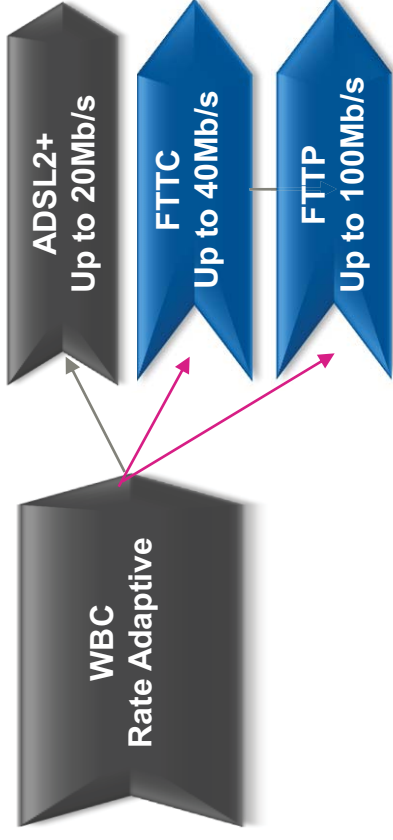
- 99+% of UK has broadband access
- ~60% household take-up

Internet browsing is the primary use

Mix of broadband access technologies

Fixed Rate
0.5 – 2Mb/s

ADSL 1
Rate Adaptive
Up to 8Mb/s



Moving forward



Bandwidth

Speed – down and up speeds

Control, choice and flexibility

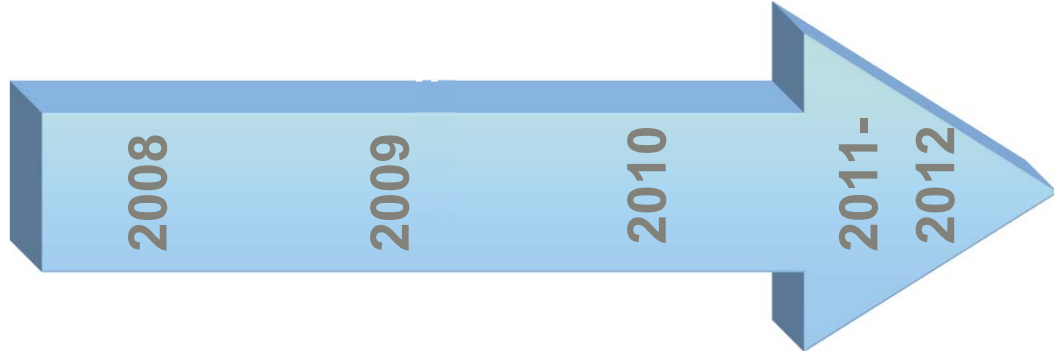
Multiple and multimedia application

Customer experience

Super >fast broadband



BT's fibre plans will offer more choice to our wholesale and retail customers



Enhanced copper

- ADSL2+ roll-out makes speeds of up to 20Mb/s available to 40% population

- ADSL2+ roll-out makes speeds of up to 20 Mb/s available to 55% population

- Widespread access to ADSL2+ and speeds of up to 20 Mb/ps
- BT backhaul investment reduces network bottlenecks

- Continued development of technologies to enable faster speeds and more services

Fibre

- £1.5Bn investment in fibre networks announced
- Fibre to the premise (FTTP) in Ebbsfleet, Kent offering speeds of up to 100Mb/ps
- 130k business customers connected by fibre

- January: Fibre to the cabinet (FTTC) Technical trial
- July: Operational pilots of FTTC, bringing speeds of up to 40Mb/s to over 30,000 premises passed

- Spring: Fibre available to more than a million homes and businesses
- FTTP Brownfield trial planned for early 2010

- Fibre roll-out brings range of speeds up to 100Mb/s
- Fibre available to up to 10 million premises (UK 40% population)
- Olympic village, a future fibre showpiece

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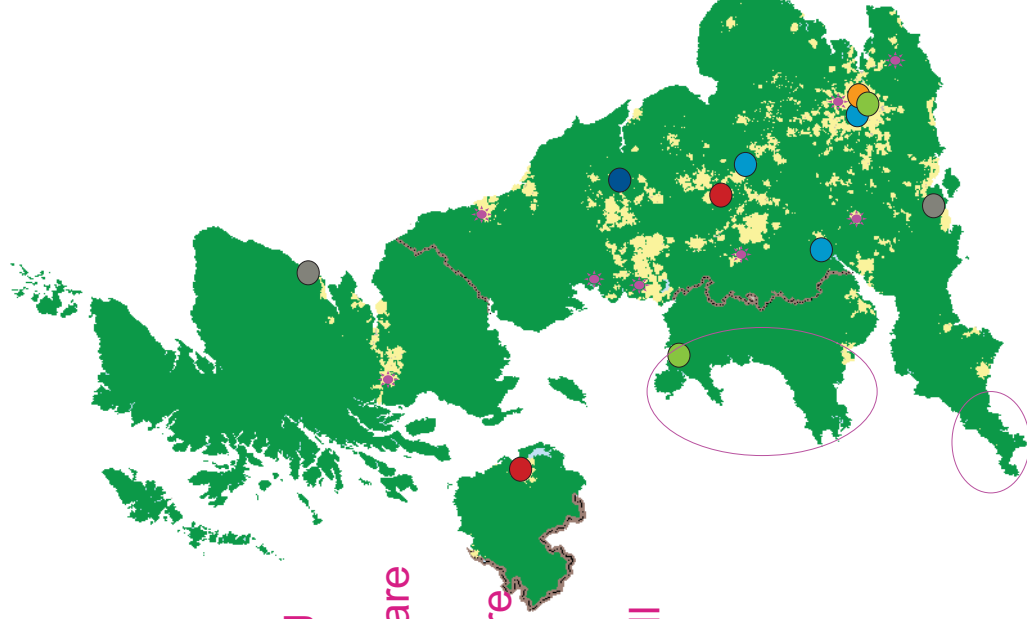
Super > fast broadband

FTTx in the UK

- There are many FTTx deployments planned or in progress in the UK
 - Several different commercial players involved
 - Different technologies are being deployed
 - A range of commercial models are being used
 - Local or regional government are actively involved in several projects
 - Service offerings and pricing will determine take-up

Technology	Footprint ('000s premises)
FTTC	~468*
FTTP	>200*
DOCSIS 3.0#	~12,500

Cable is a variant of FTTC/FTTN using coax in the final drop
* excluding BT



Sources: company web sites, local government web sites

Super > fast broadband



Operator & Platform	Open Access	Where
 DOCSIS 3.0, ~12.5M premises passed	X	■
 THALES FTTC, ~468k premises passed	✓	●
 INEXUS FTTP, >5000 premises to be passed	?	●
 i3 GROUP LTD FTTP, 143k premises to be passed	?	●
 ceo. FTTP to businesses & business parks	?	●
 redstone FTTH, 5k HHs in Belfast, multiple retail centres	?	●
 VELOCITY FTTP, > 12k premises to be passed	?	●
There will be more local & regional FTTx deployments	✓	●

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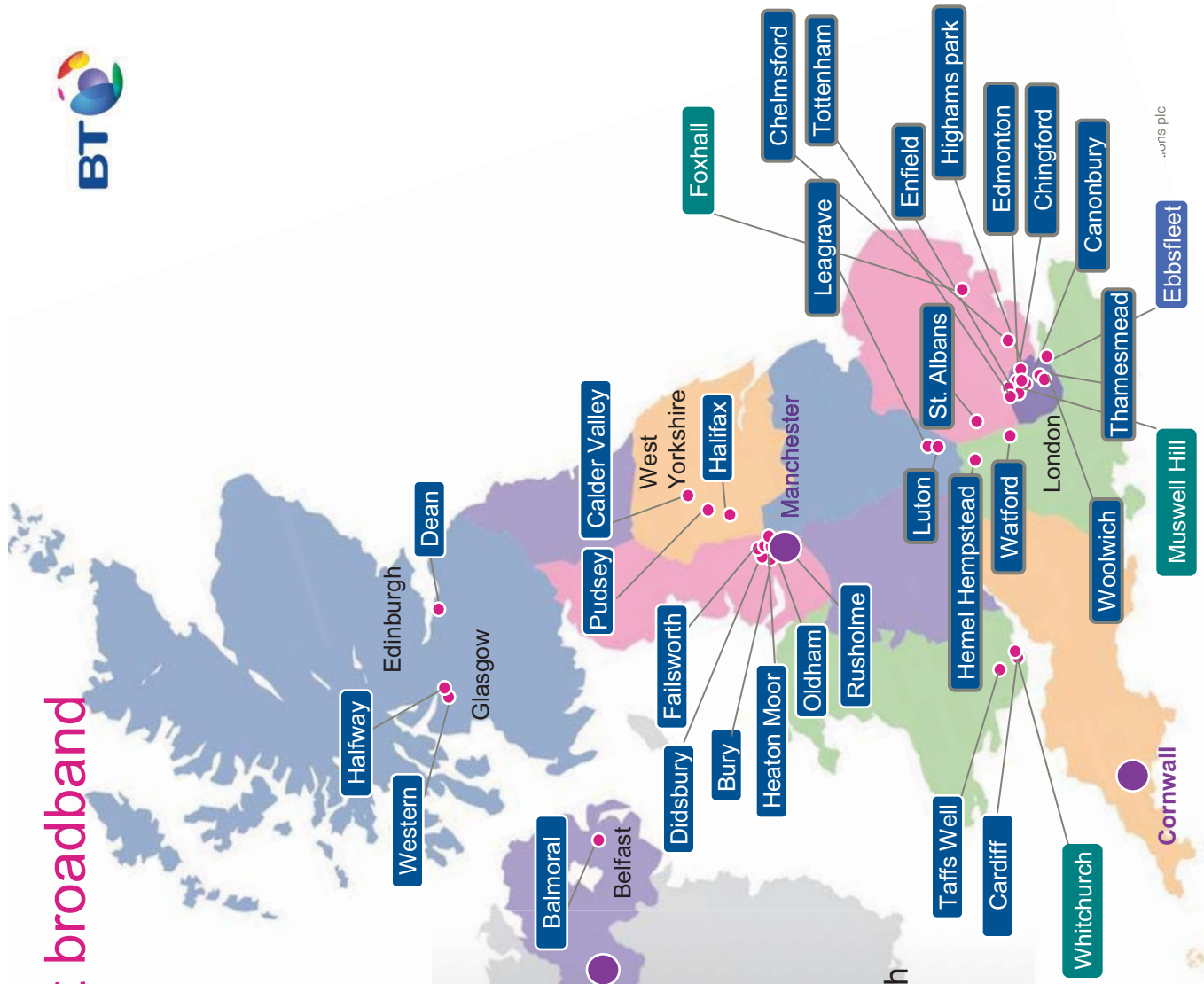
A closer look at super>fast broadband



- Fibre to the premise (FTTP)
 - Sept 2008: first end-users connected at Ebbsfleet Valley, Kent
- Fibre to the cabinet (FTTC)
 - January 2009; Technical trials in Foxhall, Ipswich
 - July 2009: Operational pilots in Muswell Hill, London & Whitchurch, Cardiff
 - Up to 30,000 premises passed
- Early market deployment of FTTC January 2010
 - Up to 500,000 premises passed, including urban and rural locations
- Additional opportunity to work with regions that share our fibre vision through EU funding

Key

- FTTP
- FTTC Rollout Jan 2010
- FTTC Trial/Pilot
- Areas of NGA bid activity



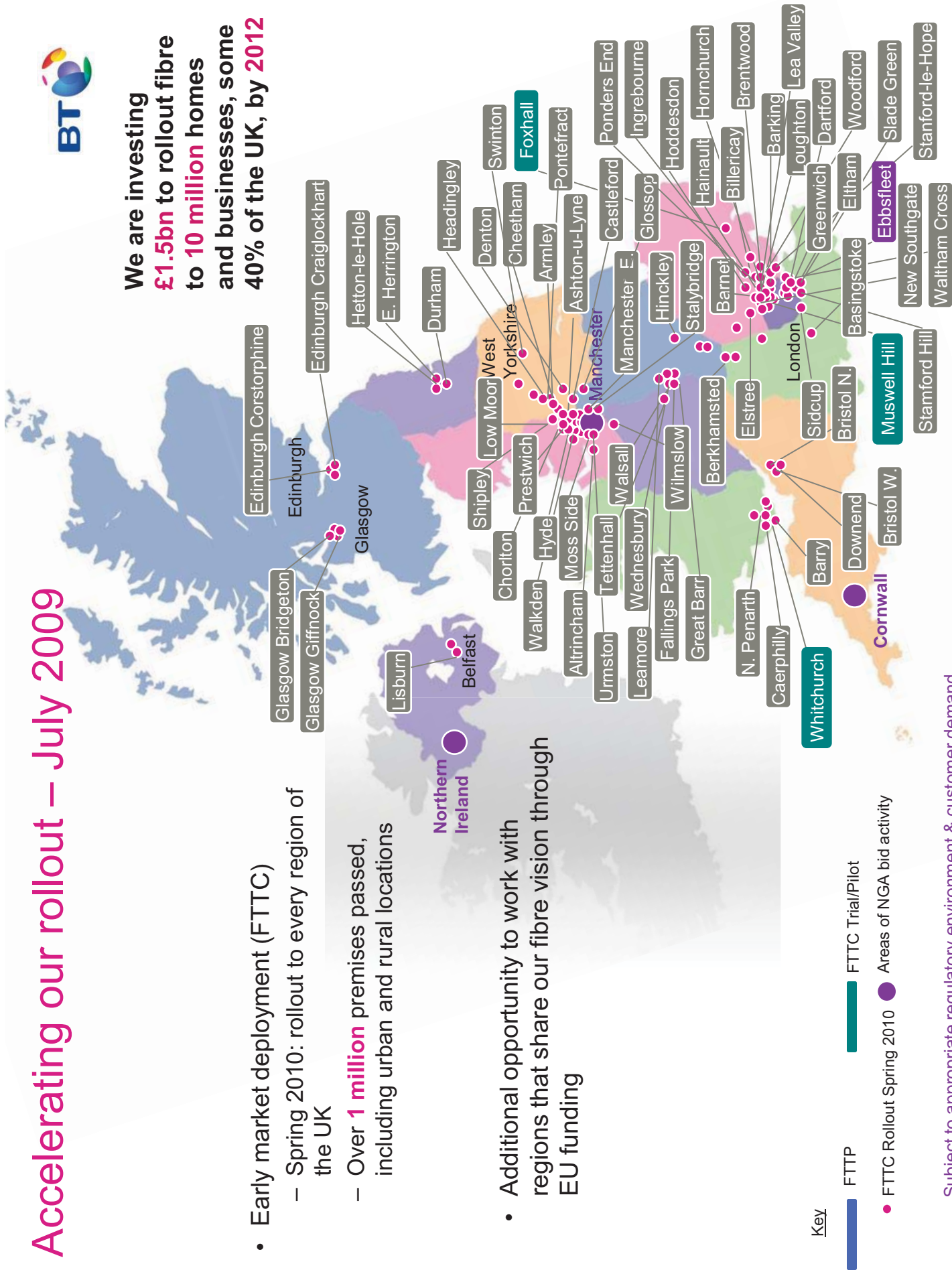
Accelerating our rollout – July 2009



We are investing **£1.5bn** to rollout fibre to **10 million** homes and businesses, some **40% of the UK, by 2012**

- Early market deployment (FTTC)
 - Spring 2010: rollout to every region of the UK
 - Over **1 million** premises passed, including urban and rural locations

- Additional opportunity to work with regions that share our fibre vision through EU funding



Subject to appropriate regulatory environment & customer demand

A closer look at super>fast broadband



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Subject to appropriate regulatory environment & customer demand

Super>fast broadband: TODAY



- Opening doors to exciting and innovative applications

- **Network backup:** uploading and downloading large files such as home movie content will be dramatically improved
- **HD TV content:** high definition content delivered over broadband
- **VoIP:** many telephone lines via one connection
- **Video conferencing:** HD, professional quality video conferencing without the needs for expensive equipment or networks
- **High speed game download:** enhancing the gamers experience
- **Concurrency:** multiple applications in a family household removes competing bandwidth needs.

<http://www.superfastbb.com/>

Better, faster, richer experience with next generation access



Super>fast broadband

Super>fast broadband: TOMORROW

- Opening doors to exciting and innovative applications



- **TV-based video calling:** family-to-family calling in high definition could revolutionise the way we communicate
- **Hi-Def security:** video surveillance of your home / business in high definition, without the need for expensive setup costs.
- **Thin client:** network-based computing, enabling session mobility and zero-configuration.
- **Internet-TV:** HD video streaming mixed with Internet content – I can watch TV programmes, YouTube and check the weather, all from my TV
- **Desktop sharing:** Much faster upstream rates lets you “see what I see”, such as sharing family videos



Better, faster, richer experience with next generation access

Super>fast broadband

Super>fast broadband: IN THE FUTURE

- Opening doors to exciting and innovative applications



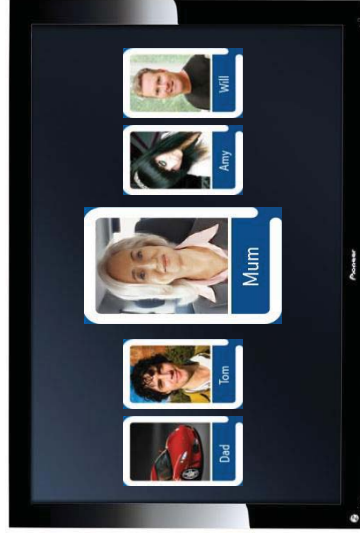
HD streamed games – without a console



Doctor @ Home



3DTV: a new TV experience



Touch-screen telepresence – a window into your world



Look Left Look Forward Look Right

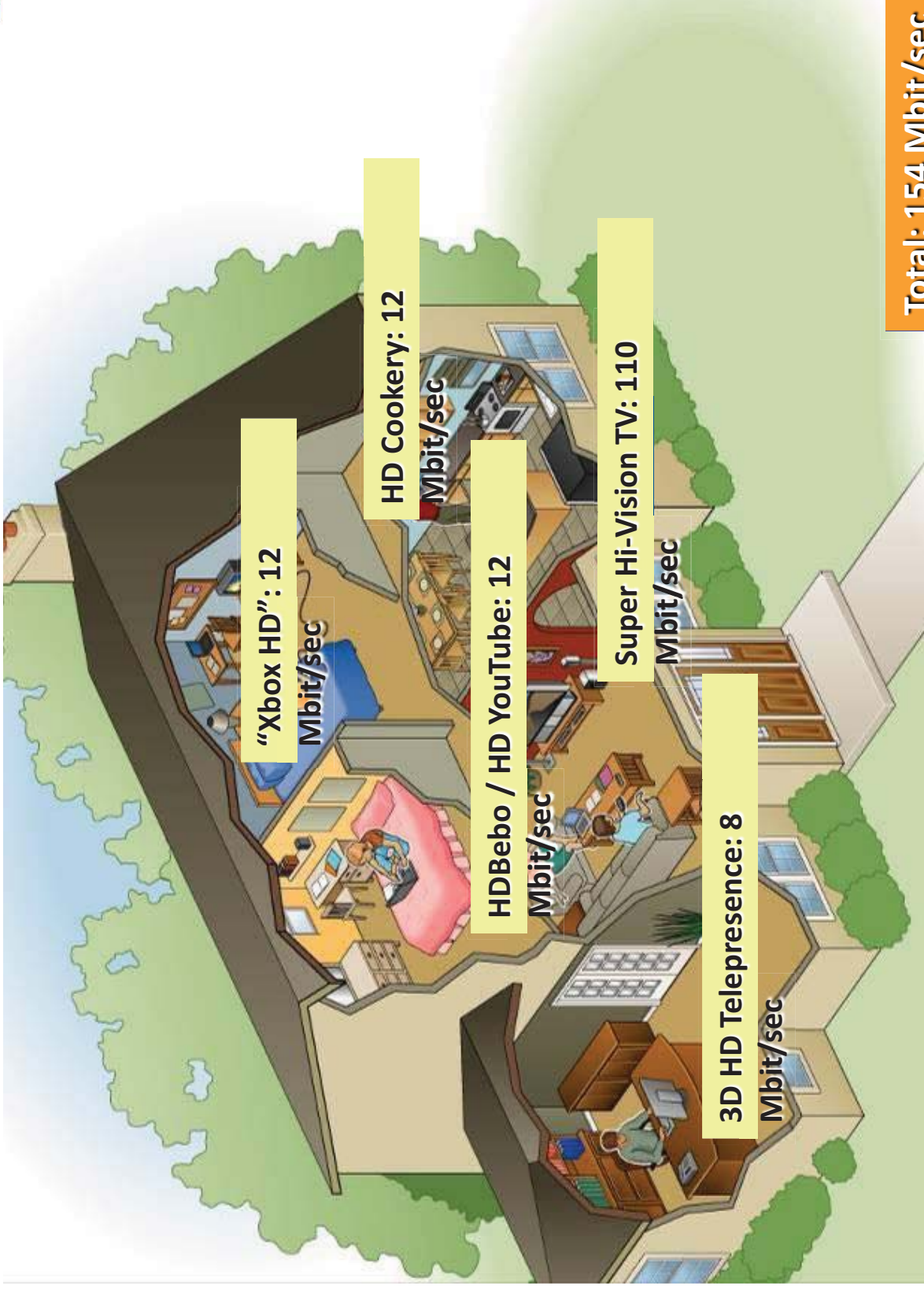
360 degree video streaming - with real-time end-user control



Virtual academy – removing the barriers to learning

Super>fast broadband

One vision of the Connected Home: c. 2013



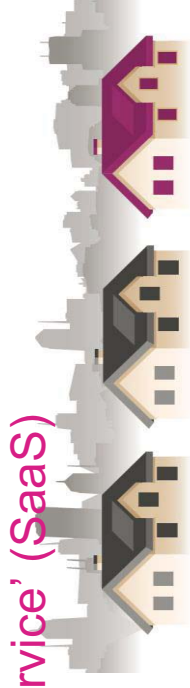
Super > fast broadband

SMEs and Home-Based Businesses



super>fast broadband will offer the highest upstream speed in the UK ... which could mean

- Greater location flexibility for
 - Businesses with specific upload requirements - architects, designers, media companies.....
 - Businesses delivering or using 'software as a service' (SaaS)
- More powerful services for small to medium-sized offices
 - Easier, faster and cheaper back-up of valuable and essential files for disaster recovery and archiving
 - Multiple simultaneous accesses to the internet
 - The capability to have several voice calls underway simultaneously, either broadband voice or else integrated fixed/mobile voice *



* e.g. using a new generation of small base station (a 'femtocell') connected to the broadband network

Super>fast broadband

More Powerful Home-working Applications



*super>fast broadband will offer greater symmetric capability
..... which could mean*

- Opportunities to extend homeworking to industries and professions needing very large files shared or transferred
 - **Tele-medicine e.g. collaborative assessment of X-rays and other images**
 - **Media/film/advertising/design**
- Increased capability to use interactive, video-rich web applications from home
 - **Online training**
 - **IP video conferencing**
 - **Tele-presence applications**
 - **Web-casts**
- Enhanced user experience of concurrent applications such as LiveMeeting, email, web surfing
- Greater opportunity for effective 'homeshoring' of work.
 - **Remote call centre agents with full two-way video supporting CRM applications**



Super>fast broadband

Economic and Enterprise Growth



Pervasive super>fast broadband in a Region should support:

- Thin client computing, particularly for schools and schoolchildren at home – access to course materials, textbooks and homework programmes with:
 - **Reduced cost**
 - **Improved security**
 - **Better performance**
 - **No PC to get 'lost'**
- Attractiveness for new and relocating businesses and their staff
- Enhanced BT 21CN enterprise offer in terms of:
 - **Access speed**
 - **Response times**
 - **Shared access infrastructure**
 - **Speed of provision**
 - **Speed of repair (improving the client experience)**
 - **Potentially reducing costs or increasing value for money**



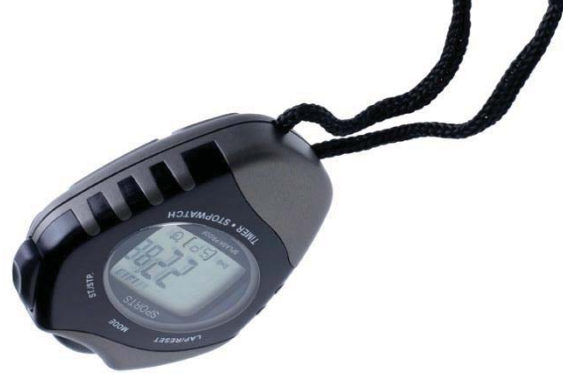
(Other CPs may use super>fast broadband in conjunction with their own Next Generation Network offer.)

Super>fast broadband

The Role of Communication Providers



- The super>fast broadband services, products and applications which become available will be decided by Communication Providers (CPs), including BT Wholesale, BT Retail and BT Global Services, complementing and enhancing their own Next Generation Network capability.
- Openreach will offer super>fast access to all CPs on an equivalent basis
- We expect that the different CPs who wish to sell super>fast broadband will use different methods of assessing demand from consumers, businesses and the public sector. Some CPs may choose to run publicity campaigns or demand-registration schemes.



Regulatory position and Digital Britain



- Ofcom's announcement set out approach to future regulation for NGA
 - Steve Robertson responded “whilst Ofcom has given us a very welcome green light, we will require a few more over the coming months. We remain confident though that Ofcom recognises the need for an environment that encourages investment”
- Some further certainty achieved in support of SFBB
 - FTTC electronics variation agreed with no material changes
 - *New Build guidance* issued for other network operators
 - OFFR final statement published
- Digital Britain
 - Some positive policy statements to create NGA and universal BB coverage, BT has a range of solutions to address both of these taking advantage of the benefits of fixed line technology
 - Future regime must maintain focus on open access competition
 - 50p levy on all fixed copper lines to part-subsidise delivering fibre to the ‘final third’ of the UK
 - We are analysing these in detail to understand the impact
 - Swift action by government is needed to maintain momentum and deliver success
- FTTP now regulatory focus- initial Ofcom engagement on FTTP is encouraging
 - FTTP electronics variation targeted for later in the year
 - Pragmatic approach to transition/cut-over arrangements
 - FTTP voice solution (PATS and features)



Super > fast broadband

Factors Affecting Initial Market Deployment



- Openreach asked CPs engaging with the FTTC roll-out to indicate their priorities from the areas short-listed for early deployment. (BT Wholesale, BT Retail and BT Global Services are CPs, as well as external operators)
- Openreach has also noted the level of enthusiasm, interest and investment in local/devolved government concerning the short-listed areas e.g. practical help with planning the civil engineering aspects is welcomed
- Some areas of the country will pose a challenge.
 - A catalyst (e.g. aggregated demand) might tip the economic balance
 - BT will also consider extending deployment via public procurement contracts



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Super > fast broadband

Latest information on

delivering Next Generation Broadband Services nationwide



- BT's 21CN programme is making good progress
- In 2009/10 BT will continue 21CN investment, adopting a customer and market-led approach
- BT's super>fast fibre-access broadband plans dovetail with 21CN
- 'Mixed economy' access technology approach will promote customer choice and flexibility
- BT's committed to ensuring the UK retains the most competitive broadband market in the world
- Large enterprises, SMEs, end user customers, communications providers and UK plc will benefit from BT's exciting 21CN-driven products

Super>fast broadband

Summary of Next Steps



- The UK already has world-leading availability
- The UK already has world-leading take-up
- The UK already has world-leading competition and prices
- BT will provide the UK with world-leading speeds and capacity through Next Generation Broadband
- Nations & Regions have a key role to play in raising awareness of the benefits of Next Generation Broadband to:
 - Stimulate demand
 - Encourage investment
 - Support the growth of the regional economies



Super>fast broadband

3. Chambers Ireland



Chambers Ireland Digital Policy Council
Response to

Discussion Document	Commission for Communications Regulation Discussion Document 09/56
Title	Next Generation Broadband in Ireland Producing the timely and efficient development of high speed broadband infrastructure and services



Chambers Ireland, Ireland's largest business organisation with 60 member chambers representing over 13,000 businesses on the island of Ireland welcomes this opportunity to contribute to the latest discussion document from the Commission for Communications Regulation.

Chambers Ireland's Digital Policy Council brings together suppliers and users of ICT from innovative, new and established technology companies. The Council contributes to Chambers Ireland's knowledge and expertise in this field and provides a forum to identify and discuss solutions to Ireland's ICT deficits.

Summary Points

- We need to ensure that adequate incentives are in place to deliver Next Generation Broadband (NGB) faster and to underpin capital expenditure decisions.
- As the roll out of NGB proceeds, we need to reflect on basic connection standards at a minimum of 25 mb/s.
- In rolling out NGB, we will need to phase out copper connections.
- The greater the access to higher bandwidth rates, the more demand will grow.
- Chambers Ireland supports tax incentives for Fibre to the Home (FTTH) - similar to the Danish model and encouraging tele-working and e-working.
- Involving key stakeholders within Government Departments will help to drive NGB. Utilising existing resources, the Department of Finance could establish a dedicated unit to co-ordinate the introduction of e-payments as a key enabler of the NGB Project.

Section Response

Section 2: Next Generation Broadband – What is it and why does it matter?

Question 1: *What speeds and other quality of service parameters will be demanded by businesses and consumers over the next 3 to 5 years? Please explain your reasoning. Do you believe the market itself will deliver these capabilities, and within what timeframe?*

Chambers Ireland believes that business and consumers will be best served in the next 3-5 years by setting a minimum connection bandwidth of 25mb/s upwards. The upper limit for broadband services will be hard to measure at this time given the ever increasing amounts of symmetrical bandwidth already being sought by both domestic and business consumers.

It is our belief that with the expansion of NGB as a more accessible service, businesses and consumers will demand and require much faster speeds to access newer services.

Greater speeds will allow business customers in particular to reduce some ICT costs, while increasing productivity with Cloud computing and real-time collaboration on projects.

We believe that the market can itself deliver these capabilities within a 3-5 year timeframe, given our dispersed population, Government will need to play its parts to stimulate and support network roll out.

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**Question 2:** *Do you agree that NGB network deployments can provide a socio-economic benefit? If so, who are likely to be the greatest beneficiaries and why? Should the policy framework explicitly favour the development of NGB in Ireland, and with what specific socio-economic goals in mind?*

Chambers Ireland agrees that the deployment of the NGB network does provide a substantial socio-economic benefit towards the future development of the country. It's deployment will not only be beneficial to economic activity and attracting future FDI, but it also creates a "community good" which can be utilised by all within our population. In achieving this "community good" though, it is crucial than we take account of our low density population base and use all available technologies to bring NGB to as wide a group as possible. We need to recognise that in order to get to the stage where businesses and consumers have access to NGB networks we must be in a position to provide support towards the costs of capital expenditure and work more closely with local planning authorities in order to speed up the roll out of NGB, where it is practical.

In the medium term, developments in wireless sensor technology in particular also offer great opportunities to enable older people to stay independently active in the community. Similarly broadband can play an important role in environmental monitoring systems and facilitating smart electricity utilities which will be a vital need to underpin and optimise wind power exploitation in the future.

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Section 3: Broadband Developments in Ireland

Question 3: *How important will cross-platform competition be to the development of NGB Networks? Do you consider that all broadband platforms are capable of supporting NGB? In what circumstances might some such platforms be more suitable than others in providing timely and efficient NGB?*

Chambers Ireland believes that cross-platform competition is both desirable and necessary in the roll out of NGB in terms of connectivity and access. A decline in investments by cable operators in the past had a significant contributory impact on the slow rate of early broadband service roll outs across Ireland. In the future wireless broadband offerings complemented by a fixed line ‘spine’ will play a major role in providing NGB in lesser populated and more remote areas where it will not be cost-effective to provide FTTH.

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**Question 4:** *Do you consider that substantial (both in cost and coverage terms) private sector led investment in the development of NGB networks is likely over the next 3-5 years? If not, and should a gap occur in comparison to other European countries, what will be needed to encourage such private sector investment in Ireland?*

This investment will be predicated on a number of ‘known unknowns’ in terms of the appetite of the old telecoms incumbent to make investments at a time when the cost of capital has increased significantly.

Similarly if other telecoms operators can work together to build shared infrastructure then the cost of NGB roll out can be reduced by enhancing the return on investment by these co-operating companies.

The economic environment in Ireland is also a challenge in terms of the declines we have witnessed over the last four quarters in telecoms use arising from the emigration by recent migrants; increased levels of unemployment and the significant rise in income

savings rates across the wider society. Government can play a part in supporting further investment by setting the WACC referred to in the consultation at a level that will underpin investment decisions.

Government can also play a very important role in reducing risk for NGB investments by ‘co-investing’ and supporting the development of open access networks that all telecoms providers can use.

Finally talk of an SMS text tax will not help wireless service providers who are increasingly seeing text messaging revenue declining in real terms as it becomes a commodity to build the business case for enhanced levels of investment. Given that mobile telecoms providers already pay significant revenue to the state via income taxes, local authority charges on their shops and base stations and capital gains taxes and VAT collected on services used by their customers, arguments for an additional tax levied on an activity that has no negative societal impacts—unlike smoking—are poorly thought out and undermine market and fiscal certainty for international companies mulling over new investment decisions.

#### **Section 4: International Approaches on Next Generation Broadband**

**Question 5:** *In what circumstances would any of the above (or other) approaches be appropriate in stimulating NGB roll-out in Ireland? How might such interventions safeguard the development of competition?*

We note the Danish model of direct Government intervention in the form of financial support to facilitate the uptake of NGB developments and recognise that it has been successful there. Further we note that the tax incentive provided to employers and employees to encourage home working has been encouraged by a direct deduction from their taxable income. The scheme, though only introduced three years ago, has proven popular among employers and as detailed, accounts for “14% of broadband subscriptions purchased by businesses are used in a home/domestic context”(Comreg, *Discussion Document 09/56 – Next Generation Broadband in Ireland*, July 2009, pg. 32).

We also note that the Danish broadband market has a penetration rate of 37.2% per capita (Comreg, *Discussion Document 09/56 – Next Generation Broadband in Ireland*, July 2009, pg. 35) compared with 20.6% in Ireland (OECD, *Broadband statistics*, 1d. OECD Broadband subscribers per 100 inhabitants, by technology, December 2008).

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Section 5: Next Generation Broadband Enablers and Inhibitors

***Question 6:** Do you consider that the issues identified are the main enablers and inhibitors of NGB developments or are other issues of greater relevance? Who are the key stakeholders who might be in a position to influence these issues and how might they best do so?*

We note that when improvements in broadband services have taken place, such as an increase in bandwidth, business consumers reacted accordingly and upgrade to the next level of service. Thus we should not set our definition of broadband at an artificially low level given that (as with electricity use) consumers typically want more broadband rather than settling for a fixed amount in the future.

Some of the key enablers to the effective roll out of NGB in Ireland would be a move by Central Government to full e-payments by 2011/2012. This would have a dual benefit by removing the cost of dealing in cash and cheques while also reducing the security cost and implications of sending cash around the country for supply.

In addition to taking approximately EUR1.5bn in cost out of the economy¹ it would also send a market signal that significant new revenue streams are available to service providers willing to invest in new market solutions (e.g. mobile payments).

We note that the Department of Finance already has working groups investigating how this could be rolled out and urge Comreg and others to work on setting a date for a migration to full epayment as soon as possible.

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<sup>1</sup> According to the Irish Payment Services Organisation

## **Section 6: The Role of Regulation in Facilitating Next Generation Broadband Development in the Irish Market**

**Question 8:** *Do you see a role for collaborative industry approaches in seeking to agree wholesale models for open access to SMP operator NGB networks? Will infrastructure sharing be critical for early deployment of NGB in Ireland? What do you see as being the appropriate regulatory response in such circumstances, particularly in light of the need to promote effective competition, innovation and incentivise investment?*

A collaborative industry based approach is a good thing to have and could in our opinion be one of the fastest routes towards the early deployment of NGB in Ireland while also encouraging competition within the market.

Comreg will need to address the fact that economies of scale will have to apply in facilitating as wide a spread of NGB services across the country.

In the long run, all stakeholders will benefit from a speedy rollout of NGB infrastructure in Ireland and collaborative efforts would be desirable to reach that stage.

**Question 10:** *Is there a case for allowing a differentiated regulated rate of return for Eircom in relation to risky NGA investments, and would this in fact be effective in encouraging early and widespread development of NGB fixed line networks?*

There is a case to be made allowing for a differentiated regulated rate of return for Eircom in relation to risky NGA investments.

A migration to NGB will most likely involve stranded assets in terms of investments made to date in Ireland's copper wire network as well as the need for more and more investment in new routes for data delivery to business and consumers. The level of return will have to be set at a level that facilitates and underpins future investment while also offering a fair rate of return to service providers.

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Claire Cunningham
Chair
Digital Policy Council

Seán Murphy
Deputy Chief Executive
Chambers Ireland

4. Communications Workers Union

Submission re:
ComReg Discussion Document 09/56

Next Generation Broadband in Ireland

**Promoting the timely and efficient development of high speed
broadband infrastructure and services**

Submitted by:
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CWU
575 North Circular Road
Dublin 1

Communications Workers' Union

Submission: ComReg Discussion Document on Next Generation Broadband

Introduction

The Communications Workers' Union (CWU) represents approximately 18,000 workers employed in the communications sector in the Republic of Ireland, of which around half are employed in the telecoms and related sectors.

The CWU represents staff working in the following telecoms and related companies:

- Eircom
- Vodafone
- BT Ireland
- Meteor
- O2
- TESL
- KN Networks

As the Union representing a significant number of workers in the telecoms markets across a range of companies CWU welcomes this opportunity to contribute to the ComReg discussion on Next Generation Broadband.

CWU has a comprehensive knowledge of this sector and the challenges facing it and recognises that the market in Ireland is entering a new evolutionary phase. This evolution has created huge potential but considerable uncertainty on how to realise this potential in a way that will ensure the long term sustainable development of a competitive market that can invest in its own future.

The CWU sets out below its views on how these challenges might be addressed in a way that will secure the economic and social future of this country in a fair and equitable way that will see all citizens and businesses have the same opportunity to benefit from truly national next generation broadband.

How important to Ireland is the development of Next Generation Broadband?

Government policy is clear on the importance it places on the development of Next Generation Networks (NGN). Government wants to put the ‘development of a knowledge society at the heart of our economic and social policy’ and that in order for this to happen ‘we need a truly national Next Generation broadband infrastructure.’ The CWU fully supports this view and would elaborate further by saying that this infrastructure should be truly national, genuinely accessible and developed on a basis that will encourage long term sustainable investment and competition.

The economic importance of the development of this infrastructure cannot be overstated. It is widely accepted that a key driver efficiency and measure of economic development is the development of and access to high speed broadband. Minister for Communications, Mr Eamonn Ryan, TD, stated at the Next Generation Broadband Consultative Forum in September 2008 that he sees the development of NGN as a critical factor in securing the economic future for Ireland and that it could effectively be the ‘guarantor’ of our continued success.

A recent Forfas submission to the Department of Communications sets out in very clear terms just how important this kind of infrastructural development is to the continued economic success of our island. Forfas observed that the country’s competitiveness and future growth would depend on the availability of this infrastructure more so than in most other developed countries for a number of reasons including our reliance on traded services and our geographic location. The same submission was critical of the Department of Communications’ commitment to positioning Ireland as a leading digital and knowledge economy describing its initiatives as insufficient and suggested that next generation broadband should be our highest priority, along with education, in terms of capital investment under the NDP. It is worth noting that of the entire budget dedicated to

Economic Infrastructure, the allocation for Communications and Broadband is not only the smallest; it amounts to only 0.8% of that budget and at €435m was dwarfed by the €33bn due to be spent on another network – our roads.

The Forfas document goes on to say that the *'availability of next generation telecommunication services will be crucial for Ireland's competitiveness ...and a return to export led growth which will be driven primarily by communication intensive services.'* In addition it states that *'Ireland's current telecommunications industry structure, infrastructure and market characteristics make the timely availability of next generation services very unlikely unless Government plays a strong role in processing the range of actions necessary to ensure that advanced services become available in Ireland.'*

The need for a clear strategic vision and action plan from Government and the regulator is more pressing now than ever before particularly in light of the suggestion in the ComReg discussion document that meaningful investment in the NGB is unlikely to take place for the next three to five years.

The economic importance of broadband is further underlined in the UN Information Economy Report 2006. This report has stated that *'the use of broadband directly increases competitiveness and productivity...which has an impact on macroeconomic growth.'* The report goes on to say that a failure by economies to adapt to the structural changes associated with globalisation and intensified ICT use may result in the marginalisation of those economies as the competitive advantage of dynamic technology and quality broadband is ceded to other markets. Given the open nature of the Irish economy and the benefits it has reaped from the globalisation process, this is a warning we can ill afford to ignore as the global economy falters and major multinationals review their cost base.

In conjunction with the very real economic imperative for developing a NGN there are considerable social implications arising from decisions taken in this area. As a small open economy on the geographical margin of Europe and with a substantial rural and dispersed population, access to high speed broadband will become an essential part of the social fabric of the country. Those areas that cannot access the infrastructure will be at a serious disadvantage. A genuine knowledge economy must surely boast access to Next Generation Broadband that, in the words of the Minister for Communications, *'leaves no-one behind'* and which is based on the principle of equal access regardless of location.

The fact that gaps in the provision of broadband still exist is not insignificant, particularly in light of the key role which broadband plays in creating a sense of connectedness within a country. According to the OECD report 'Broadband Growth and Policies in OECD Countries' broadband *'not only plays a critical role in the workings of the economy, it connects consumers, businesses, governments and facilitates social interaction.'*

The European Parliament resolution of 19 June 2007 on 'Building a European policy on broadband' elaborates on this point even more effectively. The resolution notes that:

'broadband has transformed the global economy, integrated regions and countries with each other, created a dynamic paradigm where individual citizens wherever they live have opportunities never seen before regarding information, communication, influence, participation, consumption, professional life and entrepreneurship.'

On the importance of being able to access this dynamic paradigm the Parliament states it:

'Considers that general access to broadband is an essential prerequisite for social development and improved public services and that public authorities should make every

effort to ensure that all citizens have access to broadband, thereby enabling its benefits to extend to every section of the population, particularly in the less-developed areas of the Union.'

The Government's decentralisation strategy underlines the importance of balanced development and job creation which reduces the economic emphasis and concentration of opportunities on the east coast and shifts these to economically challenged parts of the country. Access to Next Generation Broadband has a critical role to play in this regard.

Aside from the economic benefits mentioned above, a proper high speed broadband infrastructure will be instrumental in the more effective and efficient delivery of public services. As observed by the OECD '*E-government services and broadband applications would help organise the public sector more efficiently.*' In economic circumstances where the public service budget is under severe pressure a delivery platform such as that provided by high speed broadband can help to provide a range of services to those who need it, regardless of location, in a highly efficient way in areas such as healthcare, government services and education. The European Commission in its report on of 2006 on 'Bridging the Broadband Gap' suggested a number of areas where high speed broadband could make a very real, positive impact:

Telemedicine and eHealth: The delivery of telemedicine and eHealth applications bridges time and distance and allows services to reach individuals in their own communities. Rural hospitals may exploit broadband to enjoy the same medical expertise available in urban centres. Purchase of medical supplies, prescriptions and electronic record keeping are enabled online. Electronic monitoring is made possible, with important benefits for assisted living.

eGovernment: Broadband improves the capability of eGovernment services and allows a better interaction between governments, easing access to government for citizens and businesses. It facilitates the development of high-quality services and may increase organisational performance resulting in efficiency gains for the public administrations.

Education: Broadband strengthens the life-long learning process and enables students to obtain real-time education from qualified teachers in areas where that instruction may not be available. Students can access alternative educational resources and be exposed to new forms of educational content. It enables video-conferencing and facilitates inter-institutional collaboration.

Rural Development: In rural areas, broadband plays an important role in connecting farms and businesses to national and international markets. It helps the development of the rural economy by facilitating e-business, particularly in the farm and food sectors. It can encourage diversification by making rural areas more attractive and improving marketing opportunities for products and services such as tourism and rural amenities. Village ICT initiatives built around broadband hubs can provide a cost-effective approach to provision of services to businesses and local communities

A new reality of the information age must be embraced by the Government and the Regulator and that is the acceptance that high speed broadband access must be treated as a utility such as water or electricity. The UN Information Economy Report 2006 posited that quality broadband access is critical to the competitive advantage of businesses to such an extent that it should be compared to utilities such as water and electricity. Since then other members states in the European Union have adopted a similar approach with the notable inclusion of the UK Prime Minister Gordon Brown. Some may argue that there is simply not the demand for access to justify this strategic mind set, there is no 'killer application' to sustain the demand that would validate the investment in a truly

national NGN. But the same could have been said of the utilities we have today. One might argue that the killer application for electricity at the time was street lighting or the humble household bulb, was the myriad of applications that now depend on the provision of this service from household appliances to major industry to the entire health service etc. foreseen. The provision of the service will create its own applications – the provision of high speed broadband is the killer application.

Digital Divide

The Minister for Communications has, in the past, expressed the view that the provision of NGB must be conducted on the basis that no-one is left behind and this is welcomed by the CWU and is viewed as critical to ensuring that our Knowledge Economy gives a equal chance to every citizen.

The reality is that Ireland has a substantial rural (40%) and highly dispersed population. The average for Western European countries is around 5-10%. This is a significant obstacle to any telecoms provider seeking a modest return on their investments in these areas and this fact is acknowledged in the ComReg document; *'It is population density that will drive the economic case for the provision of NGB, with the business case for rolling out such networks improving the greater the potential number of customers reached.'*

Ireland's urban centres are ripe for cherry picking and will most likely continue to operate highly competitive broadband markets but with one of the lowest population densities in the EU, large parts of the country will never realise the aspiration of truly national NGB without the intervention of the state as the commercial case for the investment required in a fibre network to service these areas is simply not there.

It is true that there has been huge growth in mobile broadband in this country, largely due to the lack of a viable alternative. But mobile broadband is not considered as a long term viable alternative to the kind of service and speed available via fibre. This platform does have a role to play but is described by the OCED report as *'largely complementary access technology to wired broadband.'*

A recent report by Epiteiro based on over 5 million tests from August 2008 to October 2008 extracted from broadband monitoring infrastructure in Ireland monitoring urban broadband performance, in both wired and wireless (3G) formats has led to some

interesting conclusions including the point that *'Mobile broadband had very high (slow) DNS lookup times, adding delays to the browsing process and making it considerably slower when compared to like-for-like fixed line bandwidth services'*.

This would lend some weight to the considerable criticisms that have been made of the National Broadband Scheme from various quarters which maintain that it is not a proper broadband service and should be more accurately referred to as 'midband'. Perhaps a clearer distinction has to be made about what speeds are actually available from various platforms so that an honest debate can take place regarding what steps need to be taken to develop proper infrastructure in the future. The same report from Epiteiro stated that, *'The 3G services from mobile ISPs were the slowest for surfing the web'* which would support a strongly held view that, on the basis of what is an acceptable speed for adequate broadband, that these providers should be excluded from statistics which measure Ireland's international standing in various league tables.

A Ramboll Management study in 2007 conducted by Union Network International (UNI) observes that *'mobile technology is not sufficient to secure the necessary technological development of next generation networks, and investments in fixed-line infrastructure cannot be neglected.'* In addition to this there are serious service and contention issues with mobile providers where advertised speeds are not being delivered; a point that is echoed in the ComReg document though it must be said that fixed line operators are not without sin in this regard also. The OECD has also noted that where they are available, *'wired connections offer the fastest connections and the lowest prices per Mbit/s in the OECD.'*

It is acknowledged in the OCED report that there are several factors to the digital divide: penetration levels, geographical challenges and population dispersion. The existing

disadvantage being faced by users in rural areas in terms of access to basic broadband will be only be exacerbated with the advent of high speed access in urban areas. Put simply the digital divide continues to grow and will grow even further as the NGB development is concentrated in major urban areas. As it stands rural users continue to fall behind urban users in terms of bandwidth availability. As technology in the telecoms sector continues to improve so to have the speeds that are available to all users, however the divide between urban and rural users has grown wider as evidenced by research conducted as part of the OECD report on broadband growth. The report noted that:

'In 2004, the average advertised DSL speed in the OECD was 36 times faster than a standard dial-up connection. However, by 2006 the average DSL connection was 160 times faster than a standard dial-up connection.'

The growing disparity is becoming increasingly critical and is important for a number of reasons. Aside from the social implications arising from this divide which are particularly pronounced in a country with a large rural population like Ireland, the fact is that sites and services available on the internet are increasingly unsuitable to dial-up connections as the level of interactivity and bandwidth required to access large portions of the web grows. This is a serious obstacle to genuine social cohesion as the applications that will help to deliver e-government, e-health and tele-work will only be delivered over high-speed connections. The irony of this situation being that rural areas which stand to benefit most from these innovations are those areas least likely to realise their potential as the digital divide grows. The remedy to this is state intervention and the OECD has highlighted that *'there are clearly some circumstances in which government intervention is justified. For example, connecting underserved areas and promoting efficient markets.'* And these two issues; underserved areas and efficient markets are so intertwined that one is not achievable without clarity on the extent to which the state is prepared to intervene to remedy the other.

Government Intervention and Regulation of Infrastructure

The stated preference of Government would be to have the private sector drive investment in NGB. It also notes that aside from largest network owned by eircom there are other fixed line operators such as BT Ireland, Magnet Networks and Smart Telecom which have invested in high speed broadband. The cable operator UPC is also investing in its network in addition to the mobile operators who are also considering technology which could offer high-speed services though it is unclear when this may happen.

WiMAX is available from Clearwire, Irish Broadband and Digiweb in some areas up to 5 Mbps. In addition to these however, there are significant fibre networks which are State-sponsored or State-owned.

Looking at just a few, it is clear that there is a significant fibre investment out there already in certain areas. ESBT (a wholly owned subsidiary of ESB) has a 1,300km fibre-optic network in a figure of eight around Ireland including a spur to Carrick-on-Shannon and Buncrana. Aurora Telecoms Limited (a wholly owned subsidiary of Bord Gais) has a 42km fibre optic network in several business districts in Dublin and has the sub ducts in place for a further 253km into the west of Ireland. In addition the Metropolitan Networks which were funded by the state has seen the creation of fibre optic rings around 27 cities and towns throughout Ireland under Phase 1. Phase 2 will potentially see a further 66 towns encompassed by the scheme though the state of the public purse along with a somewhat critical Value for Money review of the project to date might see a review of this second stage. The review described the first phase of the MANs as '*a mixed success.*' (It is also interesting to note that the MANs are described as successful in areas where a '*critical mass*' seeking a broadband service existed thus confirming that a purely commercial approach to high speed broadband provision would never deliver where '*the*

underlying structural or geographic problems which prevent or dissuade the private sector from providing a service can also apply to MAN.')

In effect there are a number of current and potential high speed broadband providers who could be doing more to bring investment, services and ultimately competition to the market but who are reluctant to move in the absence of a clear strategy and vision from the Government. Competition in the major urban centres, as noted above, will likely not be an issue to the same extent as that is where the commercial return is viable. The challenge presents itself in a very real way when one begins to look beyond the urban centres and at those areas which might be considered to have '*underlying structural and geographic*' problems. The difficulty being that this description could apply to a very significant proportion of the island in the context of NGB development as the investment and return that is required to make this development is very different to that of previous standards in the telecoms industry. If a truly national NGB is to be achieved then a truly national strategy is required and only a strategy that deals with the digital divide can claim to be truly national. And in identifying where and how it deals with this digital divide the state will be able to provide the certainty that is required for telecoms providers to know where they can invest and compete with a fair chance of a return.

What is clear is that the state has a role to play in providing national NGB, what is not clear is how it will make its presence felt in the marketplace and in the absence of this clarity no provider will be prepared to make the risky decision to invest in network development. A clear strategic vision for the country's broadband needs supported by regulatory certainty is a pre-requisite of any private sector investment. And regardless of whether the current limited access to capital was such a strong inhibitor to investment as it is at present this would likely remain, to slightly lesser degree, to be the case. Large investments will not be made without some sense of the potential return. In the meantime

our international competitive standing is being undermined, potential efficiencies and job opportunities go unrealised and the digital divide continues to grow as rural Ireland lags further behind its high speed urban peers.

In circumstances where alternative providers have neither the capacity or in some cases the desire to make major investment in high speed infrastructure the ability of the marketplace to develop anything approaching national NGB to provide high speed broadband becomes the responsibility of a few key players. As such the incumbent's ability to make investment in this area should not only yield commercial benefit for itself but will also benefit the marketplace as a whole. This will only be possible if the regulatory philosophy for this section of the market is reviewed and adapted to achieving the Government objective of national NGB. Taking the European perspective the Ramboll/UNI report puts it another way:

'Investments in Europe are lagging behind, while other countries are ahead when it comes to the necessary broadband penetration. The facts and results show a need for loosening the asymmetric regulation in order to enable the telecoms operators to invest in next generation networks without risking their investments. The regulatory focus therefore needs to change from cutting prices to develop the necessary environments for technological investments that will fuel next generation networks.'

The OECD also raises the issue of how fibre is regulated as being one that will require some debate and notes that the *'pressing question is whether fibre optic cables extending to homes, buildings and street curbs should be regulated in the same way as traditional copper telephone lines.'*

NGB requires a different business model and regulatory approach to that which has gone before. The development of NGB infrastructure will only succeed if long term sustainable competition is allowed to develop in a context where the critical element of regulatory certainty exists. This regulatory approach must create the space and conditions for strategic investment to take place on the basis that a return is potentially there and will not be undermined by an asymmetric model that compels the investor to provide access to competitors at a price that will erode future investments.

Comreg has suggested that some form of open access model will deliver the broadband vision we desire. Whilst it is unclear what shape or form this open access model might take, it is critical that the terms of this access are not set at a level that acts as a disincentive on future investment. Open access networks require that the operators provide competitive access to the network on non-discriminatory terms. Some commentators have said functional separation has merit in helping to foster this kind of model and it has been a feature of the debate in the European Commission for some time. However it is far from clear that this is best strategic decision to take. As the OECD report states *'the results of functional separation, particularly on investment, are still far from certain and warrant significant research.'* Added to this uncertainty are the significant costs of creating the administrative framework for this approach which are not insignificant as a percentage of turnover in a market such as that in Ireland. The OECD report concludes that *'regulators should actively consider other policy options ...which may provide similar outcomes.'*

The OECD Communications Outlook 2009 goes further stating that the *'the high fixed investment costs for new fibre networks to users means that a limit to the number of competing fibre networks a specific geographic area might be able to support.'* The fact that much of the investment that takes place in this part of the telecoms market is limited to urban areas means that *'there are concerns about the implications this may have in*

creating new digital geographic divides and whether alternative technologies, such as high-speed wireless, are sufficiently adequate to provide rural and remote areas with sufficient capacity for emerging services.'

Conclusion

This submission has considered the importance of NGB and the role it has to play in helping to secure the economic and social future of this country. High speed broadband should be treated as a utility. Government and regulatory decisions should be made on this basis. The development of a truly national NGB will have clear implications for efficiency and job creation and should be treated as a strategically important development that will act as a guarantor of the island's future success as a small open economy on the edge of Europe whose success depends on maintaining a competitive presence in a highly globalised marketplace.

The social benefits of a genuine national high speed infrastructure have also been outlined as well as the implications of an expanding digital divide. The condition of the existing fixed line provision to the residential sector is a factor in delivering NGB. The policy challenge is accentuated by the dispersed nature of Irish population. The idea that high speed broadband provision should be slightly ahead of demand will be of little comfort to the dispersed rural population of Ireland who will be left to languish in circumstances where the country has yet to achieve universal coverage of basic broadband despite the market being over 10 years old.

Some may argue that with the pace of development being what it is in the telecoms market that the move from urban centred NGA to a more equitable universal access model should not take as long. The concern of the CWU is that moving to this model will take considerably longer in this evolutionary phase of the telecoms market. There a number of reasons for this and the root of these reasons of course is the commercial imperative that drives telecoms operators who must realize a return, or more importantly, see the long term potential to realise an appropriate return on their investment.

A clear sense of what the market will support will depend on a clear strategy from Government and a review of the regulatory outlook to ensure it plays its role to facilitate continued and meaningful investment as outlined above. The role of Government policy however, is critical as has been demonstrated in other countries. A study conducted by the Saïd Business School at the University of Oxford and the University of Oviedo's Department of Applied Economics into *High-Quality Broadband Essential to Growth of the World's Knowledge Economies* noted that:

'Sweden and The Netherlands had the best performing broadband connections in Europe, a result of increasing investments in fibre and cable network upgrades, coupled with competition diversity, and supported by strong government vision and policy.'

It would be unacceptable to find ourselves with a NBS for NGB in another 10 years from now. In that time the digital divide will have grown to such an extent as to be impossible to bridge and would represent the abandonment of large swathes of our society. It is the view of the CWU that what is required to facilitate the growth and development of a NGB in Ireland is:

- A clear strategic vision from Government on how it will realise its vision of a truly national NGN to provide NGB that leaves no-one behind and which will help to secure the economic and social future of the country.
- A realisation and acceptance by the Government that leaving the provision of NGB solely to the private sector will not be enough to deliver on this vision given the specific challenges of our dispersed, rural population.
- State intervention will be required and the nature and extent of this intervention, when clarified, will help to provide important clarity to marketplace on where investment needs to be directed.
- A revised regulatory approach to NGB that recognises that this phase of the evolution of the market is based on a new business model and the that regulatory approach required must facilitate sustainable competition and investment in the

- long term which allows those companies making the investments an opportunity to realise a fair return.
- If an open access approach is pursued then it is critical that the same principle of a fair price that encourages future investment is recognised as being critical to the long term sustainability of the market. The asymmetric model is not suited to the early stages of this evolutionary phase.
 - The digital divide must be embraced as a critical obstacle to the fair and balanced development of the economy and society in significant parts of our island. The digital divide as outlined above is a serious impediment to job creation, SME development and a balanced society that has equal access to services.
 - Studies have found a significant correlation between a nation's broadband quality and its advancement as a knowledge economy. Any failure of Government policy to deal with the challenge of the digital divide would send a critical message to those citizens affected that they cannot participate in the knowledge economy and represent a damning betrayal of the principle that no-one should be left behind.

5. Derek Cassidy

Submission by Derek Cassidy

Question 1: What speeds and other quality of service parameters will be demanded by businesses and consumers over the next 3 to 5 years? Please explain your reasoning. Do you believe the market itself will deliver these capabilities and within what timeframe?

Answer 1: Over the next three to five years the demand for broadband products will increase from various sectors of our society. Business, which has been the biggest driver of bandwidth will soon be over taken by the consumer market as they look to increasing speeds to feed their internet communications needs. There has been an increase in the availability of social networks and portals giving access to many facets of our society that require bandwidths that today's speeds can just cope with. This evolution will continue into the future as video streaming becomes the norm and this type of bandwidth hungry service can only be provided by a few of today's suppliers. Video streaming today is done over the existing networks with the bandwidth available however this bandwidth is incapable of showing high definition video or even good quality video. The cable TV network with its analogue and digital carriers still cannot get access to the broadband spectrum because to view the channels with the same sharpness and quality requires bandwidth still not available today as a norm. 24Mb broadband is the only offering today that could come close to viewing video over the internet in a real time clear high definition capability; however the 24Mb offering is being offered in selected areas and only where the network carriers have the capability to carry such a service. HEANET and other services designed as a closed broadband network might have the capability to deliver high broadband services as we speak however these are closed and only accessible via the colleges and universities and so are not commercially available for common access. For the future needs of our society in terms of broadband the minimum bandwidth will need to be at least >24Mb and possibility as high as 45Mb or 50Mb. The telecommunications market will only be able to deliver this bandwidth capability by fixed wire services or dedicated wire line services, however the fixed wire services have an advantage over wire line is that they can upgrade their bandwidth offering faster and at a less costly effort than wire line can.

Question 2: Do you consider that NGB network deployments can provide a socioeconomic benefit? If so, who are likely to be the greatest beneficiaries and why? Should the policy framework explicitly favour the development of NGB in Ireland, and with what specific socio-economic goals in mind?

Answer 2: Yes I believe that the establishment of a Next Generation Broadband network would be off a social benefit as it will help to expand the high speed services out to the regions and so equalise the availability of high speed broadband between the rural and urban communities. However a cost benefit analyses will need to be carried out to clarify what the actual return on investment will be and will the benefits outweigh the costs. The likeliest beneficiaries will be small business, home users and community groups as they can avail of the higher speeds and so be able to communicate more effectively with others. As communications methods develop from 3G to 4G mobile networks and video streaming has high definition as a norm and the prospect of digital terrestrial television being broadcast by 2012 at the latest, the availability will become an important factor in the future development of a competitive communications network to the already established incumbent fixed line, mobile and broadcast services. The availability of this high bandwidth NGB network will enable the future growth of our rural areas and will help to revitalise their declining existence.

Question 3: How important will cross-platform competition be to the development of NGB Networks? Do you consider that all broadband platforms are capable of supporting NGB? In what circumstances might some such platforms be more suitable than others in providing timely and efficient NGB?

Answer 3: Next Generation Broadband is a derivative of the Next Generation Network that is being looked at by the telecom players in Ireland some of them like Magnet, Cable and Wireless, Eircom and BT have begun to roll out their version of NGN. However the protocols and services that run over the respective NGNs. For example Eircom will be deploying a MPLS (Multiple Protocol Label Switching) service over their NGN and this will be the main driver of their network upgrade and protocol service. BT will be delivering an Ethernet product that can allow increase in bandwidth capacity without the need to change customer equipment. This Ethernet product has been signalled by BT Ireland as the next big thing as is called Etherflow by their Sales and Wholesale Team. The presence of SDH is declining in favour of Ethernet and MPLS services over WDM (Wave Division Multiplexing) networks. However the ability to switch traffic will still depend on the structural design of the NGN and its capacity and ability to switch. Ethernet for example has still not achieved this capability and MPLS is only getting there however SDH has had the capability to switch since its inception in 1988. The differences in service protocol have their advantages and disadvantages but the NGN that they are all built upon will be able to carry high capacity links with high bandwidth broadband links. Technically the introduction on

Question 4: Do you consider that substantial (in both cost and coverage terms) private sector led investment in the development of NGB networks is likely over the next 3-5 years? If not, and should a gap occur in comparison to other European countries, what will be needed to encourage such private sector investment in Ireland?

Answer 4: many of the industry players are already investing in Next Generation Networks for the delivery of high speed data and high bandwidth broadband. However there is an issue in that broadband is a very low return on investment product that could not lead an investment drive of the scale needed. The networks that are being built or already installed have been built with private equity with the exception to Eircom who have only updated an already established infrastructure that was funded by the tax payer. This has put all the other players at a disadvantage as Eircom hold the keys to the rollout of any broadband policy and so far the Department of Communications and Comreg have failed to liberalise the market in such a way as can be seen in France, Germany or even the UK where accessibility to the already established incumbent network is seen as a given. The lack of accessibility in Ireland has led to a patchwork of infrastructure that does not meet the requirements of society at large but is only suitable for the telecoms party who owns the infrastructure. To invest in new Next Generation Networks to deliver Next Generation Broadband needs guidance from the market with agreement from the Government as to what approach to take. For far too long the Government under the auspices of the Department of Communications has tried to create a broadband network but has failed to implement a policy based on sound principles and goals and instead has gone with ideas that have no proper foundation in proper network design.

The establishment of a non-government organisation to oversee the interconnection of the existing networks so that by combining what we already have will enable Ireland to deliver a Next Generation Network capable of delivering Next Generation Broadband. However, the use of the states assets should be available instead of using the private telecom assets because the state has enabled the utilities to establish their own networks with state funding, therefore these state funded networks should be made available to the network operators to avail off and use with an agreed government strategy to deliver Next Generation Broadband.

Question 5: In what circumstances would any of the above (or other) approaches be appropriate in stimulating NGB roll-out in Ireland? How might such interventions safeguard the development of competition?

Competition between the telecom players can only be achieved if the Dept of Communications along with Government backing opens up the states optical networks that are being managed by the states utilities such as Bord Gais, ESB and the MANs so that the telecom players can use these links to spread their own networks further a field and so help deliver a Next Generation Broadband strategy and deliver on the Governments commitments to increase the broadband speeds and national coverage.

Question 6: Do you consider that the issues identified are the main enablers and inhibitors of NGB developments or are other issues of greater relevance? Who are the key stakeholders who might be in a position to influence these issues and how might they best do so?

Answer 6: The main inhibitors to the roll out of Next Generation Broadband in Ireland are Eircom and the National Government. It is understandable that Eircom are holding back in opening up their network to other players in the market. Eircom have invested heavily in their network and opening it to others will lessen their return on investment and so reduce their overall operational profit. The National Government is also an inhibitor in that it has failed to come up with a proper open and concise policy that would deliver all the drivers needed to deliver Next Generation Broadband. The idea of Next Generation Broadband and the rollout of Next Generation Networks should be a national effort with all players all having a part to play in its development with Government support. Comreg, as the national regulator, would be in a perfect position to over see the development of such a cause and be its mitigation adviser and its council. By just allowing the telecom players to develop their own national networks and competing against each other and trying to overcome the costs of this infrastructural build imposed on them by the local authorities and others will inevitably lead to a failure in delivering a proper network capable of delivering broadband speeds that are available in the UK and across Europe. It is noted that none of these countries has a mobile broadband strategy but a fix line strategy capable of delivering higher speeds.

Question 7: Are the areas identified the relevant tools available to ComReg for accelerating NGB investment in Ireland, or could other regulatory levers be as or more effective? What might be the impact of these activities on both the level and timing of NGB developments?

Answer 7: Comreg will need to get to the same level of authority and be totally independent of all players so that they can apply the full rigors of regulatory law and compliance. I believe that the tools and procedures available to comreg or not refined enough to deliver a fully competitive market, it is not Comreg's fault. If the same rules applied to Comreg that apply to OFCOM, then I believe Ireland would have the tools required to deliver a fully sustainable broadband and telecoms market. Comreg should be looking to OFCOM for guidance as OFCOM have been in operation a while and have the experience and knowledge to assist. Also the technologies that the telecom players in Ireland are deploying should be incorporated into the Next Generation Broadband policy so that this investment will see some sort of return and acknowledgement.

Question 8: Do you see a role for collaborative industry approaches in seeking to agree wholesale models for open access to SMP operator NGB networks? Will infrastructure sharing be critical for early deployment of NGB in Ireland? What do you see as being the appropriate regulatory response in such circumstances, particularly in light of the need to promote effective competition, innovation and incentivise investment?

Answer 8: This is a very grey area; from recent press releases the Dept of Communications and Minister have decided that infrastructure sharing is the way forward; however we have a problem here. Most of the infrastructure built for optical networks has been built but private

telecom operators who are infesting heavily in their own networks so that they can compete against the Semi-State telecom companies such as ESBT and Aurora Telecom. To ask the private companies to open their networks so that Next Generation Broadband can be delivered is a problem. No state aid was given to the private telecom players and even the local authorities have added their own charges to the infrastructure development which in some cases has been as much as 100% of cost, therefore a better logical approach needs to be taken where an agreed wholesale rental value for duct space or dark fibre needs to be agreed so that the field is level for competition. To get to this level of competition, Eircom; ESBT and Aurora Telecom will need to open their networks for access with an agreed wholesale value so that that a fully competitive network sharing agreement can be achieved. Also only people directly involved in telecom companies can answer this as they have a vested interest in their own companies' future, consultants and others do not have the authority to speak about another's investment.

Question 9: What role has the regulation of investment incentives such as wholesale pricing to play in stimulating the development of NGB networks?

Answer 9: Wholesale pricing has a lead role in Next Generation Broadband policy. Eircom are the leading telecom company in Ireland and it is only by getting access to their network and with their operational assistance will the Next Generation Broadband be capable of being delivered in Ireland, therefore by applying a solid wholesale policy agreed by all parties and regulated by Comreg can this be achieved.

Question 10: Is there a case for allowing a differentiated regulated rate of return for Eircom in relation to risky NGA investments, and would this in fact be effective in encouraging early and widespread development of NGB fixed line networks?

Answer 10: With regards to a regulated rate of return for investment for Eircom, it should be acknowledged that Eircom are already at an advantage to every other player in the market due to their incumbent status and the network they inherited from Telecom Eireann. Therefore a regulated rate of return should not be allowed to operate without understanding the rate of return on investment the other players will receive. They should also be allowed to operate on an equal footing as Eircom and in doing so be given access to the network which was built by the funding provided by the Irish State.

6. Eircom

eircom Ltd.

Response to ComReg Doc. 09/56

Next Generation Broadband in Ireland



1 September 2009

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1. PROMOTING THE DEPLOYMENT OF NEXT GENERATION BROADBAND IN IRELAND -- PRELIMINARY VIEWS.

A. *ComReg's Discussion Document provides a useful springboard for discussion but not for regulatory action.*

eircom is pleased to provide the views of its fixed network operations and its mobile arm, Meteor, in response to ComReg's Discussion Document 09/56 entitled "Next Generation Broadband in Ireland - Promoting the timely and efficient development of high speed broadband infrastructure and services" ("Discussion Document"). The Discussion Document provides a thoughtful overview of the issues and is a useful platform for *preliminary* consideration of regulatory policy going forward. However, the timing of the present consultation is such that no definitive assessment can or should be made concerning the need for future regulation of as yet unbuilt Next Generation Broadband ("NGB") networks. As discussed below, that will require further and far more informed analysis based on events that are yet to unfold.

The Discussion Document has been issued at what can only be described as an extraordinary time for the global economy, for Ireland, and for eircom. At this point in time, it remains unclear whether the world is in the process of emerging from the deepest recession in nearly a century or, instead, is on the verge of a painful relapse. In Ireland, where the effects of the global financial crisis and the economic downturn have been particularly harsh, serious challenges remain to be dealt with, and there are as yet few signs of recovery. Despite these daunting challenges, eircom is poised to continue its investment programmes in order to position itself to provide enhanced broadband products and services to its customers in competition with cable, other mobile network operators, and networks availing of other high-speed broadband platforms.

In eircom's view, the fact that the current business climate is not conducive to aggressive capital spending with the prospect of uncertain returns is directly relevant to many of the issues raised by this consultation. However, today's financial and economic realities seem to be the proverbial elephant in the room. The Discussion Document addresses the critical question of how to promote NGB investment with barely a reference to the remarkable context in which the question is being addressed. The Executive Summary observes in passing that there are "many competing demands for capital in an already constrained economic

environment” (at para. 1.6), but the Discussion Document fails to consider the wider implications.

Even setting aside the impact of the current credit crisis, the business case for NGB deployment at this early stage of the development cycle will be inherently risky for any player as a result of various critical commercial uncertainties that must be dealt with, as discussed in the following section.

These economic, financial and commercial uncertainties are compounded by shifting regulatory sands. The European Commission is in the process of developing a recommendation on regulated access to Next Generation Access (“NGA”) networks, and the outcome of the Commission's work in this area will ultimately have a direct bearing on many of the issues raised by the Discussion Document. The most recent (second) draft of the NGA recommendation contains a number of highly controversial proposals that have sparked heated debate amongst virtually all stakeholders, including the European Regulators Group. A copy of eircom's comments outlining its concerns regarding the second draft of the NGA recommendation -- many of which are relevant to ComReg's Discussion Document -- is appended as Annex 1.

It has been widely reported that a further draft will need to be developed and consulted on before a final NGA recommendation can be issued, which is now expected to be finalised early in 2010. At this stage there is no way of knowing what the conclusions of the final NGA recommendation will be. Although eircom is keen to see the core regulatory issues resolved at the EU level and in Ireland as soon as possible, it is essential that the final decisions are based on solid data and sound reasoning and that the outcome is clear, fair, balanced and forward-looking.

In light of the many “known unknowns” that exist at this particular point in time, the Foreword to the Discussion Document (at page 4) is troubling in so far as it suggests that “[t]he views received will . . . feed into the assessment as to whether and how specific regulatory measures can support the timely and efficient provision of NGB networks and services”. An informed assessment will need to await in-depth analysis of the final NGA recommendation of the European Commission and its adaptation to the Irish context, the timing of which may also afford greater clarity on the global financial situation, the Irish economy and eircom's future direction. ComReg should at a minimum await the final recommendation of the European

Commission before taking further steps to delineate specific regulatory measures for high-speed broadband access in Ireland.

As the largest single investor in fixed network infrastructure in Ireland and a major investor in the country's mobile infrastructure, eircom has a great deal at stake in the outcome of the policy and regulatory decisions concerning NGB that will be taken by the Government and by ComReg. According to the Discussion Document (at para. 3.21), "indications from eircom are that it has no immediate plans to invest any further sums in NGB at this time" beyond the initial FTTC and FTTH trials that eircom has recently completed at three locations. This characterisation could be considered accurate if by "plans" ComReg means fully funded commitments to install high-speed broadband on a ubiquitous basis across Ireland. It would not be accurate, however, to suggest that eircom is making no progress towards developing its NGB strategy. eircom is currently reviewing its investment strategy with respect to fixed broadband access and is continuing to invest in its 3G mobile network, which is capable of evolving to HSPA+ and (if spectrum is available) LTE. eircom is therefore laying the groundwork for NGB in Ireland.

Thus, while it may be the case (as ComReg has observed¹) that alternative fixed network operators in Ireland have given no firm indications that they intend to make major outlays to build out or upgrade their networks, eircom is actively engaged in the process of determining how to create an integrated, high-speed broadband strategy that is built upon a sound business case. This work is taking place in the midst of an expected change of ownership in eircom's major shareholder, which may also have important ramifications for eircom's strategic plans.

By the first quarter of 2010, eircom expects to be in a position to address the important issues raised by the Discussion Document on the basis of a confirmed strategy that is backed by the company's management and shareholders. It is to be hoped that this timing will enable eircom to set its strategy with greater visibility of local and global economic trends and their likely impact on access to capital as well as customer demand at both the wholesale and retail levels. This assessment will play an important role in helping to achieve the efficient development of high-speed broadband infrastructure in Ireland within a sensible timeframe. Until the completion

¹ Discussion Document at paras. 3.22, 3.28.

of eircom's internal NGB business review, eircom must reserve its position on many of the issues raised by the Discussion Document.²

In light of all these factors, eircom urges ComReg to use this consultation as a starting point, and to consult further on the key issues following completion of eircom's internal NGB business review and issuance of the final NGA recommendation by the European Commission.

B. *The Discussion Document correctly identifies a number of key concerns and uncertainties.*

The Discussion Document identifies several key supply- and demand-side factors that any investor in high-speed broadband will need to evaluate as part of its business case. The document offers a candid assessment of the many commercial uncertainties that currently cloud the assessment. However, the document does not appear to fully grasp the enormity of the overall challenge. eircom's NGB roll-out will have few precedents in the history of Irish private sector investment in terms of its scale, financial risk and the degree of potential regulatory intervention based on proposals being mooted at European and national levels.

As ComReg acknowledges, a key variable is the cost of deployment. The Discussion Document (at para. 2.27) cites a Yankee Group estimate putting the cost of FTTx at between €300 per dwelling in dense, urban multi-dwelling units with pre-existing infrastructure, and "more than €1,000" per dwelling in less dense areas and single-dwelling units. Based on these figures, the Discussion Document observes (at para. 2.29) that the costs of NGB deployment "can be significant" and will differ depending on local conditions.

eircom estimates that the cost of upgrading the Irish access network to an FTTC solution for the top 65 percent of exchanges (reaching approximately one million homes or 68 percent of the population) will cost on the average of €300 per home

² ComReg should also take note that following the withdrawal of the Boxer consortium, eircom, as part of the One Vision consortium is currently assessing the business case for accepting the invitation from the Broadcasting Commission of Ireland for the deployment of the DTT Multiplex Contract. This project, a key national infrastructure initiative to meet Ireland's compliance obligations relating to the switch-over from Analogue to Digital TV, faces the same vulnerabilities as NGB in relation to the availability of scarce capital, the assessment of consumer demand for another multi-media platform, limited market scale and scope, etc. A holistic strategic view of all these related projects is imperative; failure to do so will increase the prospects of either inadequate total investment or stranded investments with a sub-optimal national outcome.

passed in urban areas, excluding CPE and OSS and other non access network costs, for a total estimated cost to eircom of between €400 million and €500 million. Estimates across Europe for the deployment of FTTH range from €1,000 - €2,000 per home passed. There are a number of factors which influence the cost – availability and quality of duct, network architecture, demographics, density of multi-dwelling units etc. In light of Ireland's population dispersion, it is reasonable to assume that the costs will be close to the top of that range.

As ComReg is aware, factors relating to scale, demographic density and dispersion have a significant impact on network deployment costs in Ireland, as has been demonstrated by the Dotecon study which was submitted by eircom to ComReg on 18th November 2008 and these factors have had a significant impact on the cost of LLU deployment in Ireland. These same factors will impact the costs of NGB roll-out to an even greater degree than in the case of LLU because the newly built elements will extend much further towards the edge of the access network. As a result, proportionate Government intervention in accordance with EU State Aid rules will be essential to help fund high-speed broadband roll-out in the more sparsely populated areas, where the costs will be significantly higher, in order to minimise the digital divide.

In an NGB environment, state funding is likely to be required for the final 30-40 percent of the population. Uncertainties associated with the degree of Government support for NGB deployment in uneconomic areas and the basis on which state involvement will occur are additional risk factors that must be taken into account by eircom in developing the NGB business case. In any event, securing the commercial finance necessary to fund the deployment of fibre-based NGB in the current economic climate presents a major challenge, and the regulatory signals being sent out by ComReg will have a profound effect on eircom's ability to secure the necessary financing and the cost at which it is able to do so.

Another major unknown at this stage, and one that is also linked to the current state of the economy, is the value that consumers will place on access to higher broadband speeds over the next three to five years. Consumer demand and willingness-to-pay are obviously critical to eircom's NGB business case at both the retail and wholesale levels. As ComReg correctly points out in the Discussion Document (at paras. 2.23 & 5.8), although many applications can be delivered over current generation broadband networks, a number of new applications requiring NGB are emerging which consumers will want to be able to access. The findings of

a recent survey of residential consumers commissioned by ComReg are not particularly encouraging, however. The survey concluded that “[a]lmost 4 in 10 respondents anticipate a reduction in their communications expenditure over the next 12 months”, with 3 in 10 already having done so, primarily through reduced consumption.³ According to the survey, moreover, “[n]early 70% of consumers indicate that their home internet connection is fast enough for their needs.”⁴ In light of the severe recession into which the Irish economy has fallen, these responses are not surprising. Two critical questions for the business case are when the Irish economy will improve and how the upturn will affect consumer confidence and spending patterns in relation to NGB and bandwidth-hungry applications. Assuming that, over the next several months, the trends that emerge are positive, the business case will rest on the reasonableness of the regulatory regime, which will be a key factor in decisions taken by financial institutions and shareholders on whether to risk making the capital available for fixed-network NGB deployment.

The Discussion Document (at para. 5.9) touches on another key issue that is of major importance to operators attempting to plan for the conversion of their existing DSL networks to NGB. As ComReg points out, there is a “tri-partite relationship between the network owner, the end consumer, and the suppliers of ‘over the top’ services which are provided over the network.” Thus, a corollary to the issue of the extent to which end consumers will be willing to pay for bandwidth-intensive services and the network upgrades required to deliver them is whether content providers will be willing to share part of the burden by paying more for the delivery of higher-bandwidth applications. ComReg correctly perceives (at para. 5.4) that there is inherent tension between network builders and content providers that will need to be resolved over time.

The mutuality of dependencies within the tri-partite relationship creates a number of planning challenges for the conversion of DSL to NGB. In particular, there are two sets of concerns that pose serious challenges for eircom but which are likely to be of far less concern to competing cable television network operators. First, the “free” Internet culture places the pricing proposition for eircom on a much more precarious footing than that for competing cable television networks, which consumers perceive foremost as providers of premium video programming, including sports events, films

³ ComReg issues Q2 survey findings of residential customer attitudes to communications and information technology, ComReg PR230709 (23 July 2009), based on research conducted by Millward Brown Lansdowne in May-June 2009.

⁴ *Ibid.*

and other types of entertainment for which customers typically are willing to pay handsome prices. Second, the tri-partite relationship operates very differently for cable television operators because their relationship with programming providers is far more evolved and the operators themselves are rightsholders in respect of significant programming segments distributed over their networks.

Because IPTV is expected to be one of the most important drivers of demand for high-speed bandwidth over NGB networks, the business case must take account of the fundamental differences between the current and foreseeable *programming* options available to FTTx and cable television platforms. In Ireland, the analysis will also need to consider the role of Sky Television, in particular the degree of its control over premium programming in the delivery of subscription television via satellite along with bundled voice and broadband services.

Another key variable in eircom's business case is the likely timing and extent of investment by competing and other wireless network operators in high-speed broadband infrastructure. A baseline question is whether eircom's actual and potential wireless competitors will see a benefit in postponing investment in their own high-speed broadband networks while waiting to see whether a market develops following the roll-out of eircom's FTTx and UPC's DOCSIS 3.0 networks. In any event, as discussed in Section 1.D below, upgrades to mobile network infrastructure to enable high-speed broadband services and further development of fixed wireless networks are also dependent on the availability of spectrum, which is another major area of regulatory uncertainty in Ireland. The timing and extent of high-speed wireless broadband deployment is important not only for modelling the effects of enhanced platform competition from wireless NGB networks but also for assessing wholesale demand for FTTx access.

In an unstable environment (particularly given the uncertainties created surrounding spectrum policy in Ireland), playing a wait-and-see game may be a prudent strategy for some wireless operators to pursue. However, it would be a perverse result if their deliberate inaction served as the basis for regulatory decisions that penalise eircom for taking a substantial investment risk by subjecting it to heavy-handed regulation at the wholesale level. As discussed in the following section, regardless of the speed with which wireless NGB platforms are deployed in Ireland, the imminent threat of their entry coupled with broadband competition between UPC and eircom will be sufficient, in the near term, to justify a period of light-touch

regulation of NGB, at least in those geographic areas that are served by both eircom and UPC.

C. *ComReg has avoided consideration of a pivotal issue: What is **sustainable** competition in an NGB environment?*

Among the most inscrutable variables with which eircom's NGB business plan must deal is regulatory risk. Following a sobering discussion of the serious commercial uncertainties surrounding NGB, the Discussion Document goes on to describe a potentially onerous set of regulatory obligations that may be applied to eircom, and eircom alone, as and when it moves forward and invests in FTTx. By highlighting (at para. 6.6) the "range of regulatory tools" at ComReg's disposal in an NGB environment, the Discussion Document appears to take a page from the WPNIA market review, on foot of which ComReg proposes to impose a costly thicket of regulatory obligations in regard to eircom's provision of Local Loop Unbundling ("LLU"). As eircom has pointed out in the WPNIA review, many of these proposed obligations are unjustified and completely unworkable in the context of LLU, and there is no evidence whatsoever to support the extension of similarly onerous obligations to FTTx access. Indeed, it is an open question whether an *unbundled* wholesale solution (as opposed to an active solution more akin to bitstream access) will be necessary, desirable or feasible in an NGB environment.

Despite these unhelpful regulatory signals, the Discussion Document appears to acknowledge the fundamental dilemma inherent in applying a heavy-handed regulatory approach to eircom's provision of NGB. The document concedes (at para. 5.30) that in light of the "dynamic setting, . . . ComReg must clearly modulate its response to market developments." The document further notes that ComReg would be prepared to embrace a "new dynamic" that has the "support of the wider sector". Though oblique, these signals are welcome steps in the direction of a new regulatory settlement that eircom is keen to pursue as it moves forward with the preparation and implementation of its NGB business plan.

The appropriate framework for such a settlement, however, will need to be carefully considered. For example, the Discussion Document correctly observes (at para. 5.32) that the proposal to allow an upward adjustment to the Weighted Average Cost of Capital ("WACC") fails to address a very real concern: that eircom could be left with massive stranded investment if demand does not materialise in the expected timeframe. The Discussion Document also makes reference to the

potential for a range of flexible pricing arrangements based on purchase commitments for NGB access that could result in a greater role for “self-enforcement.” Although these options are, in effect, a variation on the WACC theme, eircom welcomes ComReg’s recognition of the need for a more creative approach to regulating a network that does not yet exist and which as a matter of public policy the Government wants to encourage eircom to construct.⁵ However, eircom urges ComReg to refrain from designing a regulatory cart before there is a commercial horse.

eircom believes that positive regulatory signals such as the willingness to consider pricing flexibility for FTTx access and the potential for supporting commercially negotiated co-investment solutions are helpful steps in the direction of what eircom hopes will be a completely new and innovative regulatory approach for NGB. Although eircom questions the commercial viability of the co-investment models that are being mooted (see Annex 1, page 13), the fact that these options are even being considered is a positive sign that the regulatory establishment is open to developing new ways of dealing with unprecedented commercial and public policy challenges.

Before proceeding to develop any specific regulatory measures for NGB, ComReg should first resolve a threshold question that is the proper starting point for any discussion of future regulatory policy: *What is “sustainable competition” in an NGB environment?* ComReg has identified (at para. 6.44) the “promotion of effective and sustainable competition” as one of the key regulatory principles for NGB. However, it has nowhere identified what this well-worn phrase actually means in terms of NGB roll-out.

In eircom’s view, the answer is clear. ComReg’s policy should be to promote platform competition amongst vertically integrated providers of voice, data and video services, which will in turn give rise to robust bandwidth-hungry competition in the provision of services, applications and programming. It is clear that in many parts of Ireland, actual competition from cable television is already creating a fierce contest for broadband customers. As eircom contemplates how to break into the IPTV market (which will present enormous challenges in terms of acquiring access to content that consumers will pay for), UPC is rapidly expanding into broadband and

⁵ In its 2009 report on NGB, the Irish Government has stated that a key public interest concern is that “[i]f there is not investment in Next Generation broadband now, Ireland will lag behind other advanced economies in terms of attracting inward investment and remaining economically competitive.” See “Next Generation Broadband; Gateway to a Knowledge Ireland”, at Sec. 5.4.

voice (a far less challenging vertical move). In a market characterised by vertically integrated providers, competition up and down the value chain cannot be conveniently dismissed when conducting a market review to assess the need for *ex ante* regulation.

At the same time, as discussed below, there will also be actual or potential competition from mobile and other wireless operators across the country. These operators will have the advantage of relatively modest investment thresholds and shorter lead times for high-speed wireless broadband deployment than is the case for FTTx. Thus, even if wireless operators delay NGB investment, the imminent threat of potential entry will be a potent force in the marketplace.

In these circumstances, ComReg should send a clear message that light-touch regulation will be the default position. Moreover, ComReg should make clear that anything like the regulatory obligations proposed for eircom's LLU offerings would be applied, if at all, on a symmetrical basis to *all* NGB providers so that no single platform provider is burdened with mandatory wholesale provision.

Unfortunately, the Discussion Document has missed an important opportunity to address these issues on a forward-looking basis. For example, the document merely repeats (at para. 5.18) the unexamined conclusion reached in past consultations that the "non-ubiquity of the cable network" means that UPC will pose a "dull competitive threat" to eircom in the near term. Although ComReg concedes (at para. 5.18) that UPC's recent upgrades "may, in the future, raise the competitive tensions posed by cable broadband providers in certain geographic areas," no attempt is made to evaluate the likely impact over the next three to five years. This issue is fundamental and requires far deeper examination on a forward-looking basis, including an assessment of how well UPC's upgraded and expanded network will perform against FTTx solutions over the expected lives of the investments.

In fact, UPC has consolidated what had previously been a fragmented cable television industry and is now at the mid-stage of a three-year programme to upgrade broadband in major urban centres servicing a total customer base of **55 percent of the addressable market** capable of being served on a commercial basis by FTTx (as discussed above). This is the relevant coverage figure on which ComReg should be focusing (rather than 35% of total households). This is a threat which eircom takes very seriously, particularly since UPC is already competing very aggressively to win broadband and voice telephony customers. With the

announced launch of its upgraded network in 2010 and the ability to advertise broadband speeds of 120 Mbps along with voice and subscription television programming, UPC poses anything but a “dull competitive threat” to eircom.

In eircom’s view, actual and evolving competition from cable television is sufficient to justify light-touch regulation at both the wholesale and retail levels, at least in those areas where UPC offers broadband and voice packages in competition with eircom. This basic competition question -- whether competition is sufficiently effective where two vertically integrated operators compete with one another from positions of strength on opposite rungs of the value chain in an NGB environment -- has not been addressed by the European Commission⁶ or ComReg; nor has the impact of actual and potential competition from fixed and mobile platform providers been fully considered.

However, in a paper published by OPTA in 2006, entitled “Is Two Enough?”⁷, the Dutch regulator concluded (in respect of legacy networks) that although competition may not be fully effective in a market consisting of two firms competing in the multi-play market, it may be the “optimal solution from a total welfare point of view”. This was predicated on OPTA’s observation that “[w]ithin industries facing large economies of scale, there is in some way a trade-off between the optimal number of firms on the market and the degree of competition within the market.”⁸ The OPTA paper went on to conclude that before considering regulatory intervention, a more thorough analysis was needed to determine where the market falls on the continuum between effective competition and monopoly. The paper also observed that it would be necessary to weigh “the costs of regulatory intervention against the potential benefits of more effective competition.”⁹ The paper called for further research on these points and noted (from its vantage point in 2006) that the prospects of “other infrastructures like mobile networks, fibre networks and fixed wireless access networks are also promising” for the development of competition in the provision of multi-play bundles.¹⁰

⁶ The European Commission’s second draft of the NGA recommendation appears to recognise that *three* vertically integrated NGA platform providers operating in the same market would be sufficient to permit a light-touch regulatory approach in a co-investment situation, but the basis for that construct is unclear.

⁷ OPTA Economic Policy Note No. 6, at p. 33 (Sept. 2006).

⁸ *Ibid.*

⁹ *Ibid.*

¹⁰ *Ibid.* at p. 24.

It is time for this fundamental issue to be considered afresh, based on market information that is available today in connection with anticipated NGB developments. In eircom's view, the picture is very different from that observed by OPTA in 2006 and provides a compelling case for regulatory forbearance based on the development of efficient – or sufficient – NGB platform competition between cable television, FTTx and mobile network operators.

The Discussion Document makes equally short shrift of the competitive threat posed by high-speed wireless broadband solutions, including LTE and WiMax, on the basis that no operator has yet committed to invest in substantial roll-out (para. 1.9). Despite compelling evidence, ComReg has consistently failed to credit the head-on competition that eircom already faces from mobile network operators in the provision of bundles of broadband and voice services. Although the Discussion Document offers the “preliminary view” that fixed and mobile broadband are not in the same market today, the paper acknowledges (at para. 5.11) that it is possible they could be in the future. This is a small but welcome step in the direction of reality-based market analysis.¹¹ In this regard, Vodafone Ireland’s recent agreement to take over all of BT Ireland’s retail customer base has transformed Vodafone into the second largest fixed network operator in Ireland. This development, coupled with Vodafone’s demonstrated ability to market bundled products (unfettered by any regulatory constraints) and the use of femtocells and other advanced technologies to maximise broadband speeds and network efficiency, place Vodafone squarely in competition with eircom in the provision of broadband and evolving high-speed broadband networks and services.

As the Discussion Document correctly acknowledges, mobile network operators can transition to HSPA+ and achieve speeds of up to 42 Mbps, and they will be in a position to complete this upgrade incrementally with relatively modest capital expenditures over time. As a follow-on or in the alternative, LTE will enable mobile operators to provide speeds in excess of 100 Mbps, or four times the minimum speed that ComReg uses to define NGB (spectrum availability permitting – see Section D below). Mobile operators will be able to offer super-fast broadband

¹¹ In a subsequent section of the Discussion Document (para. 5.19), however, ComReg appears to give credence to unnamed “commentators [who] do not see a future where the competitive constraint on fixed line broadband exerted by mobile wireless broadband is such that they can be seen to be in the same market. This point of view apparently rests on an unsustainably strict notion of perfect product substitutability, which is neither a requirement of competition law nor relevant as a matter of sound economics or regulatory policy.

speeds with capital outlays that are substantially less than those which will be required to deploy FTTx, and with a much shorter lead time.

Indeed, the Discussion Document appears to overlook the fact that most of the mobile network operators in Ireland are already deploying the latest family of mobile base station equipment (or have already done so). These new base stations are multi-standard and are capable of being upgraded to HSPA+ and LTE (assuming spectrum is made available) by means of software upgrades. The notion that it will take another three to five years before the impact of these new technologies is felt, as the Discussion Document apparently assumes, fails to acknowledge both supply-side realities and readily observable demand side drivers -- in particular the rapid take-up of mobile broadband to date. It is therefore imperative for ComReg to give full and impartial consideration to the impact of current inter-platform competition from mobile network operators and its potential impact -- in the near-term -- on NGB deployment, service innovation and pricing.

An assessment of actual and evolving competition from cable television, mobile and other wireless platforms is an essential input for the development of eircom's NGB business case and for prospective regulatory policy-making. Any such assessment should include an in-depth examination of existing commercial arrangements that will affect access by eircom and others to premium programming and public service content, including archive content. In eircom's view, in an NGB environment, access-to-content issues will become the new bottleneck.¹² As a result, consideration of these issues will be critical to a realistic assessment of market power and the need for regulation amongst vertically integrated operators, whose content offerings will be a key driver (if not *the* key driver) of NGB demand and a major source of revenue.

- D. *To promote mobile NGB, ComReg's approach to deciding key spectrum access issues should be holistic and aim to reduce regulatory uncertainty.*

ComReg's Discussion Document correctly identifies radio spectrum as a key determinant for the provision of wireless and mobile broadband services in Ireland. In citing the dramatic year-on-year increase in the use of wireless platforms for the delivery of broadband services, the Discussion Document notes that broadband

¹²

These issues are now coming to the fore in other countries where IPTV and HDTV are already being provided over FTTx in competition with cable television. See, for example, [OPTA programme access decision]; [Ofcom Sky programming investigation]; "Premiere to stop content distribution to Deutsche Telekom"; Total Telecom (14/08/2009); "AT&T want Cablevision HD Sports programs"; Total Telecom (14/08/2009).

access through wireless now accounts for 37 percent of all broadband delivered. Of this, 28 percent is delivered through mobile subscriptions, with this percentage rising year on year. The role, therefore, that radio spectrum plays as resource is of huge economic importance for the Irish economy and should not be underestimated.

As mobile is emerging as one of the most powerful ways to extend economic opportunities and the provision of key services, crucial to its continued development will be the mechanism through which radio spectrum is utilised. Encouraging the delivery of economically efficient mobile broadband coverage can be achieved through the adoption of a forward looking, long-term development framework. A fundament of this framework should be the encouragement of sustainable competition and efficient investment.

Although ComReg identifies a number of key drivers shaping future use of the radio spectrum (*i.e.* market adoption of next generation mobile standards), proper management of the radio spectrum is a key determinant in attaining the goals set by government -- in particular the development of a “smart economy” and a “knowledge society”.

The Discussion Document cites spectrum developments and initiatives in four key areas as the facilitators of the development of wireless-based NGB services. These initiatives are:

1. Future use of 900 MHz and 1800 MHz Frequency Bands,
2. The recent Consultation on the Digital Dividend in Ireland,
3. Competitive licensing process for the 3400-3800 MHz Band, and
4. Release of spectrum in the 2300 MHz Band.

Policy decisions taken with respect to these critical spectrum allocation and assignment issues will fundamentally influence the future development of the market and the delivery of products and services in Ireland. It is of major concern, however, that ComReg appears to be pursuing a highly fragmented approach in dealing with each area cited. The piecemeal resolution of these inter-related spectrum issues is the antithesis of the holistic approach to the delivery of wireless broadband that is required to enable major investors in the market to make coherent commercial decisions based on a reasonable degree of regulatory certainty. As we

will highlight in greater detail, ComReg also has failed to acknowledge the 2.6 GHz Band as key to facilitating the development of wireless-based NGB services. We would view this as a serious omission, as access here will also shape the development and deployment of future wireless broadband services.

The evolution of next generation mobile standards (with technologies such as LTE emerging as having potential to deliver NGB mobile services), the freeing up of additional radio spectrum for mobile use, and the liberalisation of existing spectrum so as to enable network operators to best utilise available technology, will all play an important role in ensuring that NGB becomes a reality for consumers in the Irish marketplace.

Key then to the delivery of mobile NGB services is an integrated approach to access, that is, one that approaches spectrum access on a holistic basis and looks for the promotion of competition, the encouragement of investment and the delivery of enhanced services to consumers. Aligning decisions on access to those taken in other jurisdictions across the European Union will also aid in the development of pan-European products and services and the development of a truly pan-European marketplace. This can only improve and enhance Ireland's efforts to develop its knowledge-driven economy.

In the Discussion Document, ComReg notes four key areas for spectrum development and, to date, we have responded to individual consultations on all of these issues. Responses have in the main outlined why the approach adopted to date falls short of what the market requires and what will ultimately deliver to the consumer. With respect, however, to discussion on NGB development, it is worth summarising the key arguments that we have previously outlined.

The availability of digital dividend spectrum for the delivery of mobile broadband services has the very real potential to enhance both the scope and depth of products and services offered by mobile operators.

As outlined above, the benefits of using digital dividend spectrum for the provision of mobile broadband are enormous, both in societal and economic terms. However, new technologies such as LTE¹³, whilst offering improved spectral efficiency with ensuing improvements in data provision, will require greater bandwidth. To ensure, therefore, that technological developments can be accommodated, regulators need

¹³ Advanced technology such as LTE will require wider bandwidths to offer mobile broadband data rates (for example 2 x 20 MHz for up to 150 Mbits/sec downlink)

to be mindful of the detrimental impact that some forms of regulatory intervention could have. In this regard, limiting spectrum bandwidth or inflating access prices could result in fewer operators, reduced competition, higher consumer prices and a lessening of service differentiation.

It is important for Ireland to ensure that access to spectrum is optimised, thereby guaranteeing that operators can utilise the spectrum in the most technically efficient manner possible and deliver enhanced services to the widest number of people as possible. Utilising digital dividend spectrum will allow for an expansion of services which should, if managed correctly, play an important role in improving economic performance and in bridging the digital divide.

Therefore, what industry in Ireland requires is certainty in regard to development, certainty of delivery and clarity on rights and access. If these are provided, industry can adequately plan the delivery of services and make solid investment decisions. It is for this reason that we have argued that long-term holistic planning is what is required for the Irish market.

With respect to the future use of 900 MHz and 1800 MHz spectrum and the release of spectrum in the 2300 MHz Band, decisions should not be taken in isolation from those relating to access to spectrum that will soon become available through release of the digital dividend. Operators require knowledge of market determinants, and forcing through decisions in isolation with respect to specific spectrum bands is not conducive to onward investment.

Indeed, liberalisation of spectrum to enable NGA should be implemented as soon as possible, and not just to spectrum awarded to new licencees. Indeed, with respect to the 900 MHz/1800 MHz bands, ComReg is effectively hindering NGB development by failing to allow for the immediate liberalisation of the bands utilised by existing licence holders.

Operators require certainty to make long-term and far reaching business decisions. If ComReg is serious about encouraging investment in technologies for delivering the types of wireless broadband networks required for NGB, it should be taking the steps necessary to create an environment that provides industry with as much knowledge as possible as to what spectrum will be available, when it will be available and how it will be available.

It should be noted that the Discussion Document has not identified future access to the 2.6 GHz band as a key to the development of NGB services. Because the 2.6 GHz band is a frequency band available for IMT 2000/UMTS, it is important that future access to this band is incorporated into a wider discussion of the way forward for developing wireless NGB services in Ireland.

- E. *ComReg's focus on more expansive regulation of LLU as a catalyst for NGB roll-out is misguided.*

The Discussion Document (at para. 1.9) makes the observation that Ireland “may not see substantial roll-out of NGB across the market for the next 3-5 years”. On this basis, the document expresses the view that LLU will be the key enabler of infrastructure competition for the next several years (paras 1.9 & 3.10). The document goes on to reassert ComReg’s commitment to continued work on LLU regulation and highlights the issue of migration from LLU to next generation access as a major factor in the transition to NGB.

eircom urges ComReg to rethink this regulatory focus. eircom has already invested heavily in making LLU available to wholesale customers that require this option. The critical foundation for competition in the NGB environment is not the expansion of LLU at this time but, rather, the development by each alternative network operator of a loyal customer base that will fuel demand for NGB applications and services over the range of high-speed platforms that will become available. Viewed from this perspective, the optimal regulatory approach for LLU at this time is maintenance of the established base subject to the minimum degree of regulation necessary. Expanded LLU deployment and increased LLU regulatory burdens will only serve to undermine the public interest in promoting the timely and efficient development of NGB. In terms of migration, eircom fully agrees that it will be important to ensure transparency and avoid disruption. A certain amount of lead time will be required to ensure that any consumer-facing issues (such as terminal equipment compatibility and delay-sensitivity problems with alarm or monitoring systems) can be dealt with in an orderly fashion and with minimum disruption. eircom commits to take all reasonable steps necessary to ensure that the transition is as smooth as possible for its wholesale and retail customers. However, eircom urges ComReg to make the resolution of end-consumer concerns the main focus of any notice requirements that may be prescribed. Apart from these concerns, the question of what constitutes reasonable notice prior to the cut-over from LLU to FTTx at each exchange will depend on the specific facts and circumstances in each

case and should be, first and foremost, a matter of commercial negotiation. ComReg's preliminary inclination to prescribe a mandatory five-year notice period prior to fibre cut-over at each exchange is untenable and should be reconsidered in order to avoid adding needless additional costs and risk to the NGB business case.

In this regard, recent developments in the UK are noteworthy. In a statement issued following a consultation similar to this one, Ofcom has concluded that a protracted conversion process could impose needless costs on BT and could impede NGB development and innovation.¹⁴ Ofcom has therefore provided a clear signal to the industry that its role as a regulator is *not* to protect existing infrastructure investments against market risks that may arise due to the emergence of new technologies (Annex 1.91), but rather to minimise disruption for end users. Because there currently is no clear data on which to base a transition plan, Ofcom has decided that it would be premature to attempt to develop a detailed migration plan at this time.

eircom urges ComReg to follow an approach similar to Ofcom's and avoid setting arbitrary and inflexible notice periods for the migration to fibre without having any of the relevant facts. eircom commits to working with its customers and the NGB Task Force to develop a workable transition plan once eircom's NGB strategy is finalised and a plan for the deployment of FTTx is in place.

- F. *ComReg should articulate workable and flexible guidelines for assessing margin squeeze in a converged marketplace.*

As indicated above, eircom welcomes ComReg's willingness to consider more flexible pricing approaches for regulated wholesale NGB services in consideration of the level of risk to eircom that would be associated with various levels of purchase commitments on the part of wholesale customers, including in the context of any potential margin squeeze test. However, it is clear that a mechanistic margin squeeze formula would be entirely inappropriate having regard to the added complexities of NGB multi-play bundles. A fair and pragmatic, as well as clear, approach to this issue will be critical to eircom's NGB business case and the assessment of any risk-sharing arrangements that may be contemplated.

If ComReg intends to regulate the wholesale pricing of NGB services through the application of a margin squeeze test, where appropriate and justified under the

¹⁴ Ofcom Statement, Delivering super-fast broadband in the UK, at para. 9.6 (3 March 2009).

framework, an essential requirement in eircom's view is the clarification of how ComReg would propose to apply such a test in situations where volume or term discounts are granted to access seekers willing to share the risk of eircom's investment in NGB infrastructure. eircom submits that it would be necessary that such a test relies on the lowest of any of the tiered access prices on offer to access seekers. Otherwise, the risk-sharing incentives created by these discounts would completely evaporate. In addition, in a situation where regulatory policy is intended to encourage NGB investment, investors who are willing to assume a substantial investment risk should not be subjected to whatever "hypothetical operator" test is most onerous to the risk taker. Any margin squeeze test that is applied should follow established judicial precedents and give full benefit of the doubt to the access provider in situations where alternative inputs can be used in conducting the competitive assessment.

These principles are essential elements of an enlightened regulatory pricing policy going forward. eircom urges ComReg to address these issues as an integral part of any pricing flexibility approach that is considered in line with the risk-sharing concepts outlined in the Discussion Document.

- G. *ComReg should resolve fundamental issues relating to geographic de-averaging with the advent of NGB.*

As discussed above in Section 1.C, in an NGB environment, many areas of Ireland will be characterised by effective inter-platform competition amongst vertically integrated operators. These areas should be evaluated as a single subnational market for purposes of the market review process.

In such areas, price deregulation at the wholesale and retail levels should be the presumptive policy applied to eircom and all NGB-platform providers operating on the market (apart from non-discrimination obligations subject to the principles relating to margin squeeze, as set forth in the previous section). To the extent that any form of access regulation is deemed necessary in such markets, there should be a presumption that the regulatory obligation would apply symmetrically to all platform providers in the absence of compelling evidence of a unique and enduring bottleneck controlled by a particular operator (or operators).

In other parts of the country, where the costs of providing fibre-based NGB solutions are uneconomically high, the Government's policy for providing financial assistance will be a critical factor. However, these plans have yet to crystallise. Also unknown

is whether ComReg has developed any proposals for transitioning from the traditional geographically-averaged pricing model to a system that is geographically cost-oriented and transparently subsidised in high-cost areas.

eircom assumes that, in line with European practice and Community law, such a transition will require the establishment and administration of a Universal Service Fund and a transparent funding mechanism. eircom looks forward to working with the Government and ComReg to develop an appropriate funding scheme that will enable the ubiquitous deployment of NGB networks, without the concern that profits earned by eircom in its FTTx business and reflecting appropriate risk incentives will become a forced source of cross-subsidy for the funding of NGB in areas where fibre-based access cannot be deployed on a commercially viable basis.

2. RESPONSE TO COMREG'S SPECIFIC QUESTIONS

eircom/meteor's responses to the specific questions posed by the Discussion Document are set forth below.

Question 1: *What speeds and other quality of service parameters will be demanded by businesses and consumers over the next 3 to 5 years? Please explain your reasoning. Do you believe the market itself will deliver these capabilities, and within what timeframe?*

The speeds and quality of service will be determined by the applications demanded. Because IPTV is expected to be one of the most important drivers of demand for high-speed bandwidth over NGB networks, any demand assessment must take account of the fundamental differences between the current and foreseeable *programming* options available to FTTx and cable television platforms. In this regard ComReg should reconsider its position in relation to the symmetry of obligations among competing platforms.

Question 2: *Do you agree that NGB network deployments can provide a socioeconomic benefit? If so, who are likely to be the greatest beneficiaries and why? Should the policy framework explicitly favour the development of NGB in Ireland, and with what specific socio-economic goals in mind?*

From a mobile perspective, the availability of spectrum released as part of the digital divide will play a vital and important role in expanding access both

in terms of speed and geographical coverage. The GSM Association has argued that if just 25%, or around 100MHz, of the spectrum currently used by analogue TV (470 - 862 MHz) was re-allocated to mobile communications, the mobile industry could dramatically speed up the rollout of broadband communications and increase coverage.

The spectrum that could become available is ideal for the delivery of mobile broadband applications as its characteristics would allow for the delivery of rural broadband in a more economically efficient manner, i.e. it would allow operators to cover large geographical areas with fewer base stations: with resulting savings in expenditure and huge environmental benefits. The result, we would argue, is the delivery of potentially cheaper broadband services to a larger number of customers.

In addition, the spectrum would also ensure higher quality indoor coverage, enhancing operators' ability to provide a range of products and services to the market.

In terms of the types of applications and services that could be delivered, these include:

- Mobile broadband
- High Definition TV
- Video streaming
- Mobile music
- Video calling and blogging
- Gaming

The above applications would help support a range of services, including distance learning, enterprise applications, e-health etc, all of which encourage and advance the development of a 'knowledge/smart economy'.

Question 3: *How important will cross-platform competition be to the development of NGB Networks? Do you consider that all broadband platforms are capable of supporting NGB? In what circumstances might some such platforms be more suitable than others in providing timely and efficient NGB.*

Cross-platform competition will continue to develop between FTTx, cable and wireless platforms and will intensify in an NGB environment. All of these platforms will be capable of delivering bandwidth-intensive solutions at speeds in excess of 100 Mbps. Please see Section 1.C above and Annex, pages 9-10.

Question 4: *Do you consider that substantial (both in cost and coverage terms) private sector led investment in the development of NGB networks is likely over the next 3-5 years? If not, and should a gap occur in comparison to other European countries, what will be needed to encourage such private sector investment in Ireland?*

eircom, UPC and other market participants will make major investments in NGB during that period, as will some or all mobile operators and other wireless operators. However, proportionate Government funding will be necessary to support NGB roll-out in high-cost areas. Please see Section 1.A (pages 2-3), Section 1.B (pages 4-5) and Section 1.F.

Question 5: *In what circumstances would any of the above (or other) approaches be appropriate in stimulating NGB roll-out in Ireland? How might such interventions safeguard the development of competition?*

eircom is at present considering the various options associated with the roll-out of NGB. As part of this process it is reviewing international approaches, including operating models. eircom agrees that the maintenance of competition is important and in its view there is already real and sustainable inter-platform broadband competition in Ireland. In that context it is essential that sufficient regulatory attention is given to the encouragement of investment in NGB.

Question 6: *Do you consider that the issues identified are the main enablers and inhibitors of NGB developments or are other issues of greater relevance? Who are the key stakeholders who might be in a position to influence these issues and how might they best do so?*

eircom does not agree that further investment in LLU (beyond maintenance of the existing systems) is a “key enabler” of NGB. On the contrary, increased regulatory burdens (including unreasonable notice periods prior to

the transition to NGB) will be contrary to the public interest in promoting the timely and efficient development of NGB networks. Please see Section 1.E.

The Discussion Document has identified a number of enablers and inhibitors for NGB development in Ireland. Enablers are identified as market certainty and the development of competition, whilst inhibitors include the risk created for industry by regulatory uncertainty. Although eircom accepts that competition is one of the key drivers for development of the marketplace, it should be noted that competition must be sustainable. An environment that encourages sustainable, long-term investment in both wired and wireless NGB is one that will deliver optimal results in terms of market dynamics and product and service availability.

Question 7: *Are the areas identified the relevant tools available to ComReg for accelerating NGB investment in Ireland, or could other regulatory levers be as or more effective? What might be the impact of these activities on both the level and timing of NGB developments?*

eircom does not agree with ComReg's preliminary view that NGB should fall within the definition of the current WPNIA market, which ComReg has in any event defined in a way that is unrealistically narrow. Moreover, for the reasons set out in its response to the WPNIA consultation, does not agree with the inappropriate range of remedies proposed.

eircom agrees with ComReg in regard to allowing a risk premium to the WACC with respect to NGB investments. It further agrees that in practice, this is unlikely to be sufficient in itself to overcome the wide range of broader uncertainties associated with such the required investment. eircom also notes that the proposal from the EU with regard to risk premiums is much too narrowly focused and needs to be reviewed.

Question 8: *Do you see a role for collaborative industry approaches in seeking to agree wholesale models for open access to SMP operator NGB networks? Will infrastructure sharing be critical for early deployment of NGB in Ireland? What do you see as being the appropriate regulatory response in such circumstances, particularly in light of the need to promote effective competition, innovation and incentivise investment?*

eircom is open to the concept of collaborating with industry partners with respect to the development of NGB networks in Ireland. eircom is currently involved in a collaborative effort with other operators to establish a common understanding of the scale of the challenge in providing NGA in Ireland and the results of this study will be submitted to ComReg by IBEC TIF. At that stage all interested operators may consider the merits of a consortium approach. However, experience in the sector of consortium approaches to network development is not encouraging. Agreement between the principals on key issues cannot be assumed in a timely fashion or in manner that is guaranteed to be sustainable.

At this stage what can be reasonably stated is that a continuation of the current approach, whereby one operator is obliged to take all the risks inherent in a new fibre access network, will not be conducive to progress. Conversely a symmetrical and fair sharing of the risk whether through negotiation or through the regulatory process will facilitate the development of NGA. This is of particular concern to eircom as the major fixed network operator in Ireland already investing significantly more than any other telecommunications operator in the Irish market.

Question 9: *What role has the regulation of investment incentives such as wholesale pricing to play in stimulating the development of NGB networks?*

eircom has addressed the regulatory issues associated with NGB in its comments to the European Commission draft recommendation on regulated access to Next Generation Access (NGA) (Annex 1).

Question 10: *Is there a case for allowing a differentiated regulated rate of return for eircom in relation to risky NGA investments, and would this in fact be effective in encouraging early and widespread development of NGB fixed line networks?*

eircom has addressed the regulatory issues associated with NGB in its comments to the European Commission draft recommendation on regulated access to Next Generation Access (NGA) (Annex 1).

6.1 Eircom Annex 1

eircom Ltd.

**COMMENTS OF EIRCOM IN RESPONSE TO THE
EUROPEAN COMMISSION DRAFT RECOMMENDATION ON
REGULATED ACCESS TO NEXT GENERATION ACCESS
NETWORKS (NGA)**



24 July 2009

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1. Introduction and Summary

eircom welcomes the opportunity to furnish its views on the revised draft of the European Commission's Recommendation on regulated access to NGAs, dated 12 June 2009 ("Second NGA Draft").

eircom is an active member of the European Telecommunications Network Operators' Association ("ETNO") and has contributed to the comments submitted by ETNO in response to both the first and second drafts¹ of the NGA recommendation. Among the key points made by ETNO's submission on the Second NGA Draft are the following:

- *Role of symmetric regulation in the terminating segment:* The Commission should specify, in accordance with expected modifications to Article 12 of the Framework Directive, that access to the terminating segment should be symmetric in principle to ensure a level playing field for investors.
- *Market-led approach to NGA technology and architecture:* The Commission should not prejudge which technology will triumph as the medium for NGA by requiring SMP operators to roll-out specific network solutions in the terminating segment, which would severely distort competition and could lead to under-investment in certain technologies and over-investment in others; nor should the Commission mandate unbundling before it is clear whether it will be technically feasible or economically sustainable from a supply and demand standpoint.
- *Regulatory certainty:* The regulatory principles governing NGA should be clearly defined, over the life of the investment, so that investors can

¹ ETNO Reflection Document in response to the Commission Recommendation on regulated access to Next Generation Access Networks (NGA), 24 July 2009.

make informed investment decisions based on the regulatory and financial risks involved.

- *Proportionate gradation of access remedies and geographic segmentation:* The approach proposed by the Commission in the first draft of the recommendation envisaged a proportionate gradation of remedies; this should be a cornerstone of the final recommendation, which also should recognise the potential importance of sub-national markets to the competitive assessment in a fibre environment.
- *Flexible pricing of wholesale NGA products:* The Commission should not set inflexible pricing obligations but rather should encourage NRAs to determine, on a case-by-case basis, whether cost orientation is necessary to achieve effective competition.
- *New pricing models and margin squeeze analysis:* The final recommendation should take into account the issues of risk premium in WACC and risk sharing pricing models between investors and access seekers; while margin squeeze assessments may be relied upon to detect instances of discriminatory pricing at the wholesale level, the Commission should modify a number of disproportionate and ill-conceived features of the *ex ante* margin squeeze assessment discussed in the draft recommendation.
- *Need for sound market analysis:* The Commission should not prejudge the market definitions that will apply in the case of NGA services and should encourage NRAs to carry out a proper forward-looking demand and supply side substitution analysis before reaching any conclusions on the scope of the relevant market, which should be evaluated on a technology-neutral basis.
- *Efficient migration to NGA:* The blanket five-year migration period specified in the Second NGA Draft is not appropriate; the Commission

should make clear that NRAs should intervene only where commercial negotiations fail, by specifying minimum notice periods for de-commissioning on a case-by-case basis in accordance with the relevant facts and circumstances.

eircom strongly endorses the conclusions – and shares the many concerns – that have been identified in ETNO’s Reflection Document on the Second NGA Draft, which we incorporate by reference in this response. However, because of the critical importance of the Commission’s NGA recommendation to eircom, its customers and, indeed, to economic and social development in Ireland, we wish to supplement the ETNO submission with our own comments by expanding upon the discussion of several issues which we believe would benefit from further elaboration at this time.

Our comments will focus, in particular, on the following points:

- the importance of national circumstances and conditions in developing *ex ante* regulation of NGA in each country;
- the Commission’s unsustainably narrow and technology-specific definition of “NGA”;
- the significance of sub-national markets in an NGA environment;
- the dangers of inflexible and mechanistic *ex ante* margin squeeze tests that fail to take account of the actual market dynamics; and
- the apparent intent behind the proposed recommendation to promote a co-investment approach that could create many more problems than it solves.

2. **The final recommendation should exhort NRAs to take full account of national circumstances when implementing NGA regulation**

The NGA recommendation should achieve a reasonable balance between the need to harmonise regulation across the EU on the one hand and, on the other hand, the need

for national governments and NRAs to address the specific issues and challenges raised by their individual circumstances, including economic, social, geographic and other factors. The Irish situation is a case in point.

The Irish National Context

The Irish economy has been severely affected by the recent economic downturn and faces the same general problems as other Member States, but the problems are compounded. These include economic contraction with declining consumer demand and reduced investment in enterprise. In addition, a chronic deficit in public finances means that economic recovery may take significantly longer than in other Member States and will certainly limit the extent to which the Irish Government can fund ICT infrastructure (within EU State Aid rules).

eircom believes that the development of Next Generation Networks (“NGNs”), including NGAs, is critically important for Ireland’s economic recovery and can have a transformational effect on economic enterprise and society in general. Primarily, it will enable the transformation to a smart economy that will be dependent on externally traded high-value services, especially in the ICT sector. For example, the following ICT developments identified by the Irish Government² will require ubiquitous availability of ultra-band services over fibre and equivalent NGN platforms:

- Roll-out of location-based services using ambient intelligence, pervasive computing, and embedded intelligence;
- Development of intelligent transport systems using Global Positioning Systems and other technologies that manage the flow of people, goods and services, including pay-as-you-go systems for transport, insurance, etc.;
- Technologies for independent living, including embedded sensors;

² Sharing our Future – Ireland 2025 Forfas, July 2009.

- The growing use of biometrics for health and security purposes;
- Transparency and security of supplies, for example, food security and traceability;
- The management of distribution and freight systems using radio frequency identification, etc.;
- Cash-free payment systems;
- Remote tele-services; and
- Virtualisation of work.

However, the NGN/NGA networks required to support these developments have not yet been built in Ireland. It is estimated that the cost of upgrading the Irish access network to an FTTC solution for the top 65 percent of exchanges (reaching approximately one million homes or 68 percent of the population) would be between €400 million and €500 million. It is estimated that that an FTTH solution could cost €2,000 per home for new-build premises and €2,500 per home to retrofit existing premises. The business case for this investment on a national basis is extremely difficult to establish.

Therefore, the primary and immediate objective of public policy supported by the regulatory framework must be to ensure that these NGN/NGA networks are built.

In line with the overall objectives of EU sectoral policy on telecommunications, the Irish Government has decided that NGN/NGA investment will be led primarily by the private sector facilitated by a regulatory regime that encourages investment and the development of sustainable competition³. However, there is also an expectation that Government intervention of some type will be necessary to ensure that NGN/NGA networks will be provided in areas where the commercial case for private investment cannot be made. The particular features of the Irish market (scale, demographic

³ Next Generation Broadband – Gateway to a Knowledge Ireland, June 2009.

density and dispersion) make such Government intervention essential in order to achieve the goal of ubiquitous NGN/NGA networks with minimal digital divide.

Notwithstanding the limited availability of the Government funding referred to above, the degree of State intervention will depend on the level of geographic/demographic coverage that private investment can achieve. In first generation broadband, the Irish Government, with EU Commission approval, introduced a State-funded National Broadband Scheme to in-fill the last 10 percent of the population. In an NGA environment, this is likely to be the final 30 to 40 percent of the population, with Government intervention to be governed by the EU Commission's recent Communication on the application of State Aid rules in relation to rapid broadband deployment. The percentage of the population that will ultimately be able to access NGA networks built by means of private investment will depend to a large extent on the anticipated impacts of regulation.

The secondary objective of public policy therefore should be to ensure that the requirement for State intervention is minimised by encouraging the maximum development of private investment. The regulatory model applied to the investment has a key role to play in achieving this objective.

The Irish Telecommunications Sector

Perhaps because of Ireland's unique geographic/demographic characteristics, including an island setting that provides a very hospitable environment for the use of spectrum, the first-generation broadband market in Ireland is already exhibiting the effects of rapidly developing inter-platform competition. For example:

- Availability and take-up of first generation broadband has improved significantly in the past twelve months and in general, speeds and prices compare favourably with other Member States;
- DSL is declining in terms of its overall platform share of the broadband market (including cable, mobile and Fixed Wireless Access ("FWA")) – approximately 54 percent of all connectivity.

- It is estimated that 3G/HSDPA is available to over 90 percent of the population with overall mobile broadband penetration at 28 percent and growing. In the residential space, a recent survey commissioned by ComReg has found that use of mobile broadband “increased markedly last year with 18 percent of home internet users now using this access method,” as compared to 8 percent in Q2 2008.⁴
- UPC has consolidated what had previously been a fragmented cable television industry and is now at the mid-stage of a three-year programme to upgrade broadband in major urban centres servicing a total customer base of 35 percent of the population, which would equate to approximately 55 percent of the addressable market capable of being served on a commercial basis by wireline NGA (as discussed below).⁵

Although there has recently been significant investment in NGN by fixed and mobile operators, this has so far been mainly focussed on the core network capability. eircom will complete national roll-out of its core NGN network by the end of 2010. The Irish Government has funded the construction of fibre rings (Metropolitan Area Networks) in over 90 cities and towns and State-subsidised services from these networks are used by other fixed and mobile operators to compete with eircom in the provision of broadband services at the wholesale and retail levels on a nationwide basis.

However, it is the deployment of ubiquitous broadband access networks in Ireland that has historically presented the largest obstacle and this challenge will be even greater in the roll-out of NGA. Although the “last mile” issue is not unique to Ireland, the scale and scope of the problem represent far greater challenges than in most other EU countries. This is due primarily to Ireland’s unique demographic structures and

⁴ ComReg Consumer ICT Services Survey Q2, 2009 – http://www.comreg.ie/publications/comreg_consumer_ict_services_survey_q2_2009.583.103431.p.html.

⁵ Irish Communications Market ComReg Quarterly Reports – various at www.comreg.ie.

relatively low population density⁶. Compared to other Member States, a smaller proportion of the Irish population resides in urban areas and, even within these urban areas, the population tends to be lower than in other Member States. In non-urban areas, there is relatively little population clustering and a significantly longer tail of high cost rural customers. As a consequence, the cost of access-line provision in Ireland is estimated to be up to 45 percent higher than in the EU15.⁷

Recently collected data on Ireland's housing stock (*i.e.* habitable residences) provides evidence of the stark reality of the country's NGA investment challenge. The Irish national housing stock totals over 1.9 million units – an increase of over 33 percent since 1997. Detached houses constitute 43 percent of the national housing stock, with just 10 percent being apartment blocks. More than 33 percent of the national housing stock comprises one-off housing (*i.e.* detached housing in the open countryside). Furthermore, the percentage of one-off housing actually increases as one moves towards the more peripheral parts of the country. For example, in 2007 one-off houses represented 40 percent and 47 percent, respectively, of the Western seaboard counties of Mayo and Donegal.⁸

The real addressable market for fibre NGA in Ireland is disproportionately limited compared to other Member States. Therefore, any regulatory framework which predetermines that fixed fibre-based networks will be the only viable technology platform for NGA services in Ireland is flawed. If that regulatory framework further disadvantages the fixed network operator compared to other platforms through the imposition of disproportionate, asymmetric remedies, investment will be difficult to justify outside of densely populated urban areas from a commercial perspective. In particular, if the recommendation confers significant artificial advantages on upgraded mobile broadband (ultimately LTE), upgraded cable (DOCSIS-3.-0), WiMax and upgraded copper through LLU by handicapping eircom alone with a heavy regulatory

⁶ Further detailed breakdown of the impact of demography on the economic case for NGA in Ireland is presented by ComReg in D09/56 Next Generation Broadband in Ireland – at www.comreg.ie, July 2009.

⁷ Access Network Cost in Ireland – A presentation by Dotecon to ComReg, 18 November 2008.

⁸ Department of Environment Housing Statistics Annual Report – Various.

overlay, the case for commercial FTTH/FTTC services in any of Ireland's addressable broadband markets will be problematic to say the least.

Despite the many challenges, eircom is confident that all stakeholders can develop a fair and reasonable roadmap for achieving the objective of world-class NGN/NGA in Ireland. eircom invested €1.1 billion in its networks in the past three years, which represented an increase of over 30 percent in investment levels on the previous three-year period. This resulted in a substantial increase in fixed and mobile broadband speeds and availability. More recently, eircom has been addressing key financial challenges arising from the economic downturn by introducing efficiency measures which, *inter alia*, have included significant reductions in pay costs. eircom is confident that if the business case for NGA is sustainable, based on clear customer demand and a fair regulatory regime, it will be in a position to further increase investment levels to develop the NGA network.

Ultimately, signals from policy makers at the EU and national levels that a fair, symmetric, and technology-neutral regulatory regime will be developed for NGA will assist this critical transformation process to move forward. Such a regulatory regime will also help enable all stakeholders to respond to market challenges in a forward-looking manner, while minimising disagreements within the sector over key strategic issues affecting shareholder value and stakeholder interest.

3. **The final recommendation should define NGA to include all forms of high-capacity wired and wireless access**

In light of the discussion above, it is apparent that the definition of NGA upon which the draft recommendation is centred – *i.e.* wireline network solutions only – is unreasonably narrow. This technology-specific focus is not only unrealistic but inherently discriminatory, and thus produces an unnecessarily heavy-handed regulatory result for a single broadband provider in each national market.

In many countries, including Ireland, the time horizon over which the Commission's final NGA recommendation is likely to be implemented is at least five years. As discussed in the previous section, further development of strong inter-platform

broadband competition amongst upgraded fixed telecommunications, cable television, FWA and mobile data networks is already in train. Such end-to-end, infrastructure-based competition should be encouraged under the Commission's leadership. Yet the thicket of onerous NGA obligations contemplated by the Second NGA Draft suggests that the Commission has failed to give due weight to these important developments in crafting the Second NGA Draft.

In this regard, it is interesting to note that the Second NGA Draft includes a presumption that a "regulatory-lite" solution would likely suffice in cases where there are at least three operators competing at the retail level on the basis of their own networks. It is unclear why the Commission has apparently ruled out the possibility that vigorous competition between two such operators would not be sufficient to eliminate, or at least reduce, any asymmetric *ex ante* obligations applicable to one of the two. In any event, the "three-operator" deregulatory trigger set out in the draft recommendation implies that the expected development of self-provided high-speed cable, mobile broadband and FWA networks over the next five years should be given far greater consideration in assessing the costs and benefits of establishing a highly intrusive – and technology-specific – regulatory scheme for NGA. This is all the more important in countries like Ireland that are facing the kinds of economic and demographic challenges described above.

4. The final recommendation should address issues relating to sub-national NGA markets in a positive and holistic way

In an NGN/NGA environment, there is an increased potential for competitive conditions to vary significantly in different areas within a national market. As already noted, this is particularly so in countries like Ireland, where there are densely populated urban areas surrounded by a large proportion of territory in which the population is widely dispersed. Such factors may be relevant to the analysis of both Markets 4 and 5.

It is with considerable disappointment, therefore, that eircom has reviewed the relevant language of the Second NGA Draft (recital (49) and para. 46) which would

appear to question the appropriateness of analysis at the sub-national market level in an NGA environment. The final recommendation should make clear that actual or potential competition in sub-national markets from powerful competitors with self-provided networks, including cable television, mobile and FWA, should be considered in this context.

However, in many countries, including Ireland, a number of important subsidiary issues will need to be addressed in parallel by national regulators to ensure that geographically targeted remedies are implemented in a way that does not create a cost/price imbalance in those sub-national markets where competition is less likely to develop. The recommendation should provide guidance on the ways in which national regulators should holistically address these issues.

5. **The final recommendation should establish baseline principles for a fair and proportionate *ex ante* margin squeeze test**

The draft recommendation fails to make the critical link between risk sharing and the promotion of investment on the one hand, and the elements of a test for margin squeeze on the other. In an *ex ante* setting, where the potential for margin squeeze will necessarily have to be assessed on the basis of projected demand, revenues and costs in a new and evolving environment, it will be particularly important to apply the test in a balanced way that takes into account the actual and expected market dynamics. This cannot be accomplished by applying a mechanistic formula using inputs that are effectively skewed to handicap the regulated access provider's ability to compete in downstream markets. The problems with such an approach have already become manifest in some NRAs' attempts to apply an inflexible *ex ante* margin squeeze formula to the current generation of access services.

With the introduction of NGA, these concerns will be magnified as packages of fixed, mobile, Internet and subscription audiovisual services are introduced. It would be completely unfair and disproportionate for a particular NGA provider to be constrained by highly restrictive price floors whilst well-financed and powerful

mobile, cable television and FWA operators are allowed to price competing packages without limitation.

The final recommendation should provide balanced guidance on how national regulators should deal with these difficult and complex issues in a proportionate and non-discriminatory way. In particular the recommendation should make clear that any *ex ante* margin squeeze guidelines adopted by an NRA should be designed to protect *competition* rather than particular individual competitors. The assessment also should take account of actual market circumstances, including the existence of competitive retail packages which confirm the replicability of packages offered by the regulated NGA provider.

6. The Commission should not pursue a regulatory approach that is in reality a Hobson's Choice

The Second NGA Draft is a significant departure from the first draft, which appeared to recognise the significant challenges associated with NGA financing and deployment, particularly in the current economic circumstances. The revised draft, by contrast, contains a catalogue of virtually all of the remedies ever devised in connection with the legacy copper loop and appears to contemplate their application *en masse* to an operator caught by the recommendation.

The Commission would appear to have a clear purpose in mind by cutting-and-pasting measures designed for regulating sunk investments onto a scheme for regulating networks that are still in the blueprint stage: *i.e.* to motivate regulated NGA providers to avoid a thicket of onerous and intrusive obligations by pursuing a co-investment solution with the promise of “light touch” regulation. This may turn out to be a Hobson's Choice that could have serious unintended consequences for the sector and society at large.

Co-investment may well prove to be a viable approach for NGN/NGA deployment if freely undertaken on a commercial basis, but it is far from clear whether a consortium approach will actually work in practice in every country. The willingness or ability of alternative operators to make the necessary up-front investments is a major

uncertainty, particularly at this time. Indeed, recent developments⁹ indicate that the main broadband competitors in Ireland do not foresee investor or consumer support in the upgrade to fibre networks and envisage market demands being met by upgraded services over the copper network in the medium term in advance of the launch of wireless LTE services.

The fact of the matter is that even when finance was plentiful, very few alternative network operators in Ireland chose to invest in infrastructure on a graduated basis following the much vaunted “ladder of investment” theory. It is therefore unclear on what basis they would be willing to make up-front co-investments in the roll-out of fibre networks, and the negotiation of these and other complex issues relating to the investment is not likely to be straightforward.

Past experience with joint ventures and consortia amongst competitors in the telecommunications industry in other settings (consider, for example, the largely unsuccessful Concert, GlobalOne and Unisource joint ventures) indicates that this option could result in inordinate delays in the roll-out of fibre-based access. The negotiation of these agreements is likely to require significant time and resources as potential consortium members attempt to come to a meeting of the minds over a range of start-up and business issues (for example, their individual levels of participation, the scope and structure of the venture, the filling of key positions, exit and buy-out options, network architecture, and the selection of network equipment and systems vendors). Neither consumers nor suppliers will be well served by untested commercial solutions that are effectively forced by ill-conceived regulation.

The co-investment model should clearly remain on the table as an option that is neither favoured nor effectively forced. Each such arrangement will need to be reviewed (including potentially under applicable merger control regulations) on a case-by-case basis. However, the final recommendation should focus on articulating

⁹ BT Group PLC signed a deal with Vodafone Group PLC on 22 July 2009 to transfer BT's consumer and small business broadband and voice customers in the Republic of Ireland to Vodafone and will provide Vodafone with wholesale services to help deliver its broadband products over seven years – Dow Jones Newswires, 22 July 2009.

a reasonable, proportionate and graduated framework for regulating (where absolutely necessary) *individual* NGA access providers, taking full account of actual and potential competition provided by other operators with self-provided access networks.

In refining the framework, the Commission should assess the impact of transplanting legacy copper-focussed regulations for application to fibre access networks before these networks are even built – in particular, by imposing the full panoply of available active and passive remedies on the first-mover, non-cable wireline investor in each country, and adding to this regulatory morass a requirement that the regulated operator maintain dual copper and fibre networks for a minimum five-year transition period – will significantly compromise the business case for any widespread investment in fibre in Ireland. The Commission’s final recommendation should therefore remind NRAs that it is incumbent upon them to undertake a full and objective regulatory impact assessment taking local circumstances into account before they impose any remedies on particular NGA networks and services.

7. **Conclusion**

The Second NGA Draft has proved useful insofar as it has sparked a useful debate of the future application of regulation to NGA networks. However, the proposed recommendation in its current form promises to be a potent deterrent to widespread NGA deployment in Europe. A fundamental rethink of the proposal and further consultation are necessary before a final recommendation can reasonably be adopted.

6.2 Eircom Annex 2

ETNO Reflection Document in response to the Commission Recommendation on regulated access to Next Generation Access Networks (NGA)



July 2009

Executive Summary

- Next generation access (NGA) networks are a key prerequisite for Europe's future competitiveness and the participation of its citizens in the global information society. **ETNO welcomes the Commission's ambition to provide a policy framework for NGA deployment** with the present Recommendation on access to NGA and the forthcoming guidelines on state aid for broadband networks. The Commission guidance should promote private investment in NGA networks through a consistent approach in both documents.
- **ETNO supports the objectives** of the draft Recommendation to foster **investment and innovation** in new and enhanced infrastructure while preserving strong market **competition**. We welcome the Commission's recognition of the increased risks incurred by undertakings investing in NGA networks.
- ETNO is concerned that **the Recommendation, if adopted in its present form, will not achieve the stated objectives** of innovation, competition and, in particular, investment in next generation access networks. The **draft foresees extensive access and price control obligations imposed on operators of new NGA network** as the standard regulatory solution, and largely **transposes the current regulation of copper networks to the NGA environment**. This approach is not in line with the conclusions of the spring European Council and the preliminary agreement by the European Parliament and Council on the legislative review proposals aimed at adapting the current regulation to yet-to-be-built NGA networks in order to encourage investment in these networks.

- The Recommendation should be redrafted to give proportionate guidance to NRAs on potential **access obligations** for NGA networks.
 - The guiding principle for access to new high-speed networks should be a **gradation of remedies**, ensuring, where necessary, access to the identified bottleneck in a given area to achieve effective competition in the market. A cumulative imposition of access obligations within markets 4 and 5 as foreseen in points 15, 19, 34, 36 would be disproportionate and would result in inefficient and unwarranted obligations, raising the regulatory burden imposed on the investing company. Several NRAs follow the approach to target access obligations to the relevant access bottleneck in new NGA networks to promote the emergence of sustainable infrastructure competition wherever feasible. For example, in denser areas an effective duct access regime may suffice to ensure effective competition, alleviating the need for unbundling obligations.
 - The Recommendation should ensure that NRAs fully take into account the conditions of competition in **different geographic areas**. Geographic differences may be more important in an NGA context as deployment depends upon geographic factors, such as population density and existing network coverage of entrants. A failure to take into account geographic differences would hold back investment and competition in more competitive areas to the detriment of consumers.
 - The Recommendation should recognise that **access to facilities in the ‘terminating segment’ should be symmetric** in principle, i.e. not linked to a position of significant market power (SMP) in current market 4, to ensure a level playing field for investors and promote choice for consumers. The draft Recommendation remains limited to a discussion of asymmetric remedies imposed on operators with SMP in current markets 4 and 5 without addressing the possible need for access to facilities such as ducts in the access network regardless of an SMP-position. The obligation contained in point 15 - 17 should apply symmetrically and only to the extent proportionate in view of market demand. Access to in-house wiring (point 15) should not be addressed under market 4.
 - The draft Recommendation should be amended to **not grant a ‘2nd mover advantage’** by mandating a blanket six-months advance availability of wholesale products for new services (point 33).
- ETNO notes certain positive statements on **pricing principles** and welcomes the mention of new pricing models for risk diversification in NGA in Annex 1. The practical guidance contained in the draft Recommendation, however, foresees cost-orientation, i.e. the strictest form of price regulation, for NGA wholesale products as the standard remedy.

- Freedom to set the level of wholesale access prices (**'pricing flexibility'**) is an **important factor for a successful NGA business case**. This is recognised in the draft Recommendation, but only in a very specific context (point 29). Points 22 and 33 - 40 should foresee pricing flexibility whenever effective non-discrimination is in place and sufficient pricing constraints on the investor are present in the market.
- The Recommendation should give coherent guidance on the new pricing models to drive investment and penetration (Annex I points 7, 8). In particular, the **margin squeeze test should not undermine** the effectiveness of **long-term contracts and volume discounts**. To this end, wholesale prices used as the input to the margin test should be those based on volume and term commitments, net of any option premiums for late entry or early exit.
- ETNO is concerned with statements on an 'ex-ante' margin squeeze' test in Recital 27. The **preference for a "reasonably efficient operator"** test is not in line with competition case law and **contradicts the regulatory objectives** of supporting service penetration and NGA investment.
- The instruments to take account of increased investment risk in the access price including a risk premium should also apply to civil engineering works carried out for the purpose of installing NGA networks
- **NGA deployment should be market-led**. Regulation should be careful not to 'pick a winner' be it a particular technology, network architecture or form of commercial cooperation. At the same time, different technology and network topology have to be taken into account in regulation, reflecting their competitive outcomes, which the draft in principle recognises. The Commission does not strike the right balance on this point, however, and *inter alia* wants to impose specific network solutions in the terminating segment (multi-fibre, point 18), which would further raise the regulatory burden for potential investors. No specific network topology or architecture should be mandated – *de jure* or *de facto* - by NRAs.
- In an NGA environment, welfare-enhancing **commercial agreements are in principle better suited to market needs than ex-ante economic regulation**. Negotiated arrangements for network access and commercial sharing of risk between investors and competitors should be viewed favourably and not be substituted by regulation, unless they are anti-competitive. These arrangements will take various forms in different Member States or geographic areas and should be business-driven.
- The draft Recommendation acknowledges the need for **regulatory certainty** and attempts to provide certainty on specific regulatory responses to market outcomes. Investors need to be able to anticipate regulatory

decisions over the lifecycle of the investment. Regulatory principles should thus be clear before investment decisions are made. This implies a strong commitment by the NRA, for example on pricing principles for taking into account increased investment risk (s. above). The possibility for such commitment should not be limited to situations where market conditions stay broadly constant, as the current draft does under point 6.

- The Recommendation should not assume unchanged market definitions. In the draft Recommendation, this assumption leads to erroneous guidance on the need for new wholesale access products. Even though the question of market definition is not directly covered in this Recommendation, the draft assumes that new NGA-based services will be included in currently existing relevant product market definitions (points 32, 33, 34), requiring the imposition of corresponding wholesale products. It also assumes that there will be a single SMP operator for NGA services and that this operator coincides with the SMP operator in current market 4. ETNO maintains that a proper demand and supply side substitution analysis is required before any conclusions on the scope of the relevant market can be drawn. The recommendation should **emphasise the need to analyse the geographic dimension of markets and** to possibly **define new or more segmented product markets** within the scope of current markets 4 and 5 in terms of capacity, pricing or functionality of NGA products. NRAs would in that case be required to carry out the 'three criteria test' before new obligations for NGA-based services are introduced.
- ETNO agrees that an **effective migration** from current generation broadband to NGA is essential to ensure a non-disruptive development of competition. The Recommendation should clarify that bilateral or multi-lateral commercial agreements regarding the appropriate migration paths, among investing SMP-operators and alternative operators currently enjoying access to the network, are the most efficient means to ensure network evolution. A 'blanket' five year period for maintaining existing obligations should not be specified in the Recommendation.

I. Introduction - Encouraging private investment in NGA in Europe^{1 2}

ETNO welcomes the opportunity to comment on the draft Commission Recommendation on regulated access to Next Generation Access Networks (NGA) of June 12, 2009 (“the NGA Recommendation” or “draft Recommendation”).

The availability of super-fast broadband connections can play a vital role for Europe’s economy and citizens by stimulating productivity growth across sectors, as well as preserving and creating employment in Europe. Very high-speed broadband will help to ensure Europe’s long-term competitiveness and allow future participation of its citizens in the global information society.

As highlighted in the conclusions of the March European Council, investment in new and enhanced access infrastructure should be promoted in view of the *“fundamental role of telecommunications and broadband development in terms of European investment, job creation and overall economic recovery.”*ⁱ

These new networks are needed as the backbone for sustained growth of the industry to respond to the exponential growth of online traffic and to open up new opportunities for EU citizens and businesses, for example, creating and sharing digital content thanks to higher upload speeds, engaging in new forms of collaborative working online, taking advantage of future services such as distant health care, etc.

As presented in more detail in ETNO’s response to the first draft Commission NGA Recommendation, a number of factors, including the regulatory environment, have resulted in a situation where private investments in new networks in Europe are at far lower levels than in other developed economic regions.ⁱⁱ The costs of rolling out Europe-wide NGA have been estimated at around € 250-300 billion.ⁱⁱⁱ

The sheer size of the investment means that private capital will have to provide the large majority of the financial resources. Public funds will in some geographic areas play an important but complementary role. Against this background, the present Recommendation and the

¹ TDC does not support this position.

² BT does not support the comments in sections 4, 5 and 6 of Chapter III, linked conclusions summarised in Chapter I, and Annexes I-III related to section 4.

Commission's forthcoming guidelines on state aid for broadband networks should provide a consistent set of guidance for investors and public authorities. Maximising the reach and extent of private investment in NGA benefits public authorities and EU citizens, both as consumers and tax payers.

European network operators are prepared to respond to the investment challenge posed by NGA^{iv} and to provide financial resources at an unprecedented scale for the roll out and operation the networks and development of new services. One of the preconditions for investment decisions by ETNO Members, however, is a fair and predictable regulatory environment based on an equitable treatment of all types of NGA.

II. A shared set of objectives - competition, investment and innovation

ETNO welcomes the Commission's ambition to formulate a NGA Recommendation to provide guidance to national regulatory authorities (NRAs) and provide more certainty to the market on the regulatory principles for deployment of NGA. The Recommendation should provide all players with the incentive to invest in new access networks while ensuring vibrant competition in NGA.

ETNO also welcomes that the draft NGA Recommendation acknowledges the need to alleviate additional and unnecessary regulatory risk to promote large-scale private investment. Investing financial resources on the scale required for NGA in an uncertain business environment will entail substantial business risks. Clear rules facilitating these investments need to be in place to allow investors a timely roll-out of NGAs.

ETNO fully supports the overall aim of the draft Recommendation as stated in Recital 1, namely to promote *"efficient investment and innovation in new and enhanced infrastructure ... taking due account of the risks incurred by all investing undertakings and the need to maintain effective competition."*

When pursuing this objective, NRAs should focus on fostering investment, innovation and competition. While the 'efficiency' of investment is a legitimate concern of regulators, in the presence of competitive pressures and adequate conditions for investment markets are best suited to determine the efficient level of investment.

III. Main changes required to the Recommendation

ETNO is concerned that the draft Recommendation will not achieve the stated objectives of innovation, competition and, in particular, investment in next generation access networks in Europe. If adopted in its present form, it risks undermining incentives for investment in NGA infrastructure in particular by the established operator as well as limiting the potential for sustainable competition based on competing infrastructures.

Changes in a number of key areas are required to achieve the stated objectives of increased investment, innovation and effective competition in NGA: These are:

- (1) an appropriate role for symmetric regulation in the access network
- (2) a market-led approach to technology and network architecture
- (3) regulatory certainty
- (4) a proportionate gradation of access remedies, adapted to different geographies
- (5) pricing flexibility to allow value-based pricing
- (6) fair risk sharing in access pricing and adequate margin squeeze test
- (7) sound market definition with option for geographic and product segmentation
- (8) an efficient migration regime.

1. Role of symmetric regulation in the access network

The draft Recommendation is limited to a discussion of asymmetric remedies imposed on operators with significant market power (SMP) in current markets 4 and 5.

However, deployment of NGAs by different players in different local areas (a street, a multi-dwelling unit, a district) lead to increasingly symmetric competition challenges. The sharing of certain elements of the access infrastructure may be required to facilitate deployment of NGAs regardless of an SMP-position in current market 4.^v This may for example be the case where a utility provider, an entrant or a cable operator^{vi} deploys fibre to the premises and the provision of a full alternative infrastructure is not viable. Such facilities would represent a true 'bottleneck', resulting in a need for symmetric access, particularly in the 'terminating segment'.

Art. 12 Framework Directive^{vii} will be reinforced with the review of the electronic communications Directives and enable NRAs to take appropriate measures for the sharing of facilities, such as ducts and in-house wiring, by all operators installing access networks. Accordingly, a number of obligations foreseen in the draft Recommendation should, if at all, apply in this symmetric manner (e.g., point 15, s. below, 2.).

The Commission therefore should extend its guidance and take into account the application of Article 12 Framework Directive and define proportionate regulation of markets 4 and 5 accordingly, especially in view of an adequate gradation of SMP-remedies.^{viii} The application of symmetric measures can be a very important tool for addressing competition concerns, in particular in the terminating segment and its exclusion from the Recommendation's scope significantly reduces the value of the Recommendation as a comprehensive reference for NGA regulation in the internal market

2. A market-led approach to NGA technology and architecture ³

The roll-out of NGA confronts investors with the choice of several technologies and network architectures as well as deployment scenarios. Investors can adopt different high-speed broadband technologies suiting different market needs, for example, in fixed networks, VDSL, Ethernet – point-to-point (P2P) fibre, BPON, EPON, GPON, WDM-PON or cable.

Among the leading companies in FTTx markets worldwide, no clear 'technology winner' is emerging. The most common technology appears to be GPON, but P2P solutions are also deployed at some scale.^{ix} The type of technology or architecture is chosen by the investor as a function of the market situation, including the degree of competition from alternative platforms, roll-out costs and demand expectations, both at the retail and wholesale level.

At the same time, policy makers and regulators take an interest in the technical, town-planning and competition features of different NGA networks, for example when awarding public funds or devising rules in policy areas linked to NGA. A number of measures that can be envisaged in this context, e.g. the provision of sufficient duct capacity in new building sites by a property developer are not covered by the Recommendation.

³ Swisscom does not support the comments in this section.

- **No imposition of specific types of fibre roll-out**

Different technology and topology choices also have to be taken into account in regulation, reflecting their different competitive outcomes (s. below).

However, in the context of ex-ante regulation Commission guidance is bound by several principles enshrined in the regulatory framework, among them technological neutrality and the obligation not to distort competition between operators on the market. The telecoms framework moreover foresees a limited set of ex-ante obligations which constitute an upper limit of intervention (s. Art. 8 (3) Access Directive^x).

Against this background, ETNO is very concerned that the draft Recommendation attempts to impose a specific NGA architecture by advising NRAs to oblige SMP-operators to roll-out specific network solutions in the terminating segment, “where legally possible under national law” (point 18).

The imposition of a specific network topology on the SMP-operator outside the scope of the EU legal framework. Moreover, such an obligation would severely distort competition, as it only addresses one player in the market, the SMP-operator, despite the symmetric nature of competition issues in the terminating segment (s. above).

This concern is also valid for the obligations for access to the terminating segment set out in point 15, and for the requirement to foresee extra-space in ducts for further operators in point 14. Such measures should -- if legally feasible and appropriate -- be addressed to all investors in an NGA network under Art. 12 Framework Directive, not be unilaterally imposed on the SMP-operator. Art. 9 Access Directive allows NRAs to require information on specific network characteristics, but neither this article nor Art. 12 Access Directive allow the imposition of such characteristics on the SMP-operator. ETNO also maintains that access to in-house-wiring, often owned by the landlord, should not be addressed under market 4 but by symmetric rules (point 15).

A direct obligation on an investor to create extra capacity is problematic as such especially in case end-user demand and demand by access seekers is uncertain, as is often the case in the early phase of NGA roll-out. The varying level of income and capital available across member states need to be taken into account before suggesting a “one-size-fits all” solution as in point 18.

Generally, the Commission and NRAs should refrain from prescribing technology and architecture choices which could lead to over- or under-investment, leading to suboptimal results in the market.

- **Taking account of different technology and topology in regulation**

It derives from the principle of proportionality to take into account the competitive outcomes of different network architectures or different forms of co-operation or in regulation. Guidance on remedies should fully reflect that effective competition can be achieved under several deployment types, risk-sharing- or cooperation arrangements, both on a multi-fibre and single-fibre FTTH- and on a VDSL basis.

ETNO believes that the key principles to foster NGA investment incentives as laid out in 3 – 8 below should be applied to all types of NGA deployment. The competitive outcomes of other scenarios such as specific co-operation agreements and/or network topology would in addition justify further regulatory relief.

Generally, specific network structures or ownership arrangements will meet market needs in some, but not in all cases. Therefore, regulators should be careful not to attempt to ‘pick a winner’ be it a particular technology, network architecture, or form of commercial cooperation, and should not risk steering investors towards specific types of deployment which do not meet market needs in all circumstances. Co-investments and other arrangements between operators should be business driven.

- **focus on fibre unbundling appears not technologically neutral**

A concern with regard to technology neutrality is posed by point 20 stating that NRAs should impose a “fibre unbundling” obligation irrespective of the technology used.

Given that one of the most common technologies used for FTTH roll-out, GPON, currently does not allow physical “unbundling” at the ‘MPoP’ (metropolitan point of presence), the text appears to discourage deployment of this specific technology versus others. Again we would like to underline that a competitive outcome at retail level, where not achieved by market forces, can be ensured by adequate regulation on any fibre technology or architecture. To impose obligations that can *de facto* only reasonably be met by specific technologies would contravene the technological neutrality principle of the framework.

- Definition of NGA not future-proof

The current definition of NGA as solely “wired access networks which consist wholly or in part of optical elements” (point 8) is not in conformity with the principle of technological neutrality under the regulatory framework and as such not future-proof. In Europe NGA deployment is still in its infancy. Although only a limited number of technologies may eventually succeed in delivering very high-speed broadband connections, it is at this stage uncertain that these will only be wired technologies. ETNO suggests removing the definition as no exhaustive definition of “NGA” is needed for purpose of the Recommendation.

3. Regulatory certainty

ETNO welcomes the Commission stating that “regulatory certainty is key to promoting efficient investment by all operators” (Rec. 8).

Point 6 of the draft Recommendation, however, recognises the need for a “consistent regulatory approach over appropriate review periods” only where there will be “broadly constant market conditions”. This contradicts the compromise agreed by the Parliament and the Council in the review process on the need for regulatory certainty. It also fundamentally misunderstands the purpose of regulatory consistency which is to alleviate additional risk for investors, not to respond to constant market conditions.

In the absence of regulatory certainty, in particular on the terms and conditions of network access, regulatory risk will add to the business risk and negatively affect investment decisions. Investors need to be able to anticipate regulatory decisions over the lifecycle of the investment: regulatory principles should be clearly outlined before investment decisions are made and fully take account of their effects on regulatory risk. This implies a strong commitment by the regulator to that should not be undone with changing market conditions or a changing economic outlook.

Such a commitment would not exclude adjustments to regulatory conditions in the light of market developments according to pre-determined and predictable rules. The Recommendation should specify that NRAs should be able to make precise commitments on how access terms and conditions will develop “in future market reviews in reaction to likely changes in market circumstances.” (point 6), and not just provide an explanation as currently foreseen.

Also in the presence of such regulatory certainty, regular market analyses would still be carried out, to:

- determine whether SMP is present in the market and remedies are still proportionate (in absence of SMP or where the obligation is no longer required, regulation would be lifted),
- determine how remedies will be adapted to changing market conditions according to the previously laid out approach.

4. Proportionate gradation of access remedies and geographic segmentation

The objectives of the imposition of remedies under the EU regulatory framework, namely to impose regulatory remedies where this is proportionate and necessary to remedy a specific market failure in the interest of the end-user, are laid down in Art. 8 (3) and Art. 12 (2) Access Directive and Art. 8 Framework Directive. Article 12 (2) Access Directive states that

“ When [NRAs] are considering whether to impose the obligations referred in paragraph 1, and in particular when assessing whether such obligations would be proportionate to the objectives set out in Article 8 of Directive 2002/21/EC (Framework Directive), they shall take account in particular of the following factors:

- (a) the technical and economic viability of using or installing competing facilities, in the light of the rate of market development [..]*
- (b) the feasibility of providing the access proposed, in relation to the capacity available;*
- (c) the initial investment by the facility owner, bearing in mind the risks involved in making the investment;*
- (d) the need to safeguard competition in the long term; [...]*
- (f) the provision of pan-European services.”*

- Gradation of remedies

ETNO encourages the Commission adopt an approach that targets regulatory intervention at the relevant economic bottleneck in line with Article 12 (2) Access Directive.

The first draft Recommendation of September 2008 outlined such an approach, a gradation of remedies from the deepest level of the network to higher network layers to promote infrastructure competition. It stated that *“In a Fibre to the Home (FTTH) context, [a level playing field for retail competition] can in principle be achieved subject to economies of density and*

scale as long as equivalent access is provided by the SMP operator to the relevant passive elements of its legacy network.”^{xi}

ETNO has welcomed this approach. NGAs offer the possibility to achieve sustainable and effective infrastructure competition in many parts of Europe (on the economics of infrastructure competition in NGA networks s. Annex I to this submission). Empirical findings that effective access to basic facilities such as ducts, depending on the availability of duct space, increases the scope for full infrastructure competition by more than a third (for supporting economic research on the effects of commercial or regulated access to ducts on infrastructure competition s. Annex II to this submission).

The present draft Recommendation abandons a proportionate gradation of access remedies in favour of an extensive set of access obligations, largely mirroring access obligations on the current copper-based networks (points 15, 19, 34, 36). For market 4, the approach is summarised in Recital 21:

“On Market 4, it is thus important that in principle the whole range of different physical access products [access to civil engineering works, to the terminating segment and the unbundled fibre loop], including backhaul, is available as remedies.”^{xii}

However, a parallel imposition of a range of access obligations at cost-oriented prices, including a new ‘fibre unbundling’ obligation, actively reduces the potential of NGA to lead to more infrastructure-based competition and, as a result, increased choice for consumers. A ‘fibre ladder of investment,’ as also discussed by the ERG^{xiii}, disregards technology constraints and would lead to inefficient (over-)regulation of nascent NGA markets.

For current generation broadband, empirical evidence shows a negative impact of ‘ladder of investment’-type regulatory regimes on investment by entrants and incumbents (for a discussion of the ladder concept s. Annex III to this submission). In an NGA environment, competitors have already acquired a significant customer base in current generation broadband, in some geographic areas exceeding the incumbent’s share of the market. The argument for imposing parallel access products instead of focusing regulation on the relevant bottleneck therefore appears even weaker in NGA.

In an FTTH context, as long as potential bottlenecks in the terminating segment are addressed, ensuring effective competition at retail level in a given area, it is not necessary to mandate further upstream access remedies such as fibre unbundling in the ‘feeder’ segment. Similarly, in

cases where access to trenches and/or ducts is sufficient to achieve a competitive outcome and is provided in a non discriminatory manner, no further upstream access remedies should be imposed on top of this obligation. Against this background, ETNO is particularly concerned with the draft Recommendation's focus on "fibre unbundling" as a parallel obligation to other access obligations. As described under 2. above, a physical unbundling of fibre networks may not always be an efficient and feasible option for NRAs. The case has also been made that in some markets unbundling of fibre as compared to active remedies may be less conducive to the initial investment in NGA as such a product does normally not allow pricing flexibility in view of differentiated retail products.^{xiv}

The draft Recommendation's approach to impose a range of parallel access obligations contradicts the regulatory approaches adopted by different NRAs in Europe towards NGA. For example, the French and Portuguese regulators, with different nuances, apply a graduated approach to remedies in an FTTH context, putting special emphasis on access to passive facilities such as ducts.^{xv}

- geographic segmentation should be integral part of Commission NGA guidance

Directly derived from the EU framework's principle of proportionate gradation of remedies, the Recommendation should ensure that NRAs consider the conditions of competition at national or sub-national level and impose access only to the economic bottleneck facility if needed to ensure effective competition at the retail level in a given geographic area.

There is only a minor mention in the Draft of sub-national geographic markets or remedies – indicating that such considerations might become less relevant owing to NGA deployment. To the contrary, ETNO members believe that geographic differences may become more relevant in the NGA context. NGA deployment often takes place for 'islands' of households that can be covered with lower unit costs or where an operator already has deployed an alternative network. The coverage of alternative infrastructures and the deployments by traditional SMP operators will moreover often concentrate on the same geographic area.

On the level of SMP finding, which is not directly addressed in the draft Recommendation, the Commission seems to assume that there will only be one operator identified as having SMP within a national territory. The Recommendation should clearly recognise the possibility to analyse local markets for SMP status, to provide a level playing field and avoid the risk of a lengthy and complicated process to secure reasonable and effective access to, for example, ducts and pipes deployed by first movers who are

not the incumbent. Cable or fibre-based entrants in several member states possess a far more extensive network of ducts/pipes than the incumbent.

Based on the above, the failure to take into account geographic differences could result in NRAs imposing unilateral obligations on only one of several infrastructure service providers competing on the same market. Thereby the NRA would not support the development of competition on the relevant retail market but instead hinder investment into a competing infrastructure by distorting competition to the detriment of one player.

- **Voluntary commercial agreements preferable to regulation**

In an NGA environment, welfare-enhancing commercial agreements are in principle better suited to market needs than ex-ante economic regulation. In many Member States, investors and competitors are negotiating arrangements for network access and commercial sharing of risk. They should be reassured that their agreements are not substituted by regulation unless they are anti-competitive.

In particular in situations where competitive constraints from a competing platform exist, market conditions determine the right return on investment.^{xvi} Access to networks granted on commercially attractive terms will ensure network utilisation and make the network operator's offers more attractive to wholesale customers.

A regulatory approach for NGA should primarily rely on preserving non-discrimination and only where commercial arrangements cannot be reached grant regulated access to persisting economic bottlenecks.

- **No '2nd mover advantage' for new NGA retail products**

Point 33 should be amended to not grant a "second mover advantage" for new services by mandating a blanket six-months-prior prior availability of wholesale access products for competitors. Access regulation in market 5, where applicable, should not automatically extend to wholesale inputs for new retail offers, unless the need for such access products has been determined by a market analysis (s. chapter 7 below).

In summary,

- The NGA Recommendation should acknowledge the role of commercial agreements on access terms and conditions in an evolving NGA environment, to be preferred wherever possible to prescriptive regulatory solutions.

- The NGA Recommendation should advise NRAs to only impose access obligations where access at the lower network level does not lead to effective competition at the retail level. Points 15, 19, 34, 36 and the corresponding Recitals should be reworded accordingly.
- Access obligations need to respond to the competition problem identified in a specific market analysis. For example, a specific regulated bitstream access product for business services, as mandated in point 36, may be, but will certainly not always be justified in the light of competition conditions.
- An obligation of “fibre unbundling” should be envisaged only within the limits of efficiency of such an obligation in view of the individual NGA deployment and of technical feasibility.
- The Recommendation should require NRAs to fully take account of geographic differences in competition when considering the imposition of access and price control obligations.^{xvii}

5. Flexible pricing of wholesale products

ETNO welcomes the Commission’s positive assessment of enhanced pricing flexibility for an NGA network operator as put forward – in a very limited context – in Rec. 29. ETNO agrees that a limitation of an operator’s pricing flexibility and the restriction of *“its ability to profit from increased consumer willingness to pay for new services, would [...] delay rather than foster the development of networks ...”*

However, the draft Recommendation does not foresee pricing flexibility except in a very specific roll-out scenario – a deployment of multiple fiber lines in the feeder and drop segment combined with co-investment – and as an option in the case of functional separation (s. below).

Value-based pricing – with the value of a product equalling the customers’ willingness to pay for it – leads to differentiated retail prices with different profitability. This in turn enhances overall welfare by promoting further innovations and product development with additional customer value, potentially boosting service innovation and, in turn, network roll-out. This ‘virtuous circle’ of innovation and investment is clearly beneficial for *all* NGA deployment schemes.

- **cost-based pricing inappropriate reference for ‘still-to be built’ networks**

ETNO strongly welcomes Commissioner Reding’s acknowledgement in a recent speech^{xviii} on NGA regulation that

“I hear [...] the wish to institute a regulatory regime which gives cost-oriented access (as today) to whatever network element and wholesale service of an incumbent firm, to any access seeker at any given point in time. The difficulty I have with this argument is that it ignores the fact

that new high-speed networks are not there yet and need to be built in the first place. Investors in these networks therefore need to be able to make financial returns commensurate with the risks they incur. Cost-oriented access as in today's copper world may under these new circumstances need to be modulated, subject of course to the continued possibility of market entry and sustainable new entrant business models."

As has been demonstrated both by regulatory practice - many NRAs in Europe have applied a retail minus pricing logic to bitstream products^{xx} - as well as academic analysis^{xx}, effective competition at retail level can be ensured without cost-orientation of bitstream products.

Where regulation of wholesale broadband access products is justified, effective non-discriminatory access coupled with a pricing constraint (stemming from a competing infrastructure such as cable, a copper local loop product, viable physical access to NGA civil engineering infrastructure or a combination of different factors) makes price regulation for active wholesale products redundant.^{xxi} The same reasoning applies to 'fibre unbundling' (where mandated, s. above), in particular in presence of pricing constraints by a competing platform or successful commercial arrangements over non-discriminatory access to new NGA infrastructure.

Imposing cost-orientation in such cases would unnecessarily undermine the NGA business case of the investor which critically relies on pricing flexibility for new services. Points 36 ff. and 22 ff. should be amended accordingly.

- functional separation as trigger for pricing flexibility?

Point 40 of the draft Recommendation, which grants flexibility to NRAs to "*...analyse whether an obligation of cost-orientation on mandated wholesale broadband access is necessary to achieve effective competition in case functional separation or other forms of separation haven proven to guarantee equivalence of input*",

should in our view be thoroughly revised. Firstly, NRAs in each individual case have to analyse whether an obligation for cost orientation is necessary to achieve effective competition. Otherwise, its imposition would be disproportionate. The statement therefore underlines the flawed approach in points 34, 36 of the draft Recommendation which require NRAs to impose cost orientation as a rule (s. above).

Moreover, functional separation is conceived as a remedy to achieve effective enforcement of non-discrimination with the SMP-operator. Any regulatory solution that achieves effective non-discrimination in access should result in the same regulatory conclusion and benefit from similar guidance on pricing flexibility. It appears arbitrary to link pricing freedom for active wholesale products to separation and a specific 'equivalence of input' requirement, while the EU legal framework and other Commission guidance under the framework do not recommend equivalence of input as

a concept. Such indirect guidance in favour of specific types of regulatory outcomes risks undermining the predictability, accountability and transparency of regulation.

To directly link more flexible regulatory conditions to the imposition of functional separation or “other forms of separation” finally creates a bias in favour of a separation of the established operator, even in cases where the imposition of separation is not proportionate or economically efficient. Functional separation can under the current framework agreement only be imposed where it is demonstrated that other remedies, such as non-discriminatory access, have not resulted in effective competition.^{xxii}

Guidance on active wholesale products should be thoroughly revised to allow for wholesale pricing flexibility, at least in the presence of effective non-discrimination and pricing constraints, for example, from lower level access products.

In summary,

- If mandated access is imposed, points 22 and 33-40, as well as the corresponding Recitals, should foresee pricing flexibility for wholesale products covered in these paragraphs, at least in the presence of effective non-discriminatory access and effective pricing constraints against monopoly pricing.
- Pricing flexibility should be applicable in all roll-out scenarios and irrespective of the specific form of enforcement of non-discrimination by NRAs. Point 40 which appears inconsistent with the EU legal framework would then become redundant.

6. Pricing principle and risk: new pricing models and the margin squeeze test

There are a number of inter-related issues regarding the principles for price-regulated access, which are raised separately in the recommendation. These must be treated consistently, if the requisite level of regulatory certainty is to be achieved – and if the pricing framework is to achieve the right balance between encouraging competition and providing the appropriate level of return and flexibility for the operator making the NGA investment. These issues are:

- the risk premium to be incorporated into the Weighted Average Cost of Capital (WACC) used in setting a cost oriented price for wholesale access;
- the risk sharing pricing models between investors and access seekers - by means of either term and volume discounts for committed duration

and scale of wholesale access purchased, or charging an option value for wholesale access provided to an access seeker entering when retail demand has been established;

- The application of an ex ante margin squeeze test as between wholesale access prices and retail service pricing.

ETNO finds that the final recommendation should provide guidance on the factors that the NRAs must consider when linking these issues to provide a coherent framework. It should advise that:

- any margin test apply between retail and wholesale offerings of the investing operator over the life of the investment - rather than over any arbitrarily selected shorter period;
- the margin-squeeze test be applied using the long term business case for an 'equally efficient entrant' (EEO) achieving 25% market share, representing a viable competitor, in the final projected market used in the investor's business plan;
- the wholesale prices included as the input to the new entrant business case are those based on volume and term commitments – and net of any option premiums for late entry or early exit;
- the retail costs for the new entrant in the margin test will be consistent with the investor's retail costs. There may be structural reasons why the access retail costs are lower than the investor's, such as economies of scope through presence in an adjacent market. Under these circumstances the correct margin test would use the lower of the investor and access seeker's retail cost.^{xxiii}

Only if the proposed pricing framework to be implemented by NRAs on identifying SMP is specified in this manner can investors and access seekers make informed decisions on the appropriate level of investment – and timing of entry.

In the following section, we comment in more detail the aspects of (1) long-term pricing and volume discount contracts, (2) the necessity to adapt the margin-squeeze test to the new NGA environment, (3) the role of the risk premium and (4) the pricing principles applied to civil engineering works.

(1) Long-term access pricing and volume discount contracts

ETNO welcomes the integration of investment risk in the Commission draft Recommendation and its attempt to address it through new forms of commercial contracts for risk diversification ('risk sharing') in access pricing (point 7 and 8 of Annex I). However, the draft fails to adapt the

margin-squeeze test to the nascent NGA market to prevent it from undermining future risk sharing arrangements (s. (2) below).

ETNO agrees with the possible existence of secondary trading, which could result from such a type of agreement and which would be beneficial for the overall market and notably for the increase of competition on the wholesale market. We also agree that access seekers' behaviour on the downstream market should not be controlled by the investor, or access provider, through contractual conditions. However, we consider that the statement that new entrants would "acquire full control of physical assets" (point 7, p. 19) is very broad, and unnecessarily restricts the possibilities of risk diversification arrangements. We suggest removing this point from the text.

We also suggest to clarify the statement in Annex I point 7 that: "*Long-term access prices should only reflect the reduction of risk for the investor and therefore cannot be lower than the cost-oriented price to which no higher risk premium reflecting the systematic risk of the investment is added.*" (s. also point 8). This raises the question of the reference price for such a comparison. Is the draft referring to the average price or the top or the bottom of the price scale - and over which period? At a minimum, any comparison should be based on a time period coherent with the length of the contract.

For long-term commitment prices to reflect a reduction of risk for the investor, the new access price structures should be similar to the network cost structure:

- There are fixed network costs, therefore there should be a fixed element in the access prices or, alternatively, a volume reduction;
- Network investment represents a high initial investment and a very long-term commitment for an investor and thus requires revenue streams to be profitable in the long run. Access contracts should be able to reflect these characteristics.

As far as volume discounts are concerned, several pricing models could be used, e.g. a form of 'segmented' access prices, .e.g., decreasing prices on the base of commitment linked to a territorial pattern with possible increasing commitment starting from access to a city, then access to a sub-area, then to buildings. Parties must be able to freely negotiate these technical adjustments in order to find the most efficient solution with the possible support of the NRA. Pre-determining the possible configurations or adjustments would be inappropriate.

One key issue for successful roll out of NGA networks, besides the revenues which can be attained from it, is to achieve a high level of penetration. Remedies which are now considered by the Commission may

easily thwart the flexibility operators need to achieve this. It is therefore of vital importance that the Recommendation allows for innovative wholesale pricing models which can contribute to faster and more ubiquitous penetration of NGA networks. One such example may be to insert incentives via the volume discounts discussed in point 7 of Annex I or by 'kick-backs' on wholesale prices based on achieving a certain threshold of penetration in a relevant roll out area. There may be many other ways to incentivise penetration by operators and ETNO would welcome the Commission to explicitly endorse the use of such instruments.

(2) Adapting the margin squeeze test to NGA to allow market take-up and risk diversification

- guidance on 'ex-ante' price squeeze test

Recital 27 of the draft Recommendation states that in "*the specific context of ex-ante price controls [the] hypothetical reasonably efficient competitor test*" would be more appropriate in an NGA context. ETNO is concerned that the Recital could lead to inappropriate regulation. "*Ex-ante price controls*" in the meaning of retail tariff regulation can only be applied on markets which are included in the Recommendation on relevant markets and/or fulfil the three criteria test. Moreover, the proposed methodology, which differs from the methodology applied by the Court of Justice in recent case law in the electronic communications sector, appears inappropriate in nascent NGA services markets.

The margin-squeeze test is a competition law tool and commonly applied ex post by competition authorities. While specifying the parameters for a margin-squeeze test ex ante can increase predictability for market players, the margin squeeze test must not result in an ex-ante price regulation of retail markets which are not part of the list of relevant markets and therefore not subject to regulation. Ex ante monitoring requires substantial quantities of confidential data and extensive, on-going modelling, and since no specific allegation of a margin-squeeze is made, the test must be undertaken on a hypothetical basis. In competition law practice, the context is typically crucial and the analysis must be based on specific allegations. In immature markets, moreover, unit costs are likely to change significantly as the volume of services provided increased. Applying appropriate parameters thus is even more important in such an environment in order to not jeopardize the market development.

Against this background, a margin-squeeze test should in principle be applied ex post and NRAs should limit its application to services where a need for regulation has been established in a market analysis.

- **preference for ‘REO’ methodology inappropriate in NGA world**

If, by using a margin-squeeze test, the NRA intends to control the wholesale price, Recital 27 obviously also raises an issue of price levels. By using the “hypothetical reasonably efficient competitor test” (REO) as proposed in the draft, the price level will either be higher than with the ‘equally efficient operator’ (EEO), which was the option used in recent European Commission cases against Deutsche Telekom and Telefonica^{xxiv}, or the wholesale price will be determined at a lower level than appropriate. Consequently, use of the REO either lowers penetration by raising retail prices or lowers incentives for investment by artificially lowering wholesale revenues.

The Court of First Instance, in the Deutsche Telekom case^{xxv} found that the Commission was correct to analyse the pricing practices at hand on the basis of the charges and costs of the dominant operator (cf. §193), stating that:

“It must be added that any other approach could be contrary to the general principle of legal certainty. If the lawfulness of the pricing practices of a dominant undertaking depended on the particular situation of competing undertakings, particularly their cost structure – information which is generally not known to the dominant undertaking – the latter would not be in a position to assess the lawfulness of its own activities.” (cf. § 192)

In a nascent market the EEO methodology allows the investing operator to rely on its own costs to calculate prices, leading to more regulatory certainty. ETNO encourages the Commission to recommend to NRAs to apply an EEO test.

- **Definition of margin-squeeze test must be in line with concept of risk diversification**

The effectiveness of future risk diversification / risk sharing agreements, and therefore the benefits for investment which can result from the new pricing models, depend upon an appropriate application of the margin squeeze test.

Annex I point 7 and 8 could be understood in a way that the margin-squeeze test should secure an adequate profit margin for an “efficient operator” even if the operator does not share part of the investment risk engaging, for example by engaging in long term access contracts. The consideration that an “*alternative provider with smaller customer bases and unclear business perspectives ... are unable to commit to purchasing a large number of fibre lines over a long period.*” seems to point in this direction.

If this were the case, the draft Recommendation would effectively undermine the business logic of entering into risk sharing contracts. Taking over part of the investment risk becomes unattractive, if business

models without risk sharing are fully protected by regulation and the price level is determined by the business model without risk sharing. Therefore, the wholesale prices included as the input to the new entrant business case for the purpose of the margin squeeze test should be those based on volume and term commitments – and net of any option premiums for late entry or early exit.

Such differentiation of prices according to objective criteria is not discriminatory. In a scale industry with long-term amortisation of assets, volume and term discounts are common business practice and *a priori* have no anti-competitive effect as they are available to all market participants. It is worth noting that they would also not prevent market entry of ‘smaller operators.’ Risk diversification contracts could be regional or local, and operators, who seem to be “small” on a national scale, might be large players in a regional context, allowing them to engage in risk diversification contracts on that level. Smaller operators may also establish joint purchasing schemes which allow them to profit from enhanced economies of scale. Moreover, as the draft Recommendation points out, holders of long term access contracts are free to engage in secondary trading, which allows entry at any time at true market based prices.

- Time period for amortisation of costs of fibre networks to be taken into account

In an NGA context, it is necessary to have an appropriate balance between (1) the constraints of a price squeeze test and (2) the need for selling at an attractive market price to drive service take up at retail level. The margin-squeeze test between retail and wholesale offerings of the investing operator should apply over the life of the investment - rather than over any arbitrarily selected shorter period.

To consider the relevant time period for amortisation of the relevant assets allows assessing the profitability of a product over a period of time that runs parallel with the amortization of such assets. Amortisation periods on fibre are typically around 15-20 years. A time period consistent with such amortisation periods should be considered for determining the costs that access seekers are paying in the context of long term and/or volume commitments. Basing the calculation on shorter periods would risk leading to wholesale prices that are too high to pass a margin-squeeze test with retail prices allowing for service take-up.

Due consideration for the appropriate time periods of amortisation of assets allow NRAs to strike a balance between the need to stimulate penetration as well as network investment. This is also recognized in the most recent ERG report on the application of margin-squeeze tests to bundles^{xxvi} where it is stated that:

“In the case of markets with non stable revenues and costs (for example non mature markets) the static test may not be the best choice. This is because it does not take into account the reasonable short term losses accrued in the launch period of the service and does not consider the risks associated with investments that the company may incur in marketing the offer.” (para 71).

In light of the above, Annex I point 7 and point 8 should be amended to allow reduced wholesale prices not only to reflect the reduction of risk for the investor but also to reflect the longer amortisation period of the assets to which access is requested.

As a general conclusion on margin-squeeze test issues in an NGA context, it should be remembered that a very strong economical element in favour of standard margin-squeeze test does not hold for NGAs:

- under specific conditions, it can be proved that normal profit maximisation behaviours, except anticompetitive ones, are compatible with margin-squeeze test conditions. Therefore, margin-squeeze test conditions keep a market economy as efficient as it should be. These specific conditions are satisfied when access has to be provided on an existing legacy infrastructure with known demand.
- in a NGA context with fixed costs and uncertain demand, normal pro-competitive profit maximisation behaviour, such as penetration pricing or value pricing, cannot be discriminated from anti competitive behaviour through standard margin squeeze test. Therefore, the margin-squeeze test needs to be adapted. Otherwise, the final outcome would be massive economic inefficiency.

(3) Risk premium alone will not solve the lack of incentives for the necessary NGA investments - term and volume discounts allow faster penetration.

The draft Recommendation provides that NRAs should assess whether a higher risk premium should be granted when setting access prices for NGA.

The risk premium as a component of the access price can contribute to addressing risk involved in NGA investment, within and outside long term contract arrangements. However, a risk premium, conceived as a cost-based access price with a somewhat higher WACC, alone does not solve the investment incentive problem for NGA. It maintains the first mover’s strategic disadvantage of assuming high fixed costs whereas subsequent entrants can choose between fixed (own investment) and variable costs (access-based entry). Therefore we have argued for addressing the access price structure and the necessary price flexibility on the retail market by appropriate guidance on risk diversification arrangements and margin squeeze (s. above).

Regarding the impact on retail prices, wholesale prices based on risk sharing bring a larger flexibility on the retail market than a “risk premium” price per access. In the case of a wholesale “risk premium”, the full cost of the infrastructure is contained in the variable price per access of the wholesale offer. The variable wholesale price per access will in that case be very high because the new infrastructure will be unused at the beginning. Due to the likelihood of an overly restrictive application of a margin-squeeze test, this very high wholesale price per access would be included in retail prices of the access beneficiary and of the infrastructure owner, unless the application of the test is carried out as proposed above. Under risk sharing access pricing models, to the contrary, both investor and access seeker can offer cheaper prices in order to foster penetration.

(4) Risk premium and risk sharing must also apply to civil engineering works

ETNO strongly disagrees with the provision in Annex I point 2 that “When setting the price for access to civil engineering infrastructure, NRAs should not consider the risk profile to be different from that of copper infrastructure”

The risk premium should also apply to civil engineering infrastructure, such as ducts and pipes. Even though ducts and pipes may not be replicable, this does not imply that the risk of NGA related ducts and pipes is comparable to the risk associated with conventional access networks. We recall that the Draft Explanatory memorandum published for the first public consultation held in autumn 2008 which found that “civil works represent up to 80% of the total roll-out costs of NGA.” Taking into account this very high proportion of the total investment, which is related to ducts and pipes, a risk premium on the fibre cable only will have a very limited impact on the business case.

For the same reason, it is appropriate and important that risk sharing arrangements are allowed not only for unbundled fibre access or fibre bitstream access but also for access to ducts and pipes.

In summary,

- ETNO welcomes the new possibilities for commercial arrangements for diversification of risk in points 7 and 8 of Annex I.
- The recommendations on an ‘ex-ante’ margin squeeze tests in Recital 27 meet legal and practical concerns and the preference for a “reasonably efficient operator” test is in conflict with competition case law and the regulatory objectives of service penetration and NGA investment.

- To not undermine the effectiveness of risk diversification through long-term contracts and volume discounts, the Recommendation should specify that the 'long-term commitment-price' is the reference for carrying out a margin squeeze test in case of risk diversification arrangements.
- Risk premium and other instruments to take account of increased investment risk should also apply to civil engineering works carried out for the purpose of installing NGA networks.

7. Need for a sound market analysis - option for segmentation according to geographies and capacity/services should be emphasised in the Recommendation

Despite recognising the “important changes in the economics of service provisioning” and significant changes on demand and supply-side in the move to NGA (Recital 7), the draft Recommendation effectively assumes unchanged market definitions compared to the current copper world. It affirms that new NGA-based services will be included in currently existing relevant product market definitions (points 32, 34), requiring the imposition of corresponding wholesale products. It also appears to assume a national geographic market. Consequently, the draft assumes that there will be a single SMP operator for NGA services and that this operator coincides with the SMP operator in current market 4 (cf. Rec. 21, points 19, 21).^{xxvii} ETNO maintains that a proper demand and supply side substitution analysis is required before any conclusions on the scope of the relevant market can be drawn.

The draft Recommendation should recognise that the definition of new, possibly more segmented markets within the scope of current markets 4 and 5 in terms of capacity, pricing or functionality of NGA products may be warranted. NRAs are required to carry out a ‘three criteria test’ before regulatory obligations on new NGA-based service are introduced.

As is the case for current generation broadband, we believe that in an NGA context, platforms competing on broadband services markets at retail level should be fully taken into account in wholesale market definition. This implies that there should be no artificial exclusion of self-supply from markets 4 and 5. The fact that markets 4 and 5 have been ‘created’ by regulation^{xxviii} does not justify permanently limiting their scope to the network on which regulated wholesale services are currently provided. Moving to an NGA environment, where all networks whether based on PON or P2P fibre or DOCSIS 3.0 or other technologies are newly built, a technology neutral wholesale market definition is key to avoid distortions of competition in future broadband markets.

8. Efficient migration to NGA

ETNO agrees that an effective and transparent migration from current generation broadband to NGA is essential to ensure a non-disruptive development of competition. Emerging services based on NGAs will succeed commercially only if competition creates multiple, innovative services, and if new business models flourish. The success of such services provides the best prospect for the recovery of investment in NGAs. Thus, all operators have strong incentives to enter into commercial agreements in order to co-ordinate efficiently the introduction of fibre in access networks.

ETNO agrees with the Commission that, in principle, existing SMP obligations in relation to markets 4 and 5 should remain in place for a reasonable time period and believes that the migration path should be consulted on and notified in good time to the industry as outlined. However, a requirement for an open-ended agreement with multiple access seekers, or alternative operators, may well make it impossible to organise an efficient and expedient transition. Where transition plans are consulted on and shared to a reasonable timescale, SMP-operators should not be responsible for access seekers' transition costs or delays.

SMP-operators and access seekers have gained a long experience of contractual relationships on wholesale access products, which often have duration of two to three years. Commercial and competition laws apply to these contractual relations, and thus provide broad guarantees to all parties. In particular, such provisions ensure that a provider cannot unreasonably interrupt a service if this is critical for the business of the service user.

Accordingly, the Recommendation should clarify that bilateral or multi-lateral commercial agreements regarding the appropriate migration paths, among investing SMP-operators and alternative operators currently enjoying access to the network, are the most efficient means to ensure network evolution.

In the absence of commercial agreement, NRAs should ensure that alternative operators are forewarned of any de-commissioning of points of interconnection, such as the local loop exchange, in a reasonable time period. While a reference time period for the amortization of local exchange equipment is five years, alternative operators may well have made their investments earlier and have already largely written down such investments. As such, ETNO maintains that a blanket "five year period" should not be specified in the Recommendation; NRAs should be allowed discretion to set this period according to market conditions in national and sub-national markets.

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- ⁱ European Council conclusions of 19-20 March 2009, Council Doc. 7880/09, pt. 17.
- ⁱⁱ IDATE, "FTTx: Global operator rankings," IDATE News 469, June 2009.
- ⁱⁱⁱ McKinsey estimate, s. Commission MEMO/08/572, 18th September 2008, p. 3.
- ^{iv} For established operators in some emerging markets there is the added challenge of amortisation of recent heavy investment in copper while already being faced with the need for NGA roll-out.
- ^v For a more detailed discussion of this point, s. ETNO RD 295 (2008/11), p. 10 f.
- ^{vi} Any of the investors listed may have SMP on markets 4 or 5. However, under the current regulatory practice with regard to product and geographic market definition, a SMP-designation in these cases may remain a rare exception.
- ^{vii} Directive 2002/21/EC of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive).
- ^{viii} For a detailed discussion of this point, s. ETNO RD 295 (2008/11), p. 10 f.
- ^{ix} IDATE – FTTx leaders chart
- ^x Directive 2002/19/EC of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive).
- ^{xi} Recital 7 of the first draft Recommendation of September 2008.
- ^{xii} The first draft Recommendation of September 2008 (point 15) called for the imposition of dark fibre access only where duct access in market 4 would not lead to effective competition.
- ^{xiii} S. ERG (09) 17, Report on Next Generation Access - Economic Analysis and Regulatory Principles, p. 14.
- ^{xiv} Lewin, D., Williamson, B. and Cave, M. (2008), "Regulating next-generation fixed access to telecommunications services," p. 16. ; on pricing flexibility s. section 3 below.
- ^{xv} Autoridade Nacional de Comunicações (ANACOM) notification to European Commission of 4 December 2008 concerning the review of the markets for wholesale (physical) network infrastructure access at a fixed location and for wholesale broadband access; Décision n° 2008-0835 de l'Autorité de régulation des communications électroniques et des postes (ARCEP) en date du 24 juillet 2008 portant sur la définition du marché pertinent de gros des offres d'accès aux infrastructures physiques constitutives de la boucle locale filaire, sur la désignation d'un opérateur exerçant une influence significative sur ce marché et sur les obligations imposées à cet opérateur sur ce marché; Similarly, the German regulator, Bundesnetzagentur (BNetzA), has imposed access to dark fibre for backhaul for sub-loop unbundling only subsidiary to duct access (see Regulierungsverfügung Markt 11 BK4a-07/002/R , 27 June 2007).
- ^{xvi} S. e.g., IDATE and LECG for the 'Brussels Round Table,' "Telecoms in Europe 2015," 2007.
- ^{xvii} ETNO RD288, "ETNO comments on the ERG draft common position on geographic aspects of market analysis," (2008).
- ^{xviii} Reding, V., "Towards a European Strategy of High Speed Broadband for All: How to Reward the Risk of Investment into Fibre in a Competitive Environment," SPEECH/09/312, 25 June 2009.
- ^{xix} S. ERG (09) 17 "Report on Next Generation Access - Economic Analysis and Regulatory Principles," p. 204 ff. More than a third of NRAs applying price controls on bitstream services used a retail minus or 'eviction pricing' methodology for price control.
- ^{xx} Lewin *et al* (2008).
- ^{xxi} S. Ofcom policy statement "Delivering super-fast broadband in the UK, Promoting investment and competition," (2009), which emphasises the role of functional separation in achieving full non-discrimination. Ex-post price squeeze tests present a further safeguard against any anti-competitive pricing behaviour.
- ^{xxii} cf. Art. 13a of Directive 19/2002/EC as amended in Second Reading by the European Parliament Reference.
- ^{xxiii} ETNO acknowledges that there may be issues of practicality with this implementation as the NRA may not have information on the access seeker costs.
- ^{xxiv} DT case: JUDGMENT OF THE COURT OF FIRST INSTANCE (Fifth Chamber, Extended Composition) 10 April 2008 (*) In Case T-271/03 - point173; Telefonica case: Decision 04.04.2007 case COMP/38.784 – Point 312.
- ^{xxv} *Id.*
- ^{xxvi} ERG (09) 07, "Report on the discussion of the application of Margin Squeeze tests to bundles," 2009.
- ^{xxvii} In several EU member states with high cable penetration ratio, cable operators have already started their Docsis3.0 evolution (Hungary, Belgium, Portugal). These next generation access networks are already in place and are able to deliver the very-high-speed data service; therefore in many cases the current SMP operator on market 4 is not the first mover in NGA.
- ^{xxviii} Regulation (EC) no 2887/2000 of 18 December 2000 on unbundled access to the local loop.

Annex I: Dynamics of NGA infrastructure competition

I.1 Infrastructure-based competition as key objective of European policy

The European regulatory framework for electronic communications sets out the promotion of infrastructure-based competition as one of its objectives, since it enhances competition in the long-term. As per recital 19 of the 'Access Directive'¹:

*“Mandating access to network infrastructure can be justified as a means of increasing competition, but national regulatory authorities need to balance the rights of an infrastructure owner to exploit its infrastructure for its own benefit, and the rights of other service providers to access facilities that are essential for the provision of competing services. (...) **The imposition by national regulatory authorities of mandated access that increases competition in the short-term should not reduce incentives for competitors to invest in alternative facilities that will secure more competition in the long-term.**” [emphasis added]*

This view is consistent both with economic theory and empirical evidence. Competition between operators that own all of their infrastructures -- and specifically their local loops² -- has proven superior where present. In the following sections empirical evidence on the different economic properties of broadband platform competition will be discussed, i.e. its superior social outcomes, its effectiveness and its feasibility for next generation access (NGA) networks in the European Union.

I.2 Infrastructure-based competition yields higher social benefits

Evidence shows that, in the countries or areas in which infrastructure competition is present, the broadband market has yielded higher social benefits than in areas where there is only service based competition over a single local loop. The studies

¹ Directive 2002/19/EC of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive).

² This kind of competition is referred to in literature as “infrastructure competition”, “facilities-based competition” or “platform competition”, as opposed to “services competition,” which is understood to be over a single local access network (or, at least, over local loops owned by a single organisation). All three terms will be used as equivalent in this document.

based on econometric analysis of empirical data show that platform competition drives higher service penetration, investment and innovation.

Empirical studies have found that, *caeteris paribus*, broadband penetration in a market is driven by platform competition. The more developed are alternative networks that own their local loops³, the higher is the take up of broadband services by customers. This has been observed for Europe by Kittl *et al* (2006)⁴, Distaso *et al* (2005)⁵ and Höffler (2005)⁶ and for the United States by Aron and Burnstein (2003)⁷.

Using access regulation which favours service competition over infrastructure competition has also been found to inhibit investment in broadband networks, both by incumbents and alternative operators. Several empirical studies have found this phenomenon in Europe, such as Röller *et al* (2007)⁸ and Waverman *et al* (2007)⁹, and in the United States, such as Crandall *et al* (2004)¹⁰.

The positive effect of infrastructure-based competition is not limited to investment in current networks. Empirical evidence has been recently found that platform competition also increases investment in fibre networks by Wallsten and Hausladen (2009)¹¹

I.3 Evidence of effective infrastructure-based competition

There has been some controversy about the theoretical effectiveness of competition between infrastructure-based telecommunications operators. However, the empirical analysis of the dynamics of competition has shown that the behaviour of

³ Usually cable networks but in some areas also FTTH or wireless.

⁴ Kittl, J., Lundborg, M. and Ruhle E.O., "Infrastructure-Based Versus Service-Based Competition" *Telecommunications, Communications & Strategies*, no. 64, 4th quarter 2006.

⁵ Distaso, W., Lupi, P. and Manenti, F., "Platform Competition and Broadband Uptake: Theory and Empirical Evidence from the European Union," paper presented at the 15th conference of the International Telecommunications Society, 2005.

⁶ Höffler, F., "Cost and Benefits from Infrastructure Competition. Estimating Welfare Effects from Broadband Access Competition," Max Planck Institute for Research on Collective Goods, Bonn, 2005.

⁷ Aron, D. and Burnstein, D., "Broadband Adoption in the United States: An Empirical Analysis," working paper available at Social Science Research Center (SSRC), 2003.

⁸ Roller, L.H., Friederiszick, H. and Grajek, M., "Analysing the Relationship Between Regulation and Investment in the Telecom Sector," ESMT Competition Analysis, Berlin, 2007.

⁹ Waverman, L., Meschi, M., Reillier, B. and Dasgupta, K., "Access Regulation and Infrastructure Investment in the Telecommunications Sector: An Empirical Investigation," LECG, London, 2007.

¹⁰ Crandall, R., Ingraham, A. and Singer, H., "Do Unbundling Policies Discourage CLEC Facilities-Based Investment?" *Topics in Economic Analysis and Policy*, Vol. 4: Issue 1, 2004.

¹¹ Wallsten, S. and Hausladen, S., "Net Neutrality, Unbundling, and their Effects on International Investment in Next-Generation Networks," *Review of Network Economics*, Vol. 8: Issue 1, 2009.

operators is consistent with effective competition in markets in which platform competition has been respected by regulators. Most regulators across the world have concluded that mobile markets characterised by infrastructure competition display effective competition. A recent study by Katz (2008)¹² has arrived to similar conclusions, analysing empirical evidence from quadruple-play markets (fixed voice, mobile, broadband and content distribution) from all parts of the world.

This study reviews the dynamics of the telecommunication markets in a number of countries that have adopted inter-platform competition as a model for organising the industry. Other countries, such as Switzerland, Hong Kong, Portugal, Argentina, Brazil and Mexico, have similar competitive dynamics.

*Industrial organisation in countries with inter-platform competition systems
2007 (*)*

	US	Netherlands	South Korea	Chile	Canada
Landlines telephones	Telco 1 (34%) Telco 2 (24%) Cable (9%)	Telco 1 (55%) Cable (27%)	Telco 1 (91%) Telco 2 (9%)	Telco 1 (66%) Cable (16%) Telco 2 (3%)	Telco 1 (45%) Cable (11%) Telco 2 (20%)
Mobile telephones	Telco 1 (27%) Telco 2 (26%) Telco 3 (11%) Telco 4 (18%)	Telco 1 (48%) Telco 2 (21%) Telco 3 (26%)	Telco 1 (51%) Telco 2 (32%) Telco 3 (17%)	Telco 1 (42%) Telco 2 (40%) Telco 3 (18%)	Telco 1 (31%) Cable (37%) Telco 2 (28%)
Broadband	Telco 1 (20%) Telco 2 (12%) Cable (54%)	Telco 1 (44%) Cable (39%)	Telco 1 (45%) Telco 2 (26%) Telco 3 (10%) Cable (19%)	Telco 1 (50%) Cable (40%) Telco 2 (4%)	Telco 1 (23%) Cable (48%) Telco 2 (12%)
Content distribution	Cable (97%) Telco 1 (1%) Telco 2 (2%)	Cable (81%) Telco 1 (6%)	Cable (78%) Telco 1 (3%) Telco 2 (4%)	Cable (68%) Telco 1 (17%) Telco 3 (4%)	Telco 1 Cable (74%) Telco 2
Enterprises	Telco 1: ATT Telco 2: Verizon Telco 3: T-Mobile Telco 4: Sprint Nextel Cable: Comcast, Cablevision	Telco 1: KPN Telco 2: Vodafone Telco 3: T-Mobile Cable: UPC, Zesko	Telco 1: KT Telco 2: SK/Hanaro Telco 3: LG	Telco 1: Telefónica Telco 2: ENTEL Telco 3: Telmex/Claro Cable: VTR	Telco 1: Bell Canada Telco 2: Telus Cable: Rogers

(*) The figure in brackets corresponds to market share
Sources: FCC, OPTA, CRTC, KT, Subtel, operators' reports

Source: Katz (2008)

The study by Katz also found that, albeit strong cable operators present in those countries, the regulatory authorities did not immediately adopt the inter-platform competition model but did so after experimenting with service-competition models¹³ and identifying their limitations. Katz notes:

¹² Katz, R., "La competencia entre plataformas: teoría y resultados (Platform competition: theory and results)," ENTER, Madrid, 2008.

¹³ This was the case of the United States with local loop unbundling (LLU) in 1996; in Chile, with the announcement of the intention to unbundle networks in 2000; and the introduction of LLU in the Netherlands.

“The industry’s initial response to these regulatory intentions included the entry of a large number of virtual competitors and a reduction in prices but at the same time, a deceleration of investment (as in the US and Chile). However, at the same time, the industry started a process of consolidation giving rise to players who competed in every sector of the industry (primarily, telephony, broadband, mobile and content distribution), demonstrating the actual viability of inter-platform competition. (...)

In view of these events, the regulator recognised that the process for creating strong competitors with good financial health and a capacity for maintaining a certain rate of innovation and investment had to do less with an ‘investment ladder’ and more with the Schumpeterian processes of competition and return to scale that characterise a capital-intensive industry such as telecommunications.”

Katz concludes that *“the fact that, on the basis of different industrial contexts and in the absence of contagion or the ‘export’ of a certain regulatory framework, there is a convergence towards a similar model of competition indicates that the market dynamics and economic structure of the industry play a determinant role in the migration.”*

The study finds that the developments in the analysed markets are consistent with the existence of effective competition between the platform operators, measured by a set of competition criteria:

Characteristic features of inter-platform competition by country

INDICATORS	US	Netherlands	South Korea	Chile
More than one operator (two or three) supplying the same market	YES	YES	YES	YES
Each operator is vertically integrated	YES	YES	YES	YES
Multidimensional competitive dynamics (prices, services, user service quality)	YES	YES	YES	Partial
Stabilisation of end-consumer prices but intense competition in product differentiation	YES	YES	YES	
Competitive encouragement for each operator to increase its level of investment in its own network	YES	YES	YES	YES
Operating benefits as a result of each operator controlling its own infrastructure and supply chain	Partial		YES	YES
Absence of tacit collusion between operators due to a high rate of innovation and competition in service packages	YES	YES	YES	Partial
Reduction of regulatory intervention to solve market failures	Partial	YES	YES	YES

Source: Katz (2008)

Katz maintains that *“[T]hese models will not be adopted by sacrificing the consumer interest in favour of a consolidated industry, but rather end users will benefit from static and dynamic efficiencies provided by healthy competition systems.”¹⁴*

¹⁴ *Op. cit.*

I.4 The economics of NGNs allow for infrastructure-based competition in Europe

As demonstrated in the annex to “ETNO Reflection Document in response to the Commission Recommendation on regulated access to Next Generation Access Networks (NGA)”¹⁵, in many instances the economics of the NGA networks allow for several competitors to deploy their own networks and compete with each other on a sustainable basis:

“The economics of broadband access networks show that the European policy goal to reach sustainable competition between infrastructure-based telecommunications operators is feasible, both with current technologies and with NGNs.

The empirical evidence shows that infrastructure competition is already widespread in Europe and is delivering excellent results in the areas in which it is present. Up to date, around a half of the European homes and businesses have the choice of broadband services delivered via several DSL operators and either a cable one or (in some areas) a fibre operator, and even several fibre ones in some metropolitan and industrial districts.

Recently, infrastructure competition has intensified with the deployment of broadband wireless networks by mobile operators or niche providers, which in several countries (like Austria or the Czech Republic) have already grabbed a market share of more than 30% from fixed operators.

Infrastructure competition will continue to be sustainable when new generation networks are deployed. Actually, the first fibre deployments show that alternative operators are in many cases the first movers and, overall in Europe, they have deployed roughly as many fibre lines as the incumbents.”

The analysis showed, in particular, that depending on the level of average revenue per user (ARPU), population density and total NGA network uptake, and the pre-existing networks, the number of operators and the technologies they were likely to use varied a lot, but there was room for several competitors even when standalone, greenfield operations are considered.

The table below gives additional evidence that the most significant FTTH/B deployment as of December 2008 has been carried out by alternative operators which currently have not been designated as significant market power (SMP)

¹⁵ ETNO Reflection Document RD295, November 2008.

operators in market 4 or 5. The main actors are six alternatives, six power utilities, one cable operator and one infrastructure joint venture compared to four incumbents.

Countries	Players		Home/Building passed (December 2008)
Denmark	DONG Energy	Power utility	150,000
	Energie Midt	Power utility	75,000
	TRE FOR	Power utility	60,000
Finland	TeliaSonera	Incumbent	400,000
France	France Telecom	Incumbent	500,000
	Iliad/Free	Alternative	300,000
	SFR	Alternative	250,000
	Numericable	Cable operator	3,400,000
Germany	Wilhelm Tel	Power utility	100,000
	M-Net	Power utility	80,000
Italy	Fastweb	Alternative	2,000,000
Netherlands	Reggefiber	Infrastructure operator	350,000
Norway	Lyse	Power utility	170,000
Slovakia	T-COM	Incumbent	200,000
	Orange Slovensko	Alternative	215,000
Slovenia	T2	Alternative	200,000
Spain	Telefónica	Incumbent	250,000
Sweden	B2	Alternative	390,000

Source: IDATE for FTTH Council Europe

Annex II: The impact on network competition of access to leased ducts

In the discussion on investment needed to deploy a modern and capable telecommunications network in Europe, the use of 'passive infrastructure' is critical. Passive infrastructures are ducts, poles, manholes, street cabinets, base station sites and antennae masts used to build a new network and count for most of the investments needed, in particular with regard to next generation access (NGA) networks.

Operators deciding to build a new network are motivated to use existing passive infrastructure to reduce their investments, willing to reimburse the passive infrastructure's owner for the use.¹ As returns on a reduced investment will increase, the market share they need to break even a sustainable business case will be lower and subsequently increase the number of competitors in the market and the competitive rivalry.

When the use of an existing infrastructure is technically feasible, a market for passive infrastructures can develop without regulatory intervention simply because of the economics of their owners' businesses. Since fibre optic, contrary to electrical cables, is a passive medium resistant to moisture and electrical interference, most ducts and way leaves used for other economic or public activities can be used to lay fibre optic cables alongside their ordinary use. Ducts that have already been used to deploy fibre optic cables include electricity cables and poles, sewers, service galleries, water, oil and gas pipes, railway and road tunnels etc. In all of these cases, there is an economic rationale to lease their ducts: (i) ducts are a capital intensive asset with (ii) strong economies of density, and in which, provided there is spare capacity, third party fibre cables can be roomed at (iii) a very low incremental cost. Therefore, any lease revenue will have a strong beneficial impact in the duct owner's margins.

However, in the context of such duct access, one should bear in mind that not all kinds of ducts are suitable for third party access and that moreover ducts suitable for such sharing are not always available. Indeed, in some countries, the traditional (copper) network is historically composed of copper cables directly dug into the ground (and not inserted in ducts). Therefore, in the absence of such pre-existing ducts, the traditional network architecture cannot simply be 're-used' for purposes of optical fibre deployment.

¹ By "reasonable" we mean a price that allows the infrastructure owner to cover all its costs (including costs of capital) but not to make a super-normal profit on infrastructure leases.

Recently, we have seen several examples of operators all over Europe in leasing ducts to deploy fibre networks that compete with incumbent telephone and cable companies, such as Fastweb in Italy or Free in France. For example, Fastweb deployed its fibre optic network in Milan by using the rights of way of utility company AEM, and Free is using municipal ducts alongside tramway tracks in Montpellier.

Telecommunications regulatory authorities may also impose a mandate to lease space in ducts to competing fibre operators as a remedy to operators that have been found to have significant market power (SMP) in a relevant market.

Several economic studies based on cost modelling show that, if a suitable offer to lease passive infrastructure is in place, the number of sustainable competitive NGAN infrastructure operators is significantly increased. For the sake of the economic argument, it makes no difference whether this offer is a commercial one or has been imposed to telephone operators or other utilities by regulators.

In the following, the results of modelling several scenarios using the COSTA cost model (COSTes de Redes de Acceso de Nueva Generación) from the Universidad Politécnica de Madrid² are summarised.

To focus specifically on NGA networks, it is assumed that there is user demand by a given customer segment for services and applications that require 100 Mbps both downlink and uplink. This demand is met by operators using FTTH GPON network architecture. For the sake of simplicity, potential supply by cable operators using DOCSIS 3.0 is not included, but taken into account when considering total FTTH service take up. To test the impact of duct access in the degree of competitive rivalry in the market, the COSTA model was run to find the break even point of fibre operators, i.e. the minimum percentage of premises in a given area that an operator needs to have as customers in order to become net present value (NPV) positive in a 15 year period in different geographic settings and average revenue per user (ARPU) levels³. Leasing costs were input at the rates currently set by the Spanish regulator, the Comisión del Mercado de las Telecomunicaciones (CMT), to access Telefónica's ducts in Spain. After this result, the maximum number of operators⁴ that a service area can sustain is calculated for several service take up levels.

The results from the COSTA model show that the number of operators significantly increases with access to duct leasing across all ARPU scenarios.

² <http://www.gtlic.ssr.upm.es/costa/costa.html>

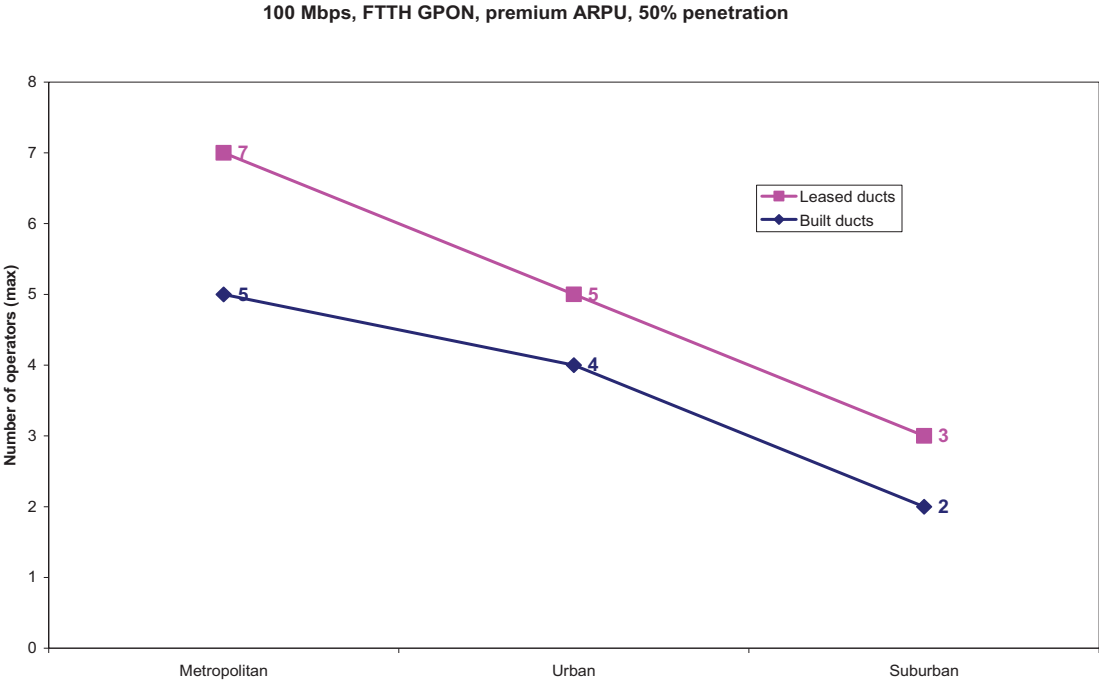
³ Three ARPU levels are considered: "premium" (customers which make full use of advanced services enabled by fibre that yield a wholesale ARPU of 50 euro); "medium" (customers that value the enhanced performance of fibre to deliver the current broadband service suite at 40 euro); "basic" (other customers at 30 euro).

⁴ Assuming that all operators have equal market shares.

In the **premium ARPU scenario** (see figure below) shows that the market can sustain two more operators in dense urban areas in the case that fibre services become mainstream. In the case of urban areas, the impact is also noticeable, because there would be room for one or two additional operators, depending on overall service take up. For suburban areas, the absolute increase in the number of competitors is lower, but the competitive impact of duct leasing is likely to be stronger, because of the higher relative increase.

A similar effect to that which happens with population density for a given ARPU level can be observed for different ARPU levels in the same geographic area. As ARPU levels decrease, the number of potential sustainable competitors becomes lower. The availability of duct leasing allows fewer additional competitors to enter the industry at lower ARPU levels, but their relative impact is greater. These results are summarised in the following figures. In them, it has been assumed a service take up level of 50% of premises, which is similar to the current average broadband penetration levels in Europe⁵.

For premium ARPU, as it has already been mentioned, duct leasing increases the number of competitors across the board, bringing markets that already had the potential to be competitive to a high degree of intra-modal competitiveness.

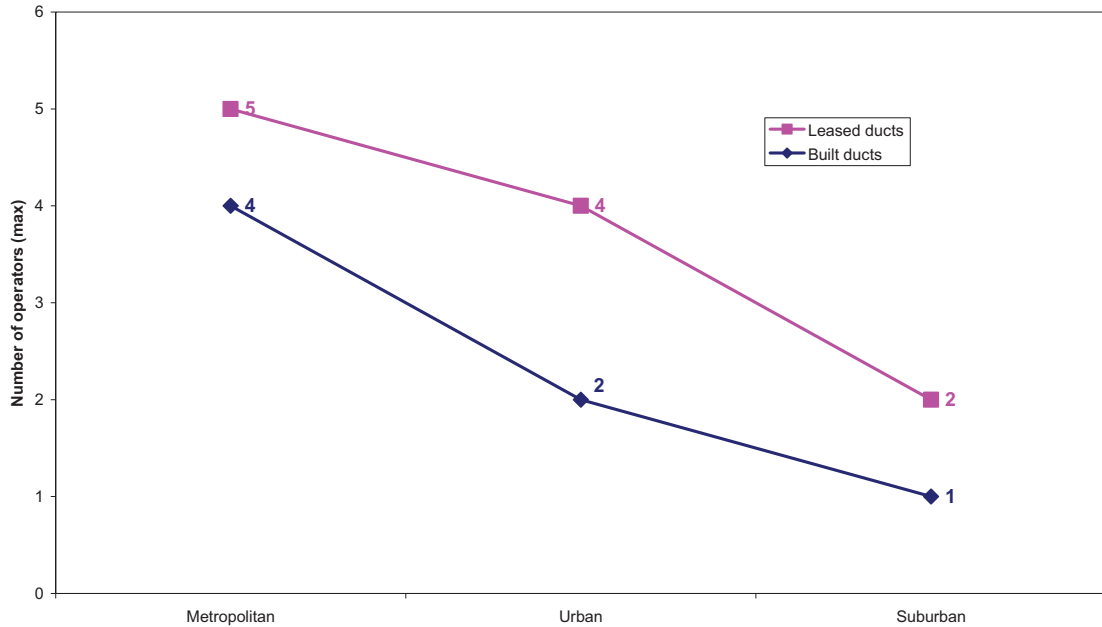


In the **medium ARPU scenario** (see figure below), duct access may bring competition to suburban areas where fibre would have otherwise competed only

⁵ The rest of households are supposed to either use mobile-only broadband access, cable modem access, legacy DSL access where available, or to not use broadband at all.

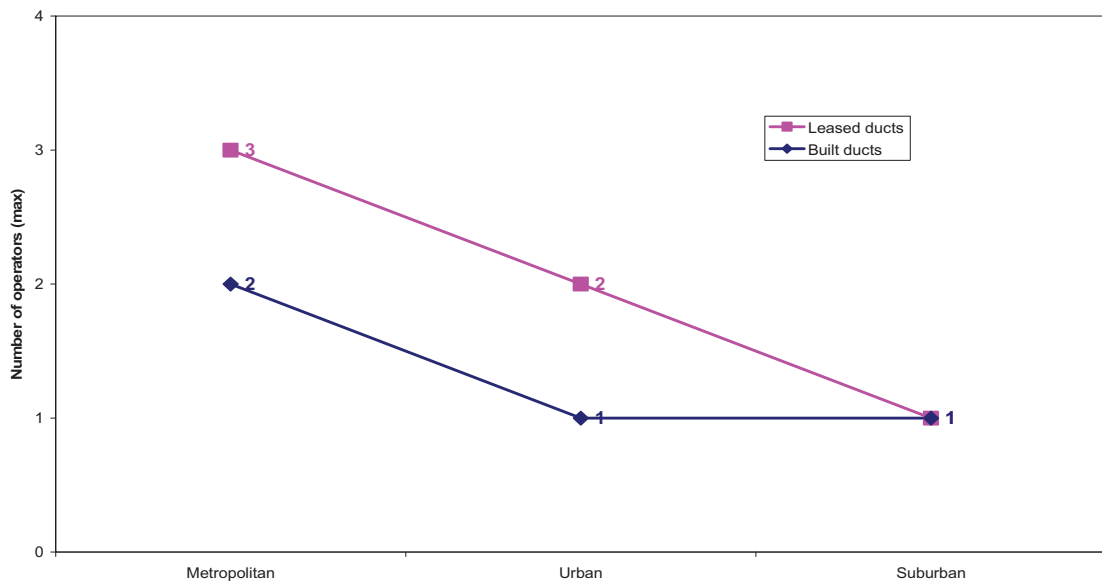
with high speed cable and wireless broadband and may also greatly enhance the competitive effectiveness of urban areas.

100 Mbps, FTTH GPON, medium ARPU, 50% penetration



In the **basic ARPU scenario** (see figure below), the business case for investing in fibre networks would be more difficult to be profitable, but the competitive impact of having ducts for lease would be greater than in the previous cases. Urban areas would sustain several fibre operators (in addition to the cable one) and dense urban areas could justify investment by three fibre operators.

100 Mbps, FTTH GPON, basic ARPU, 50% penetration



These findings are consistent with other recent studies. For example, the CMT has recently released a study⁶ from the engineering and consulting firm ISDEFE, which finds that:

- up to six infrastructure-based fixed NGA operators could compete in the two largest cities (Madrid and Barcelona): Telefónica, the cable operator and up to four alternative fibre operators;
- two to four infrastructure-based fixed NGA operators could compete in cities and towns down to 1,000 inhabitants: Telefónica, one fibre alternative, the cable operator, and a second fibre alternative in large cities.

⁶ ISDEFE, "Final report on the results of the deployment model for FTTH/GPON networks in Spain," May 2009.

Annex III: The ‘ladder of investment,’ a concept unsuited for NGA competition

The draft Recommendation proposes to impose on operators, which have been designated by national regulatory authorities as having significant market power (SMP) in relevant markets, a series of parallel remedies at all network levels. Although no specific economic justification is stated, this proposal is consistent with the idea of offering new entrants and other players a ‘ladder of investment’ to progressively develop their own networks.

In this Annex, three issues will be addressed:

- The theoretical foundations of the ladder of investment concept;
- The empirical evidence of the impact of ladder of investment regulation in the markets in which it has applied;
- Whether the economic properties of next generation access (NGA) networks meet the requirements for the ladder of investment concept to be of applied to them.

III.1 Theoretical foundations of the ladder of investment concept

The ladder of investment concept was embraced by policy makers in the telecommunications sector in the late-1990s as a regulatory approach to facilitate the supposedly efficient entry of alternative players and to promote (early) retail competition. This assistance was intended to be transitory, allowing the entrants to establish a revenue-generating customer base to fund infrastructure investments. Once a so-called ‘level playing field’ was established, asymmetric access regulation would be seen as no longer necessary and withdrawn.

However, as argued by Régibeau (2009)¹, the ladder of investment concept is not a new one but is the more recent relabeling of the old “infant industry” argument, which has been a staple of the international trade and development literature for at least 50 years. In this traditional version, local firms or local industries need to be protected from foreign competition so that they have time to become effective competitors who can survive in unregulated market conditions. As is now

¹ Régibeau, P., “Broadband Access in Belgium: Some Policy Considerations,” paper commissioned by Belgacom, 2009.

generally accepted, there are two main problems with this line of reasoning. Firstly, for the argument to have any intellectual coherence at all, one needs to identify a significant market failure that would prevent the local firm from willingly investing in an initial period of learning – when they make losses – in order to reap benefits later. While such failures might be identified relatively easily in a developing economy, it is less clear what they would be in the context of the telecom industry. Secondly, accumulated experience shows that there is an alarming tendency for those “infants” to simply refuse to “grow up”.

Proponents of the ladder of investment argued that their proposal could tackle with both problems. First, at the moment of liberalisation, they claimed that there was a clearly identified and very specific market failure in the telecommunications market in Europe. There was an incumbent company that owned a network with universal coverage, high fixed costs and low variable ones, that had been financed in privileged terms (either by monopoly profits and/or taxpayer funding) and that had already as customers virtually all potential users. Second, economists that advocated the ladder of investment concept proposed that it should be transitory. Access prices should be low only for the minimum time necessary for an efficient new entrant to build their business and customer base. The prices of the lower rungs should eventually be raised to provide an incentive for efficient entrants to invest in their own facilities -- and for inefficient entrants to consolidate or exit the market. After a reasonable period of time, all rungs of the ladder should be removed, as it should have met its goal to allow the development of infrastructure based competition.

III.2 The performance of ladder of investment regulation has been weak in terms of investment

Regulatory regimes implementing the ladder of investment concept have been instituted in many countries, such as most of EU member states, the United States and Canada. Their results have not been what their proponents expected.

Entrants that have made use of regulated access have largely not invested in fully facilities based networks. Actually, rather than complements, access services by the incumbent are often considered as substitutes for entrants’ own investments. Access regulation seems to have had a chilling effect on investments by entrants, rather than the facilitating effect expected by the ladder of investment theory.

Empirical evidence shows that low regulated access prices have discouraged investment by new entrants: Röller *et al* (2007)², Gruber (2007)³, Crandall *et al* (2004)⁴. Other empirical studies have found that entrants which avail of regulated access do so as a substitute rather than as a complement to their investments, like Hausman and Sidak (2005)⁵. The effect of disincentives has also been found for incumbent investments by Hazlett (2005)⁶ and Crandall and Sidak (2007)⁷.

Moreover, the behaviour of facilities based competitors has challenged the presumption that the incumbents' position was unassailable without regulatory protection. In addition to the upgrade of existing analogue cable networks, facilities based new entrants have decided to go straight for full network build out rather than climbing the investment ladder. In Europe, for example, Fastweb has deployed a FTTH network in Milan, Italy, and Spanish cable companies have covered 50% of Spanish households building their networks from scratch after liberalisation in 1998. In South Korea, the most developed broadband market in the world, local loop unbundling (LLU) was only introduced in 2002, after several infrastructure based competitors had build networks that covered the whole country⁸.

Conversely, ladder of investment-type regulation has also had a freezing effect on such investments by facilities based new entrants. Hausman and Sidak (2005) found that alternative infrastructure build out in the UK predated the introduction of unbundling, and that in the United States new players were increasingly relying on unbundling⁹. Waverman *et al* (2007)¹⁰ found that, also in Europe, investment by cable operators was negatively affected by lower LLU prices and, conversely, Crandall *et al* (2004) found in the United States that facilities-based line growth

² Roller, L.H., Friederiszick, H. and Grajek, M., "Analysing the Relationship Between Regulation and Investment in the Telecom Sector," *ESMT Competition Analysis*, Berlin, 2007.

³ Gruber, H., "European sector regulation and investment incentives for broadband communications networks," European Investment Bank, working paper series, 2007.

⁴ Crandall, R., Ingraham, A. and Singer, H., "Do Unbundling Policies Discourage CLEC Facilities-Based Investment?," *Topics in Economic Analysis and Policy*, Vol. 4 : Issue 1, 2004.

⁵ Hausman, J. and Sidak, G., "Did Mandatory Unbundling Achieve Its Purpose? Empirical Evidence from Five Countries," *Journal of Competition Law and Economics*. Vol. 1, No. 1, 2005.

⁶ Hazlett, T.W., "Rivalrous Telecommunications Networks with and without Mandatory Sharing," AEI-Brookings Joint Center for Regulatory Studies, Working Paper 05-07, 2005.

⁷ Crandall, R. and Sidak, G., "Is Mandatory Unbundling the Key to Increasing Broadband Penetration in Mexico? A Survey of International Evidence," working paper available at Social Science Research Center (SSRC), 2007.

⁸ Hausman, J., "Competition and Regulation for Internet-related Services: Results of Asymmetric Regulation," in Crandall and Alleman (Eds.) *Broadband: Should We Regulate High-Speed Internet Access?*, AEI-Brookings Joint Center for Regulatory Studies, 2002.

⁹ This finding refers to the period prior to broadband deregulation by the Federal Communications Commission.

¹⁰ Waverman, L., Meschi, M., Reillier, B. and Dasgupta, K. "Access Regulation and Infrastructure Investment in the Telecommunications Sector: An Empirical Investigation," LECG, London, 2007.

relative to LLU growth was faster in states where regulated LLU rates were higher relative to the cost of facilities-based investment.

III.3 NGAN markets are not suited to have ladder of investment access regulation

As discussed above, the protection supposedly warranted for new entrants, which the ladder of investment provides, would be justified only when there is a significant market failure that prevents new entrants to compete with incumbent firms until they become effective competitors.

Not only have many empirical studies demonstrated the lack of efficiency of the ladder of investment theory, but theoretical arguments justifying the ladder of investment are not appropriate to the NGA context. Indeed there are several well-established competitors in place in every European country¹¹, whose combined networks match the coverage of the incumbent operator and who have sizable customer bases in some geographic areas exceeding the incumbent's. With several networks in place, sunk costs are no longer limited to the incumbent, and, with the advent of fibre technologies, there is no longer a decisive cost advantage -- in particular, in the presence of a wholesale market for access to ducts and similar facilities. Incumbent operators have also renewed their networks with commercial market financing.

Therefore, the rationale to grant special protection to alternative operators in the form of a parallel availability of a range of access products is even less present in an NGA environment.

In an article on the subject, Cave (2007)¹² concludes:

*“Thus current ADSL competitors will be shortly be confronted by the challenge of new network architectures based on IP and fibre. Access options will change, possibly offering a difficult choice between reverting to something akin to resale (which might be withdrawn) or a major investment in a competing fibre. **It would be a mistake for regulators to perpetuate the current known world of bitstream, full loop unbundling etc. in the presence of such a disruptive change.**”*

¹¹ Cable, fibre, mobile, LLU and other wireless operators.

¹² Cave, M., “The regulation of access in telecommunications: a European perspective,” Revised, April 2007, Warwick Business School, University of Warwick, UK, 2007.

These circumstances imply a policy of facilitating fuller infrastructure competition, by freeing spectrum, removing any disadvantages cable companies face, and possibly considering mandating access to basic infrastructure such as ducts rather than traditional communications assets, such as copper or fibre.” [emphasis added]

In the context of the practical impact on investment that ladder of investment-type regulation has had in the current telecommunications markets, the imposition of such a regime for NGA infrastructure could be expected to reduce or remove incentives to invest not only by the established operator but also by facilities-based alternative operators. Moreover, given that even the original assumptions held by advocates of the ladder of investment are not relevant in a NGA context (s. above), the concept should no longer be seen as a valid regulatory approach for the sector – especially in a NGA environment.

7. e-net

Next Generation Broadband in Ireland

Response to ComReg's Discussion Document (Document No.
09/56)

by



e|net
enasc éireann teoranta

September 2009

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EXECUTIVE SUMMARY

e|net welcomes the opportunity to respond to ComReg's Discussion Document on Next Generation Broadband in Ireland. The timely and efficient development of next generation, high speed broadband networks and services is an urgent imperative for economic regeneration in this country and all major stakeholders – Government, ComReg and industry players – must work together to ensure that this important strategic project is undertaken as soon as possible in order to provide the maximum benefit to end-users and the economy as a whole.

Ireland needs to develop, as rapidly as possible, a nationwide optical fibre network, one which has, to the maximum extent possible, fibre deployed at local access level, complemented elsewhere by existing fixed, wireless and mobile broadband infrastructures. We need to do this from a national competitiveness perspective – both to retain existing multinational investment within Ireland and to attract new inward investment – and we need to do so because many of our EU peers have already embarked on such a road.

The case for widespread NGB deployment has already been made and ComReg has succinctly summarised the principal socio-economic benefits to be derived from the timely deployment of high-speed broadband infrastructure. There are major benefits to be gained in areas such as transport, healthcare and education but these benefits will only be realised when NGB services are available to business and residential end-users on a nationwide basis.

Decades from now, this infrastructure will largely - as electricity is in today's environment - be taken for granted and access to NGB services will be seen as an absolute necessity by all. In terms of national competitiveness, however, the major gains to be made will come from deploying this infrastructure as quickly as possible. As a result, it is vital that all stakeholders come together to ensure that the deployment of NGB infrastructure occurs rapidly and efficiently so that maximum economic benefit may be derived for the Irish economy.

In planning NGB deployment, it needs to be explicitly recognised that the principal beneficiaries will not be the private sector organisations who currently provide all communications services within the liberalised market. Instead, the main benefits will accrue to the national economy as a whole and to end-users. As a result, it is not realistic to expect private sector players to invest in nationwide NGB infrastructure and public funding will be required to augment planned private sector investment and to ensure that NGB services are available to all.

The weakness of the private sector business case for NGB in conjunction with the strength of the business case for the public sector means that the

Government's role in promoting NGB rollout is an absolutely crucial one. Government intervention is needed to:

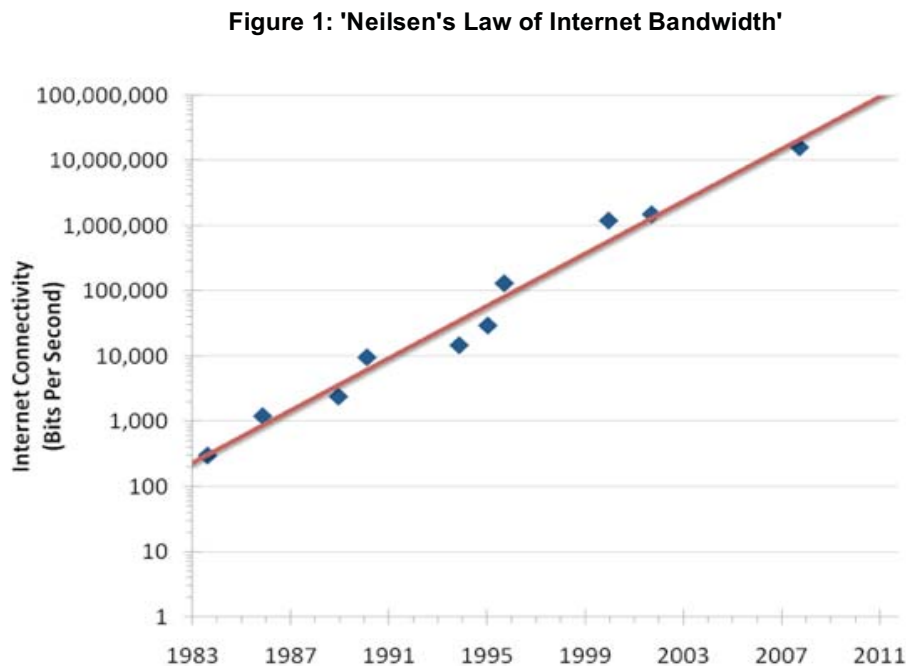
- Facilitate agreement amongst stakeholders on the best approach to use to ensure nationwide NGB rollout;
- Co-ordinate how NGB rollout will take place;
- Put in place appropriate incentives to ensure that private sector investment in NGB deployment takes place;
- Provide public funding for NGB rollout where private sector investment is not forthcoming;
- Ensure that open access principles apply in relation to the deployment of NGB local access networks;
- Ensure that competition between market players is maintained to the maximum extent possible.

All of the major stakeholders are in agreement at this point as to the desirability of early NGB deployment. What we need now is a plan to ensure that this happens in the most timely and efficient manner, which means that the Government is the key actor in this area. The Government (through the DCENR) needs to take decisive measures to ensure that the required transformation of the sector occurs. Doing so will contribute greatly to national economic regeneration.

RESPONSES TO QUESTIONS RAISED IN COMREG'S DISCUSSION DOCUMENT

Question 1: What speeds and other quality of service parameters will be demanded by businesses and consumers over the next 3 to 5 years? Please explain your reasoning. Do you believe the market itself will deliver these capabilities and within what timeframe?

International evidence shows that available internet bandwidth has increased rapidly year-on-year for several years. Indeed, a similar phenomenon to Moore's Law has been observed in relation to internet bandwidth, with 'Nielsen's Law' stating that a high-end user's connection speed grows by 50% per year, as the graph below illustrates.



Source: Jakob Nielsen's Alertbox (<http://www.useit.com/alertbox/980405.html>)

If the above relationship holds true into the future, then it may be expected that customers' internet connection speeds will continue to exhibit exponential growth year-on-year. ComReg's own analysis in the Discussion Document, both in relation to future capabilities of increased speeds being delivered via existing fixed, cable and wireless networks and the deployment of optical fibre, would suggest that future growth of this kind is realistic.

In such an environment, e|net is of the opinion that there is little to be gained from attempting to guess the precise kinds of bandwidth speeds that different types of customers will demand in the future. Instead, the policy focus should be firmly on finding the most appropriate solutions for expanding the reach of NGB networks so that the greatest possible number of business and residential customers have access to high-bandwidth services.

In the shorter-term, this is likely to mean that NGB services will still largely be provided over existing fixed and wireless access networks but ultimately widespread fibre rollout will be required in order to deliver the kinds of connection speeds that are likely to become standard over the medium term. From an international competitiveness perspective – both in ensuring that existing overseas multinationals continue to base their operations in Ireland and in attracting new companies to the country – it is vital that widespread fibre rollout takes place, not least because a number of our European peers – such as Denmark, Finland and the Netherlands - are already further down this road than we are.

Question 2: Do you consider that NGB network deployments can provide a socio-economic benefit? If so, who are likely to be the greatest beneficiaries and why? Should the policy framework explicitly favour the development of NGB in Ireland, and with what specific socio-economic goals in mind?

It is undoubtedly the case that the widespread deployment of NGB networks have the potential to provide substantial socio-economic benefits for the country in general. As ComReg points out in the Discussion Document¹, such benefits are likely to result in improved national economic competitiveness (or at least by ensuring that no loss in comparative economic competitiveness occurs) and increased productivity, as well providing additional benefits to businesses and consumers.

At a national competitiveness level, NGB deployment will help to further the Government's *Smart Economy* strategy.² As ComReg itself notes, the presence of NGB networks has the potential to foster the development of a high-end export-oriented digital services sector from within Ireland.³ Inward investment is also likely to be boosted, with consequent positive effects on employment and economic growth generally. As noted above, positive effects in this area should

¹ Discussion Document, paras 2.14 to 2.25.

² *Building Ireland's Smart Economy – A Framework for Sustainable Economic Renewal*, Department of the Taoiseach, December 2008.

³ Discussion Document, para 2.20.

arise both from the retention within Ireland of existing multinationals as well as from attracting new companies to the country.

A particularly important area where socio-economic benefits are likely to accrue from a pro-active approach to the deployment of NGB is, as ComReg states, within the area of the environment. The widespread deployment of NGB access networks will facilitate increased home working and the use of video conferencing facilities and so will help to reduce traffic volumes. Such a reduction would feed into reduced traffic in terms of the absolute number of journeys undertaken but it would also mean a reduction in **peak** traffic volumes, which research has shown can mean substantial reductions in congestion, even if the overall reduction in traffic volumes are modest. In the United States, for example, urban traffic congestion in 2008 declined by 30% compared to 2007 even though total vehicle miles travelled in the US only declined by about 3 percent over the same period.⁴

A further environmental benefit arises from the use of NGB networks by consumers to promote 'dematerialisation'. By purchasing digital downloads of such items as music albums, movies etc. instead of hard copies of CDs, DVDs etc. there are significant environmental benefits to be gained from the consequent reduction in the use of resources involved in the production, distribution and purchase of the physical variant of such goods. It follows that the greater the availability and use of NGB networks by end-users, the more significant the environmental benefits that will be realised in this area.

In terms of other areas where socio-economic benefits should arise, both e-learning and e-healthcare are the most obvious frontrunners, though, as ComReg points out, the degree to which these benefits are realised will, to a large extent, depend on how well Government agencies, businesses and societies adapt to and recognise the potential of NGB networks.

Moreover, it is also likely to be the case that Ireland stands to benefit disproportionately compared to our EU peers from the deployment of NGB, given the country's geographic location and the way in which the development of a high-end export-oriented digital services sector would negate the geographic disadvantages that the country faces from its position at the periphery of the EU. The same factors that have proved to be so relevant in promoting foreign direct investment – for example, the fact that the country is an English-speaking one which has a well-educated workforce – are also likely to be of relevance in seeking to harness the benefits from NGB deployment.

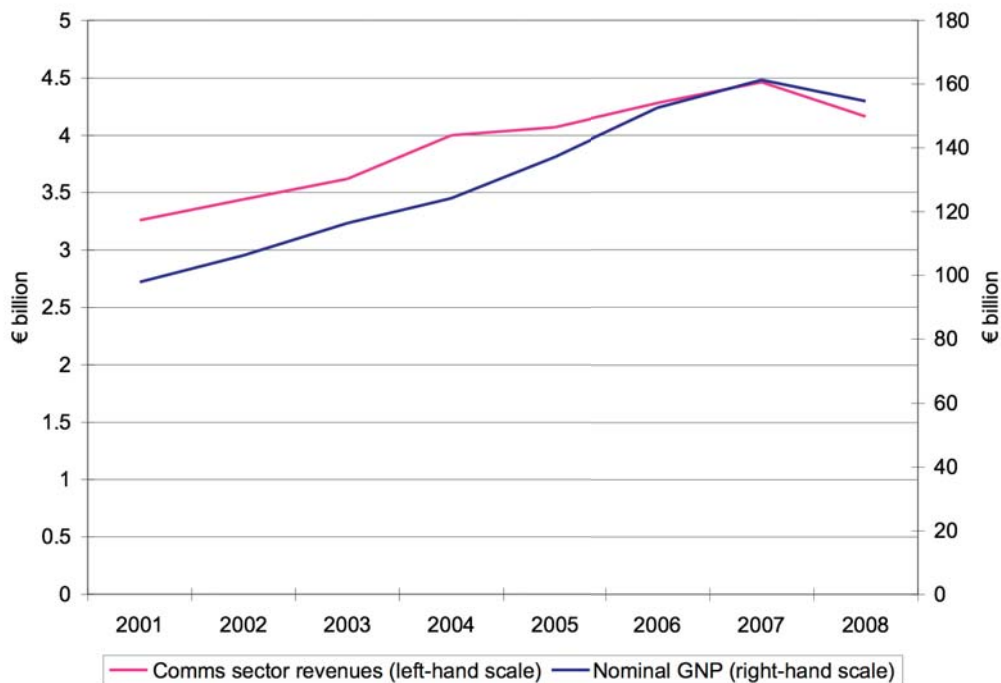
It is, however, important to recognise that the above-mentioned benefits will not accrue to any significant degree to the market players that are expected to deploy

⁴ INRIX *National Traffic Scorecard 2008 Annual Report*, available at: <http://tinyurl.com/ngp6lx>.

NGB networks. Most, if not all, of these benefits will instead be reaped by the wider Irish economy and society.

This is because expenditure on new communications services does not accrue to operators as incremental revenue on top of the revenues they gain from legacy services. Instead, this new expenditure by customers simply represents a similar spend for improved services. As a result, the significant technological advances which have occurred within the communications sector in Ireland over the past decade – a period in which the market was liberalised, mobile and broadband penetration rose sharply and a whole range of new fixed and mobile services were brought to market – have not led to any enormous increase in operators' revenues.

Figure 2: Irish communications market revenues and GNP, 2001 - 2008



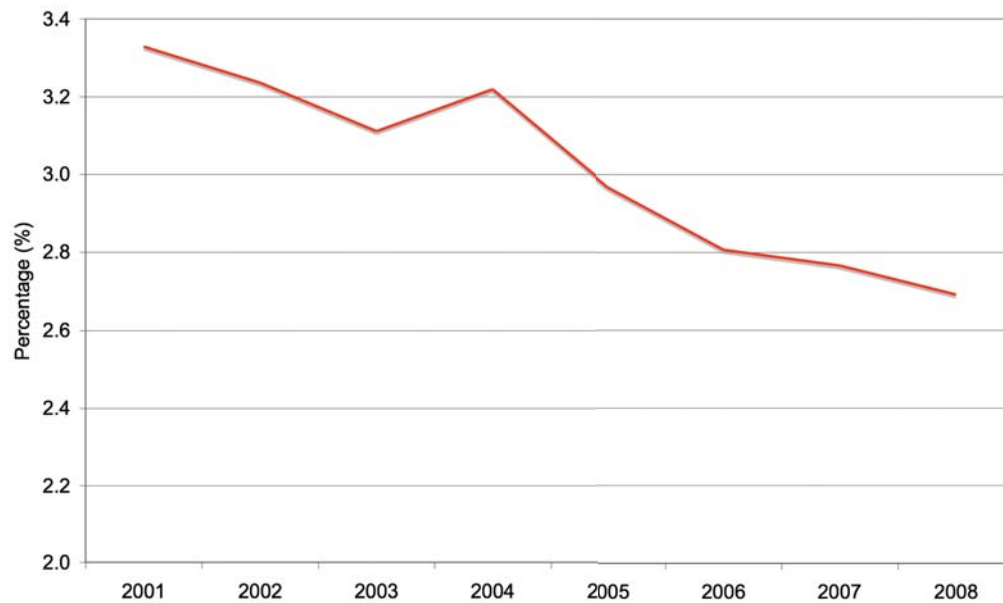
Source: ComReg Quarterly Review data, CSO

Instead, as Figure 2 above shows, sectoral revenues have closely tracked changes in nominal GNP over the past number of years. In addition, as Figure 2 also shows, the sharp contraction that occurred in economic growth in 2008 has

been mirrored within the communications sector, with sectoral revenues falling by 6.7% in 2008, compared to a 4.1% reduction in GNP over the year.⁵

Indeed, as Figure 3 below demonstrates, communications market revenues have actually been falling as a percentage of Gross National Product (GNP) every year since 2004. Back in 2002, sectoral revenues accounted for 3.3% of GNP but by 2008 this figure had fallen back to just 2.7%. As noted above, moreover, the sharp contraction in general economic activity has also been mirrored within the communications sector.

Figure 3: Irish communications market revenues as a percentage of GNP, 2001 - 2008



Source: ComReg Quarterly Review data, CSO

It is against this bleak backdrop that Irish communications operators are having to evaluate their plans to invest in the deployment of NGB networks. In this context, it needs to be recognised that private sector players will invest primarily in order to gain market share and additional revenues and not simply for the sake of deploying new technologies. This is especially so where – as is the case with the Irish communications sector - the market is not growing rapidly and slow

⁵ Both of these figures represent nominal (i.e. non inflation-adjusted) amounts. Sectoral revenues declined from €4.46 billion to €4.16 billion between 2008 and 2009 (Source: ComReg) whereas nominal GNP fell from €161.2 billion to €154.6 billion over the same period (CSO data).

market growth will also inhibit new players from seeking to gain a foothold in the market by investing in new technologies.

With sectoral revenues falling and with the benefits of NGB deployment unlikely to accrue directly to them, it is therefore self-evidently the case that if NGB deployment is left solely to the private sector, there is little prospect for widespread network deployment to occur over the medium-term.

It follows that Government will have to become directly involved in this area and that the policy framework must be geared towards ensuring the most efficient and effective way of deploying NGB networks so that the kind of socio-economic benefits discussed above are realised within the shortest possible timeframe. The need for direct Government investment in this area is underscored by the fact, as we have already noted, that most of the socio-economic benefits from NGB deployment will accrue to the country as a whole. Indeed, the Government's investment to date in the MANs programme is a reflection of this reality.

Question 3: How important will cross-platform competition be to the development of NGB Networks? Do you consider that all broadband platforms are capable of supporting NGB? In what circumstances might some such platforms be more suitable than others in providing timely and efficient NGB?

Cross-platform competition is very important in driving competition at the access level and so leading to wider NGB deployment. The promotion of platform-based competition generally within the Irish communications market has resulted in the emergence of a number of access technologies – fixed, cable, mobile and fixed wireless – which, along with the widespread deployment of fibre, all have a part to play in the delivery of NGB services to businesses and customers.

From a policy and regulatory perspective, it is important that technologically neutral stance is taken to NGB deployment. Different access technologies all address different market niches and so operators deploying different access technologies face different business case decisions as regards the extent to which they are willing to invest in deployment of new high-capacity access networks. From a policy perspective, it is important that new investment is not discouraged and that no single access technology is favoured over another.

The other critical issue from a policy perspective is that, in deploying new NGB network assets, operators are not allowed to create new bottlenecks, which would then become regulatory flashpoints in terms of securing access at a late stage. It is therefore crucial that open access principles underpin all new network

investments involving State funding or specific regulatory incentives and that all parties understand this at the outset.

Existing technologies have the obvious advantage of already being in place and, as ComReg notes, cable and mobile networks could, if planned technological upgrades result in the kind of data speeds that are envisaged become a reality, both support the provision of substantially higher connection speeds to customers. Existing networks do, however, have equally inherent compromises (i.e. the extent to which copper can support increased data speeds, the limited geographical reach of cable and capacity constraints in the case of mobile and fixed wireless) and so, over the medium-term, it is likely that the role these technologies will play, in core network terms, will be one which augments the coverage provided directly via optical fibre. Ultimately, if we are to reap the envisaged benefits from widespread NGB deployment, the only way in which we will be able to do so is by an extensive deployment of fibre at the access level.

Question 4: Do you consider that substantial (in both cost and coverage terms) private sector led investment in the development of NGB networks is likely over the next 3-5 years? If not, and should a gap occur in comparison to other European countries, what will be needed to encourage such private sector investment in Ireland?

For the reasons outlined above in our response to Question 2, the incentive for substantial private sector led investment in NGB network deployment is limited. We would agree with ComReg's assessment that, notwithstanding UPC's plans to further upgrade its cable network and the technological developments that are taking place in relation to mobile broadband, the position regarding operator-led NGB deployment is very uncertain and that it is unlikely that any substantial privately funded NGB rollout will occur over the coming three to five years.⁶

Insofar as there will be some operator investment in NGB deployment within this timeframe, it is likely that, without a coherent national approach to the development of NGB, such investment will be inefficient, poorly targeted and will lead to the duplication of network assets.

As a result, what is needed is a Government-led approach to co-ordinating NGB deployment to ensure that investment (both public and private) is well-targeted and is aimed at delivering maximum network reach with minimum duplication of

⁶ Discussion Document, paras 3.26-8.

assets. Industry players have indicated that they are open to such a co-operative approach to new network build.⁷

Question 5: In what circumstances would any of the above (or other) approaches be appropriate in stimulating NGB roll-out in Ireland? How might such interventions safeguard the development of competition?

It is obvious that some kind of co-ordinated approach needs to be developed between Government and industry to facilitate NGB rollout in a way that maximises network reach, minimises access network duplication and promotes the development of retail competition.

It is difficult to say which model (or models) of co-operation would work best within this country but the key learning to be gained from developments internationally is that co-operation and planning of some sort is required to kick-start the deployment of NGB networks here.⁸

As a result, there would appear to be a major role for the Department of Communications, Energy and Natural Resources (DCENR) to play in facilitating agreement amongst all relevant stakeholders on the best co-operative approach to adopt and then to oversee and co-ordinate the implementation of this agreed NGB investment approach. Such a role should be focused squarely on co-ordinating an agreed approach, as opposed to one aimed at attempting to stimulate private investment but it will also, for the reasons already outlined, need to be one that will involve public financing.

ComReg would be an important stakeholder within this process, with a particular focus on ensuring that the agreed approach is one that is fully compliant with the regulatory regime that ComReg oversees and that it is also one which facilitates the development of competition between different access providers to the maximum extent possible. In this regard, ComReg's role would need to be one that is focused on the needs of users, with the aim of ensuring that customers' flexibility to choose from a range of different retail operators is protected, regardless of which operator provides it with the access portion of its NGB service.

⁷ See *New approach to Next Generation Networks needed*, TIF press release, 22nd May 2009, available at <http://tinyurl.com/tifngn>.

⁸ The various approaches adopted internationally are summarised in Section 4 of the Discussion Document.

Question 6: Do you consider that the issues identified are the main enablers and inhibitors of NGB developments or are other issues of greater relevance? Who are the key stakeholders who might be in a position to influence these issues and how might they best do so?

ComReg's analysis includes all the main enablers and inhibitors of NGB deployment in Ireland.

Market certainty and an imperative to invest from a competitive perspective are two clear enablers for NGB deployment but as we have already discussed and, as ComReg itself echoes⁹, some level of risk-sharing to ensure co-ordinated network deployment could be a more important enabler for development in this area. While demographics are largely a given, the regulatory stance towards new network build (in particular that undertaken by operators deemed to have SMP in the operation of legacy networks) and Government policy on new network deployment could, depending on how they are framed, be either enablers or inhibitors to NGB deployment. The fact that this is so underscores the criticality of the respective roles to be adopted by both ComReg and DCENR.

ComReg's role is well understood and ComReg provides a succinct summary of this in the Discussion Document¹⁰. DCENR has set out details of the role that it plans to play in its recent policy document on NGB¹¹. In this context, it is critical that the Task Force (which DCENR has stated it intends to establish) becomes the driver for co-ordinated action on NGB rollout, with DCENR taking on a lead role in co-ordinating and part financing new network build.

Apart from DCENR and ComReg, the other key stakeholders are the various industry players and all end-users, both business and residential. Ultimately, given the economic impact, everyone in the country is a stakeholder in this area and so it is to everyone's advantage that NGB deployment occurs as rapidly as possible.

In our opinion, issues relating to demand - whether it be demand aggregation, application-driven demand or whatever – are less relevant when considering enablers and inhibitors of NGB rollout. Developments in the recent past in relation to broadband provision and user take-up has shown that as connection speeds grow, new (largely unanticipated) bandwidth-hungry applications and services come on stream to make use of the increased bandwidth on offer.

We can expect that this phenomenon will continue into the future and so, from a policy perspective, it is more relevant to focus on enablers and inhibitors of NGB

⁹ Discussion Document, paras 5.20-5.

¹⁰ Discussion Document, Section 7.

¹¹ *Next Generation Broadband: Gateway to a Knowledge Ireland*, Department of Communications, Energy and Natural Resources, July 2008.

rollout purely from the perspective of network supply, as it is in this area that all of the difficult issues need to be resolved. In this context, it is a truism that while demand for communications services is driven by global considerations, the supply of these services occurs at a national level.

Question 7: Are the areas identified the relevant tools available to ComReg for accelerating NGB investment in Ireland, or could other regulatory levers be as or more effective? What might be the impact of these activities on both the level and timing of NGB developments?

As we have already noted above, ComReg will be a key stakeholder in any collaborative national effort to drive the deployment of NGB networks. As the entity charged with regulating key market activities, the stance taken by ComReg on a number of regulatory issues could have a large bearing on how operators approach the issue of investing in new network build.

In this context, the regulatory principles enunciated by ComReg in the Discussion Document are helpful and constructive and will assist in minimising regulatory uncertainty for market players who are considering whether or not what extent they should invest in NGB network infrastructure, either on an individual basis or as part of some kind of collaborative approach along with other operators.

It is undoubtedly the case that a regulatory stance that is open towards different approaches to NGB deployment – in particular, one that involves some kind of co-operative arrangement amongst the main market players – and which would seek to build in a risk premium on the price of wholesale access granted by Eircom to NGB network facilities is one that can only have a positive effect on both the level and the timing of NGB network deployment within the country.

Question 8: Do you see a role for collaborative industry approaches in seeking to agree wholesale models for open access to SMP operator NGB networks? Will infrastructure sharing be critical for early deployment of NGB in Ireland? What do you see as being the appropriate regulatory response in such circumstances, particularly in light of the need to promote effective competition, innovation and incentivise investment?

It follows that if there is a collaborative industry approach to the deployment of NGB network assets, then a similar industry approach should obtain in relation to determining the kind of wholesale models which would guarantee open access to NGB networks operated by market players that are designated with SMP. Once again, this is an area where the input of ComReg will be vital in order to steer

other stakeholders towards what it sees as the most appropriate model for ensuring such access.

Infrastructure sharing will be critical, both in terms of new network deployment and as regards securing access to existing facilities. There should be no difficulties in ComReg seeking to promote infrastructure sharing while also promoting development of competition: it has been performing this twin role in a number of areas for several years, notably in relation to LLU and the deployment of mobile networks.

In terms of key tasks for ComReg to focus on, the obvious one is to ensure that NGB network deployment by SMP players does not result in the creation of new bottleneck facilities, which, if they are allowed to develop, would then become the principal regulatory battlegrounds within an NGB environment.

Question 9: What role has the regulation of investment incentives such as wholesale pricing to play in stimulating the development of NGB networks?

A regulatory regime that takes appropriate account of investment incentives, such as those in the area of wholesale pricing, will have an important role to play in the development of NGB networks in Ireland. It is obviously the case that Eircom (or any other operator who might deploy NGB local access infrastructure and face the possibility of being designated as an SMP operator in relation to its control of such infrastructure) will be extremely cautious in undertaking any NGB new build in a situation where, with no guarantee that it will secure an adequate return on this investment, it faces the prospect of being obliged to grant access to this infrastructure on cost-oriented terms to third parties who cannot or will not invest in such infrastructure themselves. In this context, it would be entirely appropriate for there to be a 'risk premium' on any wholesale price that is set for access to NGB infrastructure that is covered by an SMP designation.

Such a risk premium clearly needs to provide a sufficient incentive for facilities-based local access players to invest in the deployment of NGB infrastructure. It should not, of course, be set at a level that would discourage access-based operators from using wholesale inputs to provide NGB services to their own retail customers but it would, at the same time, need to be calibrated in such a way that access-based operators do not enjoy a 'free ride' at the expense of those market players who are willing to invest in NGB infrastructure themselves.

There would, however, need to be a *quid pro quo* in instances where local access operators such as Eircom were provided with incentives to deploy NGB

infrastructure. Such incentives should only be countenanced as part of an overall co-ordinated approach, one that ensures that open access principles apply in relation to local access legacy infrastructure. This would mean that while an operator such as Eircom could be given an incentive (for example in the area of wholesale pricing) to deploy NGB infrastructure, this could only occur in circumstances where other operators who want to deploy such infrastructure at local access network are granted access to Eircom's legacy infrastructure.

Question 10: Is there a case for allowing a differentiated regulated rate of return for Eircom in relation to risky NGA investments, and would this in fact be effective in encouraging early and widespread development of NGB fixed line networks?

There may be a case for allowing a differentiated regulated return for Eircom in relation to its undertaking risky NGA investments and such an approach should help to encourage the development of NGB fixed line networks. As has been pointed out in the Discussion Document¹², ComReg has already publicly signalled (in its review of Eircom's WACC) that it is open to re-assessing the need for a risk premium in relation to risky NGB network investments and the level at which any such risk premium should be set. In this regard, it is, as ComReg rightly states¹³, now a matter for Eircom to present its case to ComReg in relation to this issue.

The terms and conditions governing such a differentiated rate of return would need to be carefully considered, however, and ComReg would first need to engage in a consultative process setting out its analysis on the perceived economic benefits of such an approach and whether or not this represents value when compared with possible alternative NGB deployment proposals.

¹² Discussion Document, para 6.33.

¹³ *Ibid.*

8. Ericsson

September 2009

1. General comments

Ericsson welcomes the opportunity to respond to the ComReg Next Generation Broadband in Ireland Consultation.

Investment in infrastructure during the high growth period we have witnessed over the last 20 years has been driven by deregulation, increased competition and business and industry growth. With current trends in telecommunications and in the current economic climate holistic 'big picture' thinking and co-operation between operators will be increasingly necessary if Ireland is to have the world class next generation telecommunications infrastructure it needs to compete in the global market. Both incumbents and any potential new entrants face significant challenges in raising infrastructure investment in the current environment.

To compete as a modern knowledge-based and environmentally sustainable economy, Ireland needs a competitive high speed, low latency telecommunications infrastructure with wide geographical and demographical availability. Ericsson is of the view that a greater level of discussion, understanding and co-operation between Government, ComReg and industry players. Regulation and policy needs to be much more forward looking. The market has fundamentally changed and that the regulations and policies that were appropriate for a telephony and broadcast service market are not suitable for, and inhibit investment in, a next generation broadband market where services (voice, messaging, TV, entertainment) can be delivered over the top and independently of access.

2. Consultation question responses

Question 1: What speeds and other quality of service parameters will be demanded by businesses and consumers over the next 3 to 5 years? Please explain your reasoning. Do you believe the market itself will deliver these capabilities and within what timeframe?

Q1a Ericsson Response:

It is clear that over time demand for broadband speed like computer memory, CPU will constantly rise. For over 30 years Moore's Law has with accurately predicted the long-term trend in computer performance. With regard to internet bandwidth, a similar law (Neilsen's Law) has accurately predicted the growth in internet bandwidth demand since 1998, stating that that a high-end user's connection speed grows by 50% per year. In addition, other quality parameters like symmetrical bandwidth and low latency are becoming more and more important to businesses and consumers as cloud based service delivery, Telepresence, web based TV and social networking become more and more pervasive.

Symmetrical 100Mb/s and even Gb/s, low latency fibre has been available in Asian countries for some time. Initially it was taken up only by power-users and multimedia companies with high bandwidth requirements as there are very few applications that require such high performance. However, the difference in user-experience and business efficiency, in terms of time saved, has meant that these requirements are becoming more mainstream.

From a wireless perspective people expect a wireless service to be a close equivalent in user experience terms to that of a fixed service. While speeds in the 50-100Mb/s range will likely be ok in the medium term (e.g. the 3-5 year time frame), we should aim to ensure that wired or

wireless next generation broadband solutions deployed have a clear roadmap and capability to deliver up to Gb/s speeds.

Fundamental to the delivery of these sort of speeds, whether wireless or wired, is the deployment of deep fibre solutions such as FTTH/P.

Q1b Ericsson Response:

Yes, we believe that with leadership and co-operation at the most senior levels, the market can deliver this sort of infrastructure given the right policy and regulatory environment.

Question 2: Do you consider that NGB network deployments can provide a socioeconomic benefit? If so, who are likely to be the greatest beneficiaries and why? Should the policy framework explicitly favour the development of NGB in Ireland, and with what specific socio-economic goals in mind?

Q2a Ericsson Response:

Yes, it is obvious that NGB network deployments would provide a socio-economic benefit. In section 2 of ComRegs consultation on NGB in Ireland many good examples are given from studies of the likely benefits and Ericsson would concur with these. Broadband is still a relatively new service and the scale of it's socioeconomic benefit is still very difficult to accurately predict. However, in the late 80's and early 90's the socio-economic benefit of mobile network deployments was also heavily debated and most of those early predictions greatly underestimated the huge socioeconomic contribution mobile telephony has brought.

Q2b Ericsson Response:

The greatest beneficiaries of an NGB would be hard to single out. Undoubtedly enterprise and consumers would benefit and general competitiveness would also be greatly enhanced. Enterprises that would be able to compete much more effectively in the global cloud, Hosting, SaaS, PaaS and multimedia services based markets. The benefits in particular with regard to education and a smarter, greener and economically more efficient society would be holistic.

Q2c Ericsson Response:

Yes, the policy framework should explicitly favor the development of an NGB in Ireland. The stakes are too high and we cannot afford to wait for market failure to then find an Ex-ante solution such as the NBS or MAN's.

Question 3: How important will cross-platform competition be to the development of NGB Networks? Do you consider that all broadband platforms are capable of supporting NGB? In what circumstances might some such platforms be more suitable than others in providing timely and efficient NGB?

Q3a Ericsson Response:

Cross platform competition has always been a key market driver. There are clearly three potentially strong NGB platforms, Fixed(FTTx), Wireless and Cable. However these technological solutions are always inter-changeable. For example wired connections cannot be made mobile. For the majority of users, in the majority of cases these different solutions will compete directly. However a fundamental enabler to all NGB access technologies is a significantly deeper fiber footprint.

Q3b Ericsson Response:

Yes – If the definition of NGB speeds is considered to be somewhere of the order of 50Mb/s than VDSL, FTTH, Docsis, 3G/HSPA+ and LTE are all capable of supporting NGB. However, we believe FTTH and LTE/LTE advanced provide the most future proof and cost effective NGB infrastructure in the medium to long run.

Q3c Ericsson Response:

Mobile, Cable and fixed platforms are all capable of providing timely and efficient NGB given the right investment. Some applications will require mobility while other applications may

require extremely low contention. From a return on investment point of view some technologies such as wireless are more economically suitable for rural deployment.

Question 4: Do you consider that substantial (in both cost and coverage terms) private sector led investment in the development of NGB networks is likely over the next 3-5 years? If not, and should a gap occur in comparison to other European countries, what will be needed to encourage such private sector investment in Ireland?

Q4a Ericsson Response:

Yes given the right regulatory and policy environment.

Q4b Ericsson Response:

In our opinion, there is already a gap in comparison to other European countries and a more significant gap when compared to Asian countries. However, comparing us to Europe alone is flawed. Ireland competes in, and is massively affected by competition in the global marketplace. If we are to compete at all on the global stage we need to be aiming to ensure we minimize the gap when compared to other countries globally.

We believe there are two levers available to the government and regulator:

- 1.) Lower Regulatory barriers to such investment
- 2.) Stimulation/Subsidies

Question 5: In what circumstances would any of the above (or other) approaches be appropriate in stimulating NGB roll-out in Ireland? How might such interventions safeguard the development of competition?

Q5a Ericsson Response:

As per our response to question 4b we believe that in the current circumstances both suggestions above would be appropriate and neither lever would endanger competition.

Question 6: Do you consider that the issues identified are the main enablers and inhibitors of NGB developments or are other issues of greater relevance? Who are the key stakeholders who might be in a position to influence these issues and how might they best do so?

Q6a Ericsson Response:

Yes, we believe ComReg has identified most of the main enablers and inhibitors of NGB developments. It is generally recognized that some sort of co-operation will be required between operators to ensure a reasonable level of investment in NGA/NGB is secured. Possibly the biggest challenge will be to create an environment of trust between fierce competitors and the other key stakeholders representing the economy and the consumer (Regulator & Government) in order to create a vehicle that can raise all boats equitably. Perhaps some sort of trusted intermediary may be able to help this process along.

Question 7: Are the areas identified the relevant tools available to ComReg for accelerating NGB investment in Ireland, or could other regulatory levers be as or more effective? What might be the impact of these activities on both the level and timing of NGB developments?

It is essential in our opinion that a more forward looking approach to regulation needs to take place, in order to secure efficient and sustainable investment in the next generation network infrastructures that will enable Ireland to compete and prosper. The MAN's and indeed the National Broadband Scheme have been and are currently necessary instruments of the Government to compensate for market failures. These Ex-ante solutions, while necessary, are holistically inefficient in our opinion, as the Government and Regulatory authorities need to wait until market failure before devising solutions to resolve that market failure. This cannot be allowed to happen with regard to ensuring investment in NGB access.

It is essential that Ireland rapidly develops a more forward looking policy and regulatory environment. One that recognises the rapidly changing market and the clear investment challenges that businesses face. One that recognises that the market has fundamentally changed and that the regulations and policies that were appropriate for a telephony and broadcast service market are not suitable for, and inhibit investment in, a next generation broadband market where services (voice, messaging, TV, entertainment) can be delivered over-the-top and independently of access. This forward looking policy and regulatory environment needs to resolve the current disparity in regulation between fixed, cable, mobile, broadcast and over the top players.

We recognize that this sort of environment will take time to develop. In the meantime some sort of regulatory interim regulatory solution needs to be looked at in order to ensure that the required level of investment in NGA/NGB is secured.

Question 8: Do you see a role for collaborative industry approaches in seeking to agree wholesale models for open access to SMP operator NGB networks? Will infrastructure sharing be critical for early deployment of NGB in Ireland? What do you see as being the appropriate regulatory response in such circumstances, particularly in light of the need to promote effective competition, innovation and incentivise investment?

If there is a collaborative industry approach to the deployment of an NGB network then a similar industry approach may also determine the kind of wholesale models that would guarantee open access to NGB networks operated by market players that are designated with SMP.

It is clear to many in the industry that the old regulatory environment, that was strongly biased towards infrastructure competition, may not be wholly appropriate in the developing NGB market and that sharing of infrastructure investment will likely be critical, both in terms of new network deployment and existing facilities. While desirable at some level, infrastructure competition is not an essential part of a competitive market.

Question 9: What role has the regulation of investment incentives such as wholesale pricing to play in stimulating the development of NGB networks?

The designation of SMP and the regulation of wholesale pricing have significant roles in stimulating or inhibiting the development of NGB access networks. It is obviously the case that any operator who might deploy NGB access infrastructure will not undertake any NGB new build in a situation where there is no guarantee that it will secure an adequate return on this investment due to potential SMP obligations.

It would therefore be important to ensure a reasonable 'risk premium' on any wholesale price that is set for access to this new NGB infrastructure, assuming the network operator is deemed to have SMP obligations.

Question 10: Is there a case for allowing a differentiated regulated rate of return for Eircom in relation to risky NGA investments, and would this in fact be effective in encouraging early and widespread development of NGB fixed line networks?

There may be a case for allowing a differentiated regulated return for Eircom in relation to its undertaking risky NGB access investments and such an approach may help to encourage the development of NGB fixed-line networks. The economic benefits of such an approach over other alternative approaches would need to be examined to establish if this represented the best way of *encouraging early and widespread development of NGB fixed line networks*.

9. Forfás

Ms Marie Cussen
Commission for Communications Regulation
Irish Life Centre
Abbey Street, Freepost
Dublin 1

31 August 2009

Dear Ms Cussen,

Re: Submission re ComReg 09/56 Next Generation Broadband (NGB) in Ireland

I refer to the request for views on the above discussion document. Forfás and the enterprise development agencies welcome the discussion document on the regulatory dimensions of accelerating roll-out of next generation broadband networks and access in Ireland. The paper provides a good assessment of the key challenges for Ireland in achieving an accelerated roll-out of NGB networks and is an important follow-up to the DCENR paper '*Next Generation Broadband - Gateway to a Knowledge Ireland*' (July 2009).

We agree with ComReg on the need for urgent action to overcome the challenges of developing high speed broadband networks to enable Ireland to catch up with other countries. Good progress has been made in increasing the speed and coverage of basic broadband services.

However, a gap remains and is widening between Ireland and other developed western European countries in the planning and development of the broadband networks needed for e-commerce, digital business and for the knowledge society in general. These include many of our key trading partners and competitors for inward investment and innovative ideas including Denmark, Sweden and Finland, the Netherlands and the UK, Spain and Portugal and France and Germany. Each has set ambitious targets and implementation plans to enable the investment in the services of the future using a mix of government spending, private investment, and public/private partnerships.

As noted in the discussion document, it is unlikely there will be significant NGB roll-out in Ireland in the next 3 to 5 years. The dynamics of the Irish market are such that all the required investments for Ireland to catch-up with leading countries will not be made by the industry on its own. On current indications the development of next generation broadband services and infrastructures in urban and other areas across the country will continue to lag the pace of development in other leading and comparator regions in Europe. Ireland is likely to remain behind in the absence of radical change.

Ireland is now a high income economy and to sustain prosperity and incomes growth into the future we need to continue to evolve the enterprise base to high-value adding and high productivity activities. High value, high productivity activities require access to high quality and advanced skills, a supportive fiscal and regulatory environment and access to advanced communications infrastructures and services comparable to the best available in other locations with which we compete. The Government's strategy for economic recovery '*Building Ireland's Smart Economy*' highlighted the need to enhance the adoption of technology, including the penetration of broadband in businesses and households, so as to improve productivity and long term prosperity. Accelerating the roll-out of NGB infrastructure is essential to ensuring we do not miss current and future opportunities for growth and jobs in the global upturn.

At EU level the European Commission's *Economic Recovery Plan* highlights also the importance of next generation broadband to growth and innovation in all sectors of the economy and to social and regional cohesion. As highlighted by the Commission, a number of Member States are supporting investment in next generation access, including in urban areas and areas already served by basic broadband infrastructures as part of the economic recovery process in those countries.

Ireland should aim to be among the leaders in Western Europe in bandwidth availability. In this context, Ireland should adopt targets that bring Ireland in line with the leading countries in Western Europe by 2012 for both basic and advanced broadband availability and services. Unless action is taken, Ireland will not meet the Government's and the telecommunications industry's own target to be among the leaders in the OECD by 2012. The State, development agencies and ComReg need to work with the telecommunications industry and other stakeholders to ensure the targets for Ireland are delivered.

There is a clear public interest and policy priority to be accorded to ensuring optimal investment in next generation broadband so as to secure at a regional level the productivity and employment enhancing benefits of advanced communications together with the important wider social benefits.

The central challenge for Ireland is how best to achieve the transition from copper networks to fibre, specifically fibre to the cabinet. Of the three potential NGN platforms, wireless, cable and fixed networks, the bottleneck of constrained capacity on the copper access network to homes and small business needs to be a key focus of policy and regulatory attention. Addressing this bottleneck through supporting investment in future-proof technologies including optical fibre and other NGN technologies to the cabinet and to the premises would enable the necessary competitive investment in symmetrical services to homes and businesses and drive investment and competition in alternative networks including cable and wireless.

The regulatory framework needs to explicitly incentivise, support and reward network investment in the transition from copper to fibre in the local access network on an open access basis, and promote vigorous competition at the service and applications layer. Reflecting the market changing nature of next generation networks and technologies, the regulatory framework will also need to be consider alternative means to encourage innovation in products and services.

Based on current market dynamics, there is a need also for a proactive public policy development focus to next generation broadband, for the State to vigorously pursue its own objectives and to take action where the market is not delivering. The Government has demonstrated this commitment previously to work with the private sector and to make its own investments, for example through the enhancement of Ireland's international connectivity, the metropolitan area networks and the national broadband scheme. The regulatory framework is an important part in ensuring the success of such a collaborative approach and needs to be part of a broader Government strategy in order to catch-up with comparator regions in the EU.

In addition, while good progress is being made on upgrading the cable and wireless networks, the lack of progress on digital terrestrial television roll-out is a concern. Further delays could result in Ireland failing to realise the digital dividend from the move from analogue to digital broadcasting and all options to ensure the required spectrum becomes available for alternative next generation uses need to be considered.

I attach below comments on a number of the individual questions set out in the discussion document and we would be pleased to provide any additional detail as may be useful to your deliberations.

Yours sincerely

Declan Hughes
Head, Competitiveness Division

Question 1: What speeds and other quality of service parameters will be demanded by businesses and consumers over the next 3 to 5 years? Please explain your reasoning. Do you believe the market itself will deliver these capabilities, and within what timeframe?

The pace of change is radical and the experience internationally is of speeds being used as they are provided. There are a number of issues that are relevant, including symmetry, contention and quality of service. Therefore it is important not to base regulatory policy on specific speed levels or caps but rather to focus on ensuring that the necessary investments are made in the infrastructures that will have the capacity to provide higher speeds. The categorisation of the European Commission of future speeds capacities and provision are the most relevant from a national planning perspective:

- fibre to existing street cabinets offering the prospect of downstream speeds of a minimum of 40Mbit/s and 15Mbps upstream;
- cable networks to deliver speeds of up to 50Mbps;
- connectivity to homes and offices with fibre connections offering the potential to provide services of up to 100Mbps and above; and,
- over time, satellite and mobile technologies reaching speeds of up to 100Mbps upload and download of 50Mbps.

The evidence internationally is of consumers moving quickly to take-up higher speed services as they become available across a range of technology platforms from fixed line/DSL, to cable to wireless. The increasing provision of fibre-optic to small businesses internationally is driving down the cost per megabit of access to high speed broadband and as a result is rapidly increasing its share of the market for new broadband subscriptions.

As noted in the discussion document, investment in advanced broadband communications networks is increasing significantly in other countries as both consumers and enterprises are develop their sophistication of use of the Internet. These next generation communications networks are increasingly providing open access and greater levels of interoperability, which are increasing the levels of services innovation and content generation and spurring the development of new media such as IPTV. The growing importance of next generation broadband networks that allow voice, video and data services to converge on Internet Protocol (IP) networks is changing business models for both communications services providers and content and other providers as each tries to capture a share of the growing digital sector revenues.

The explosive growth in mobile broadband and ubiquitous Internet access is giving rise to new means of accessing and using the Internet and increasing efficiency in the delivery of existing services and of innovative new services and is bringing a renewed focus on optimising spectrum use. Mobile broadband roll-out and take-up has been dramatic in Europe, achieving high market penetrations rates in Ireland and other northern European countries. Spectrum use and management, including spectrum re-farming, together with continuing innovations in access devices are likely to drive the growth of mobile commerce and also increase the feasibility of remote working and remote access to on-line services.

On current indications, in the absence of policy and regulatory change, the market in Ireland on its own will not provide the necessary next generation broadband infrastructures. The reasons for this are well set out in the discussion document: relying on competition alone

will not result in significant roll-out across the market and Ireland will not see substantial roll-out of NGB networks in the next 3 to 5 years.

Question 2: Do you agree that NGB network deployments can provide a socio-economic benefit? If so, who are likely to be the greatest beneficiaries and why? Should the policy framework explicitly favour the development of NGB in Ireland, and with what specific socio-economic goals in mind?

The policy framework should explicitly favour investment in NGB as the availability of advanced communications infrastructure is one of the most critical enablers of our economic and social development for the future. As noted in the Forfás long term strategy '*Sharing Our Future - Ireland 2025*'¹, universal access to broadband and next generation networks (NGNs) will be essential in allowing new types of enterprises (in services, in media, in education and in health) to emerge, flourish, and to grow globally. Greater roll-out and take-up of high quality broadband in Ireland would allow more people to work from home or from the regions, cutting commuting times and encouraging better work-life balance. It offers opportunities for improved delivery of health, education and public services in general, for greater connectivity between citizens and government and greater environmental awareness and behavioural adaptation in response to the key challenge of climate change.

Sharing Our Future also noted that world-class ICT infrastructure in terms of the availability and speed of broadband is a crucial factor in attracting overseas investment and in developing indigenous enterprise, and thereby jobs and shared prosperity. The future for high income economies such as Ireland, as set out in the report of the Services Strategy Group published in September 2008, is one of bandwidth-intensive services that will demand greatly increased broadband speeds. As these services are highly dependent on electronic delivery, the development of next generation broadband is critical for achieving more balanced regional development.

A world-class ICT infrastructure is a key enabler to exploiting business opportunities in services sectors. These include in personal services areas such as in healthcare for remote diagnostics and independent living, in education for online course delivery and learning and in entertainment for video conferencing, gaming, TV and film. For enterprises there are tremendous new opportunities for on-line service delivery and customer interaction, for collaborative design, development and working with customers and suppliers, for video conferencing and large real-time file transfer and for the accelerated development of internationally traded services from Ireland.

The enterprise development agencies have recorded considerable success in developing Ireland as a hub for new and emerging digital businesses over the last decade, both in terms of indigenous enterprise development and in the attraction to Ireland of a range of the leading global players in Internet, digital content and information based services. The ICT sector employs directly about 70,000 people in the Irish economy today and accounted for a third of Ireland's exports amounting to €50 billion in 2007.

In addition, Forfás, IDA Ireland and Enterprise Ireland have worked with a range of stakeholders to ensure coherent programme support for the development of the digital content sector² and to progress the establishment of supportive initiatives including the Digital Hub and Digital Parks in Dublin and on the establishment of dedicated WebWorks facilities for

¹ '*Sharing Our Future - Ireland 2025: Strategic Policy Requirements for Enterprise Development*' (July 2009)

² See, *A Strategy for the Digital Content Sector in Ireland*, November 2002, Forfás.

indigenous digital businesses in key regional centres. As part of the Government's response to the recommendations of the Small Business Forum, supports are now available through Enterprise Ireland and the City and County Enterprise Boards for firms to undertake ICT audits and to develop appropriate technological and organisational change action plans³.

Recognising the critical importance of skills to success in digital businesses, the Expert Group on Future Skills Needs, which operates under the auspices of Forfás, has monitored and made recommendations on the skills development needs of the sector over recent years to ensure Ireland continues to develop the skills base needed for success in new and emerging areas⁴. The skills and occupational implications of advances in ICTs for the workforce more generally and of the digital sector in particular are dealt with also in the National Skills Strategy⁵.

The importance of ICT integration in education and learning is recognised by Government and some initial progress has been made in connecting all schools to the Internet and in providing basic ICT training for teachers.

In relation to e-Government, Ireland established a strong leadership position in the adoption of ICT in the public sector in the late 1990s, with a number of notable successes including on-line filing of tax returns (ROS), motor-tax on-line, CSO data collection and dissemination, Department of Agriculture farm administration and compliance among others.

Ireland has in the past demonstrated a capacity for leadership and initiative to harness the potential and capture the benefits of new developments in ICTs. However, there is a risk of complacency in developing the necessary policy initiatives required to position Ireland as a leading digital economy as other countries continue to move ahead of Ireland in realising the opportunities afforded by ICTs, as illustrated by the following:

- Investment in communications and information technologies in Ireland ranks among the lowest in the EU and we are not realising the full productivity enhancing benefits of advanced ICTs;
- Enterprise and household Internet penetration and use is growing, but still behind comparable countries in Europe. Broadband access and use are increasing in Ireland but penetration among firms is among the lowest in the EU, particularly among smaller firms and is also low in terms of household penetration;
- The range and speed of broadband services widely available are limited and costs are not as competitive as in other countries;
- Multinationals in Ireland have access to the broadband they need, but are experiencing difficulties connecting at required speeds with their suppliers in Ireland and for remote and home working by employees;
- *Aside from new builds, no large scale Next Generation broadband infrastructure has yet been deployed in Ireland*⁶;
- Digital and IPTV have not developed to the same extent in Ireland as in other countries, hence missing the opportunities in media industries etc.;

³ See, *Small Business is Big Business*, report of the Small Business Forum, May 2006, Forfás; and National Centre for Partnership and Performance, *Working to Our Advantage - A National Workplace Strategy*, March 2005, Department of An Taoiseach.

⁴ See, EGFSN *Skills Requirements of the Digital Content Industry in Ireland*, February 2005, Forfás; EGFSN *Future Requirements for High Level ICT Skills in the ICT Sector*, June 2008, Forfás

⁵ See EGFSN, *Towards a National Skills Strategy*, February 2008, Forfás.

⁶ DCENR, *Consultation Paper on Next Generation broadband*, July 2008

- ICTs are available and being used in schools but are not of the quality, level of integration and sophistication in use as is the case in other countries;
- The range of eGovernment services remains limited in Ireland and other countries continue to move ahead in terms of the online availability of basic public services. This is in part contributing to a general low take-up of ecommerce by firms and individuals.

In the short term, the objective for Ireland needs to be that all gateways and hubs centres under the national Spatial Strategy have the capability to provide next generation broadband by 2012.

Question 3: How important will cross-platform competition be to the development of NGB Networks? Do you consider that all broadband platforms are capable of supporting NGB? In what circumstances might some such platforms be more suitable than others in providing timely and efficient NGB

Cross-platform competition and intra-platform competition have proven important factors internationally to the development of broadband networks and services. However, in relation to next generation broadband networks and access there is likely to be a different dynamic, given the high investment costs, with less intra-platform competition and more competition on the services layer, and given also that different platforms will have different technological development paths. Hence it is important to developing clear policy objectives and supportive regulatory environment for each of the key platforms for NGB of cable, wireless and fixed line networks, specifically fibre.

The investments being made by market players in Ireland are important, but not sufficient for us to catch up with other countries. Programmes are underway in other western European countries for the provision of fibre to the cabinet and to the home together with extensive roll-out of NGB technology on cable networks, while in Ireland alternative operators are limited to seeking to progress unbundled access at the exchange level.

The contribution of competition between broadband access platforms to the take up of current generation broadband is well established internationally. Similarly, for Ireland the increase in alternative provision of current generation broadband has corresponded with an increase in broadband penetration.

For the future it is as yet unclear as to the role inter-platform competition, on its own, will play in stimulating the required levels of investment in NGB and NGA. In theory we would expect to see firms responding to competition by investing in service enhancements to increase their competitiveness. As yet there is insufficient quantitative evidence to determine whether countries with a higher degree of competition between broadband firms based on different technology platforms have seen earlier deployment of NGB. There is however some anecdotal evidence. For example:

- Denmark, the most competitive broadband market in Europe, and Hungary, which is above the EU average in terms of inter-platform competition, both have relatively high penetration rates of fibre;
- Sweden, which is one of the most competitive broadband markets in Europe, has the highest level of fibre penetration in the EU;
- The announcement of investments in NGB in, for example, France and UK show how competing firms respond to the initiatives of their rivals. In the United Kingdom, which is also one of the most competitive broadband markets in the EU, both BT and Virgin Media have announced major investments in NGB. BT is rolling-out fibre to two million homes and sufficient cabinets to reach a further ten million homes by 2012. Virgin Media is upgrading its Hybrid Fibre-Coax network to DOCSIS3 to offer 50Mbps during 2009.

The expectation in other larger European markets is for the emergence of competition to encourage firms to invest in fibre and other NGB technologies as they compete to win market share.

In relation to the capacities of different broadband platforms to support NGB, in the immediate future, it is clear that fixed wireline technologies such as Fibre to the Home (FTTH) or Cabinet (FTTC) and Hybrid Fibre Coax (HFC) supporting DOCSIS3 are the platforms most capable of delivering reliable NGB, although FTTH has more capacity for upscaling in the longer-term. Currently, from a policy and regulatory perspective these are the technology domains and markets that are probably least developed from a regulatory perspective. In the medium term, wireless technologies, such as HSPA+ and LTE, will be commercially capable of offering higher speed access and may be in a position to compete with fixed technologies. However, the speed at which fixed and mobile operators will roll-out such services is likely to be affected by the current financial situation and by factors such as the financial and investment capacities of the incumbent.

Ireland should be in a strong situation to support a variety of technologies, as there is already competition between xDSL, cable and fixed and mobile wireless access. Urban areas are almost certainly going to be best served by fixed technologies where there is a sufficient population density to make such services economically viable. At the same time, Ireland's dispersed population and already high penetration of mobile broadband, could lead to mobile operators deploying HSPA+ and LTE, provided that the economic and regulatory conditions encourage, or at least do not discourage, investment. WiMax may also be a possibility as noted below.

Question 4: Do you consider that substantial (both in cost and coverage terms) private sector led investment in the development of NGB networks is likely over the next 3-5 years? If not, and should a gap occur in comparison to other European countries, what will be needed to encourage such private sector investment in Ireland?

We agree with ComReg that, based on current market indications, Ireland is unlikely to experience significant NGB network development over the next three to five years. In the light of announced intentions from the incumbent for a significant FTTC upgrade but the absence of a detailed plan, the prospects for NGA investment, specifically the transition from copper to fibre optic to the cabinet and to homes, remains poor. The investment climate in the telecommunications sector has been severely impacted by the recent financial crisis. The investment announcements to date are welcome, including those by UPC in cable, BT/Vodafone in unbundled access at the exchange level and a number of initiatives in the roll-out of WiMax technologies. The agreement with eNet for management of all of the Government's metropolitan area networks and the roll-out of the national broadband scheme are also important development in terms of provision of current generation broadband.

In addition to the actions already taken by Government and the proposed establishment of a one-stop-shop for access to the State's broadband assets and associated infrastructure, additional Government actions are necessary. The State owns a wide range of telecommunications assets across a number of organisations. The value and utilisation of these networks are limited as separate entities. Creating a single state telecommunications entity from existing state assets would support competitiveness and regional development. Separate investments in upgrading Ireland's water distribution system and in smart electricity metering offer unique potential for the simultaneous delivery of a world-class telecommunications network. The Government should also mandate the provision of ducting for telecommunications on an open access basis as part of all State infrastructure development programmes at regional, city/town and local level including road developments, water and waste water investments, rail and public transport enhancement programmes. This can provide the open access platform needed for competition in the provision of services among competing access technologies and service providers.

Question 5: In what circumstances would any of the above (or other) approaches be appropriate in stimulating NGB roll-out in Ireland? How might such interventions safeguard the development of competition?

As in other countries the key public policy objective is to secure investment in next generation broadband networks on an open access basis and thereby enabling competition at the service provision level. The focus in countries with similar demographics and land use patterns to Ireland are of a collaborative approach to investment in the last mile or sub-loop to the cabinet. Such a collaborative approach is needed for Ireland to make further progress, making full use of the existing state broadband and ducting assets.

The Government has demonstrated this willingness to work with the private sector to ensure the required investments in enabling infrastructures are made so as to facilitate competitive provision of services. Collaborative initiatives include the development of our international connectivity with Global Crossing and Project Kelvin, the investment in the metropolitan area networks facilitating the delivery of competitive broadband services in key towns and the national broadband scheme. A similar initiative to drive the development of next generation broadband services through combining and making the best use of national optical fibre assets and ducting now needs to be developed.

In principle, market based solutions ought to be the most efficient to promote the uptake of next generation broadband. However, Ireland's small size, particular spatial patterns and legacy systems mean that the market is unlikely to serve the whole country at least in the foreseeable future.

In paragraph 4.27 of the discussion document, reference is made to the European Regulators Group (ERG) and its view that "regulatory certainty and transparency" are important for creating the right conditions for efficient investment. We agree with this and would support any measures by ComReg which will ensure such certainty and transparency.

Where the market is likely to deliver NGB, the key regulatory response required is to allow the market to develop. This may mean examining whether there are any regulatory barriers to investment, including expectation or uncertainty as to future price regulation that might dampen investment incentives. In this context it would be sensible to ComReg to consult with industry stakeholders as to any key regulatory barriers to investment that could be removed.

The extent to which the state can be directly involved in the funding of NGB, as for example in Korea, Japan and New Zealand, is clearly a matter for government policy and any funding needs to comply with European Union state aid rules. The recent guidelines on state aid and broadband are very helpful from a national planning perspective and give clear guidance on the circumstances in which state funding of broadband development would be considered compatible with the Single Market and national socio-economic development objectives.

Question 6: Do you consider that the issues identified are the main enablers and inhibitors of NGB developments or are other issues of greater relevance? Who are the key stakeholders who might be in a position to influence these issues and how might they best do so?

The section covers the issues in broad terms as inhibitors and enablers of investment. It would be important that this broad assessment be applied to the dynamics of the Irish communications market so as to guide decisions on the required future regulatory framework. An important aspect to focus on is the economic and competitiveness imperative for developing a conducive framework for broadband investment.

Current broadband investment in Ireland is not sufficient to put us among the leaders by 2012. Experience to date and the dynamics of the Irish market suggest that all the required investments for Ireland to catch-up with leading countries in Western Europe will not be made by the industry. The fastest speeds widely available in Ireland costs four to five times more than considerably higher speed (ADSL) services in countries in the leading European countries. Broadband speeds available here and the capacity of connections to business premises and homes are obstacles for business development and growth of the knowledge economy and social inclusion.

As is the case in most other developed countries Ireland is an increasingly services and knowledge-based economy. Services activities will continue to grow in importance as sources of employment, exports and wealth creation as Ireland develops its advantages in a range of business, finance and information related services. Services exports currently account for almost 45 per cent of total Irish exports and are forecast to reach 50 per cent by 2010 and for the most part these services are delivered to international markets using the Internet. Employment growth has been particularly strong in internationally traded services over the last decade, in particular in financial, computer, software and other data and information based services.

Manufacturing will continue to make a strong contribution to the economy and exports over the coming decade as it further restructures towards increased sophistication of processes, more knowledge-intensive and higher-productivity activities, coupled with increased servicisation of output and an acceleration in the pace of product and process innovation.

The effective use of ICTs and organisational change will be important for all enterprises to take full advantage of the international trade opportunities emerging on foot of policy initiatives at EU level to liberalise formerly protected sectors and in the context of the implementation of the agreed EU Services Directive, in addition to responding to WTO and other international agreements to open access to services markets.

Investment in advanced broadband communications networks is increasing significantly in other countries as both consumers and enterprises are increasing the sophistication of use of the Internet. These next generation communications networks are increasingly providing open access and greater levels of interoperability, which are increasing the levels of services innovation and content generation and spurring the development of new media such as IPTV. The growing importance of next generation broadband networks that allow voice, video and data services to converge on Internet Protocol (IP) networks is changing business models for both communications services providers and content and other providers as each tries to capture a share of the growing digital sector revenues.

The evidence internationally is of consumers moving quickly to take-up higher speed services as they become available across a range of technology platforms from fixed line/DSL, to cable to wireless. The increasing provision of fibre-optic to small businesses internationally is driving down the cost per megabit of access to high speed broadband and as a result is rapidly increasing its share of the market for new broadband subscriptions⁷.

The explosive growth in mobile broadband and ubiquitous Internet access is giving rise to new means of accessing and using the Internet and increasing efficiency in the delivery of existing services and of innovative new services and is bringing a renewed focus on optimising spectrum use. Mobile broadband roll-out and take-up has been dramatic in Europe, achieving market penetrations of between 10-20 per cent of broadband subscribers in Ireland, Sweden and Denmark and over a quarter of subscribers in Austria over the last year (see chart 6). Spectrum use and management, including spectrum re-farming, together with continuing innovations in access devices are likely to drive the growth of mobile commerce and also increase the feasibility of remote working and remote access to on-line services.

Developments in sensors, biometrics and radio-frequency identification (RFID) technologies, with connectivity enabled over IP platforms, are also opening tremendous opportunities for 'smart' and 'real-time' management of business processes such as supply chain management and in the delivery of public services and personal services such as in health and long term care. Innovations include the greater use of location based services, intelligent transport systems and technologies for independent living etc.

Developments in ICTs are at the heart of the increasing convergence between technology fields, for example, underpinning advances in life-sciences research and technological innovation and pushing boundaries in engineering and materials sciences research.

In addition, ICTs are empowering consumers to both make more informed decisions about their economic and social choices, to participate in new ways in communities and in society and through these choices to stimulate innovation, creativity and competition in markets. Developments in Web 2.0 and Web 3.0 will continue to drive rapid growth in social media, user-created content, participative web and interactivity between users and the applications based on artificial intelligence.

Question 7: Are the areas identified the relevant tools available to ComReg for accelerating NGB investment in Ireland, or could other regulatory levers be as or more effective? What might be the impact of these activities on both the level and timing of NGB developments?

The discussion document sets out four regulatory areas that can be used to affect investment in NGB. While there is a strong emphasis on wireless and spectrum, it is essential that equal regulatory attention is devoted to addressing the key challenge in terms of next generation broadband in Ireland that is the transition in the fixed network from copper based access to optical fibre.

⁷ Point Topic report that new fibre optic connections exceeded cable connections for the first time, with 4.2m new connections compared to 2.5m new cable broadband connections in Q1 2008.

Spectrum Policy

Fixed and mobile wireless broadband access are more developed in Ireland than in many other countries and so wireless has the potential to continue to play an important role in the development of NGB if operators invest in new wireless technologies such as LTE.

As a general principle, firms are likely to be better at deciding the most efficient use of particular bands of spectrum than regulators or government. Technology neutral licences for frequency bands are therefore preferable to prescriptive licences which limit usage of spectrum to a particular technology. The various moves that ComReg is making towards such technology neutral licensing, such as opening up the 900 and 1800 MHz bands to 3G and LTE, are therefore welcomed. The regulatory regime for trial and test spectrum licensing is also welcome.

In addition, consideration should be given to developing an efficient regime for spectrum trading to ensure the optimum use of available bandwidth on an ongoing basis. Ireland is one of the few countries in the EU that does not have rules in place for spectrum trading⁸.

Open Access to Networks

The discussion document sets out three models for open access to networks.

One of the key concerns of Option B is that the integrated firm with SMP in the wholesale market can practice non-price discrimination which is often harder for the regulator and other downstream providers to detect. Non-price discrimination involves the integrated provider offering better quality of service to its own retail arm than to its competitors.

In an attempt to overcome the problem of non-price discrimination, regulators such as Ofcom (UK), PTS (Sweden) and AGCOM (Italy) have entered into agreements with the incumbent operators to ensure the provision of key wholesale inputs under “Equivalent” terms. They have also agreed various organisational changes in the incumbent operator with varying degrees of “functional separation”. We understand ComReg has undertaken some initial work on this issue of Equivalence. However, the use of Equivalence as regulatory tool is not mentioned in the discussion document as a means of promoting open access to an SMP network. Similarly, functional separation is worthy of consideration from a market development perspective and an option that Forfás and the National Competitiveness Council have previously proposed as a means to encourage investment and competition at the service layer in the market. Functional separation may also become an exceptional remedy allowable under the proposed revisions of the New Regulatory Framework currently being considered by the European Commission and therefore its applicability in an Irish context should be considered in detail.

Ofcom in the UK attributes much of the success of Local Loop Unbundling (LLU) there to the effectiveness of Equivalence and functional separation ensuring that Openreach has no incentive to practice non-price discrimination. With the increase in the number of LLU lines, operators have invested in advanced forms of DSL (e.g., ADSL2+) to provide higher

⁸ See ECTA Regulatory Scorecard 2008

bandwidth to customers as a way of competing for business. As noted above, the increased competition from LLU operators has led both BT and Virgin Media to invest in NGB.

Wholesale access pricing and risk premium

In terms of private sector investment in the market, it is critical that there is a certain and transparent regulatory regime that enables a return commensurate with the level of risk. In setting access pricing for next generation networks, therefore, there is a need to tread a careful path between encouraging investment and preventing re-monopolisation.

A distinction can be drawn between monopoly rents, which a firm earns from exploiting its monopoly position, and the higher returns a firm can earn from its investment in innovative technologies. Whilst the former damage consumer welfare and by restricting output and reducing consumption, the latter come about because firms have invested in new services which consumers value. The regulatory regime needs to focus on facilitating innovation whilst preventing abuse of a monopoly position.

The discussion paper identifies a higher WACC being allowed on SMP operators of NGB as one way of recognising the risk being taken by the operator. However, the risk for operators remains that its “upside” earnings on an investment in NGB are capped, whereas its downside losses are not.

An alternative approach that may be worth considering is that of “anchor pricing”, whereby current generation products provided on NGB are subject to the same pricing regulation as on current generation networks and providers are free to offer genuinely new services at whatever price they regard as appropriate. Anchor pricing should be further considered for its applicability in the Irish context as a regulatory instrument to encourage investment.

Infrastructure Sharing

The civil engineering cost of laying infrastructure is generally accepted to represent about 60 – 70% of the total cost of building a network. There is therefore an attraction in allowing or encouraging infrastructure sharing so that these civil engineering costs can be reduced. In particular in rural areas, where the cost per household or business is higher than in urban areas, such arrangements are highly attractive.

The key with infrastructure sharing arrangements from a regulatory perspective is that co-operation agreements may give rise to co-ordinated anti-competitive effects. They may also raise barriers to entry to new entrants not part of the initial group of companies sharing infrastructure. Thus, whilst there are many advantages to infrastructure sharing there are also potential problems which need careful consideration before it is encouraged.

One aspect of infrastructure sharing that is not covered in the discussion document is access to existing ducts, both those owned by eircom and by other utilities. Requiring owners of duct with spare capacity to make that capacity open to other operators can substantially reduce the cost of building a new network in particular in urban areas. The proposed one-stop-shop for access to State owned ducting assets and facilities is an important first step towards

improving the economics for NGB network deployment. The European Commission has set out guidance on the regulatory issues arising.

Question 8: Do you see a role for collaborative industry approaches in seeking to agree wholesale models for open access to SMP operator NGB networks? Will infrastructure sharing be critical for early deployment of NGB in Ireland? What do you see as being the appropriate regulatory response in such circumstances, particularly in light of the need to promote effective competition, innovation and incentivise investment?

The experience internationally is for market led investment and early deployment of NGB to be focused in urban areas where there is a critical mass of potential users and the deployment cost per user is relatively low. Whilst such investment has occurred in Ireland only on a very limited basis, the regulatory framework needs to take a view as to how best to create a conducive environment for investment and innovation for private NGB investment in the near to medium term.

Perhaps the greatest need for a collaborative approach will be in some of the gateways and hubs and regional towns where it is unlikely that more than one firm will be able to invest in NGB infrastructure, and even then the business case might be uncertain. These areas might approximate to the European Commission's "grey" areas identified in its guidelines on state aid rules. Here rules which allow the sharing of physical infrastructure might encourage two or more operators to share the cost of building a network and then compete at the service level for end users.

As mentioned in response to question 7, the most important regulatory response will be to ensure that there is no co-ordinated behaviour between the sharers of the infrastructure which raises barriers to entry to other providers. This would probably require that those firms which have invested in the infrastructure allow access by service providers on a non-discriminatory basis, whilst allowing the infrastructure investors to earn a sufficient return to encourage the investment in the first place. As mentioned earlier, this is a difficult balance to strike.

Question 9: What role has the regulation of investment incentives such as wholesale pricing to play in stimulating the development of NGB networks?

To support the development of Ireland as a competitive economy, it is vital that investors operate in a climate where they can keep the rewards of a successful investment. For this to happen firms need a transparent and certain regulatory environment where incentives to invest are not distorted by potential ex post behaviour by the regulator. Hence we would be concerned with the phrasing of this question, in particular the term “regulation of investment incentives”.

Regulation should only play a role in the event of a market failure which allows a dominant firm to exploit its position. If the regulator attempts to play too large a role ex ante, then investment may be deterred and so no market may develop.

However, on the assumption, which may or may not be correct, that there will be a wholesale provider of NGB with SMP and which therefore might be subject to price regulation, then clearly regulation of wholesale pricing will affect investment incentives. If prices are set too low, then the incentive to invest will be removed whilst if they are set too high inefficient investment may occur.

In paragraph 6.28, the discussion paper suggests that differential pricing might not be discriminatory if it was associated with an up-front or long term volume commitment. We would caution ComReg to be careful about allowing differential pricing on such terms. It is quite probable that only the SMP operator’s own downstream retail business would be prepared to make such a commitment. Smaller operators may not be in a financial position to make an up-front commitment and may be concerned about a long term volume commitment, especially in the current financial climate. This would then mean that only the SMP operator’s own retail business could enjoy the cost advantages that such commitments bring. It is for this reason that Ofcom prohibits BT from offering volume discounts on certain wholesale products.

In paragraph 6.2 it is noted that one of ComReg’s objectives is to create a “supportive and predictable regulatory environment”. We consider predictability to be essential. An investor in a genuinely new service faces both demand and technology risk and so would not want to face regulatory risks as well. One way in which regulatory risk can be reduced is to align the regulatory cycle with the investment cycle, providing predictability as to potential for adjustment in the WACC/wholesale pricing regime over time as markets and technologies develop.

The regulatory approach can help to create the supportive environment it has as an objective by making commitments to investors not to change the rules over the period needed for firms to recover their initial capital outlay.

Question10: Is there a case for allowing a differentiated regulated rate of return for Eircom in relation to risky NGA investments, and would this in fact be effective in encouraging early and widespread development of NGB fixed line networks?

When a firm is making an investment decision it will tend to do so either to be able to offer existing products at a lower cost and so gain an efficiency advantage over its rivals (productive efficiency) or to develop new products which it believes will give it a competitive edge (dynamic efficiency). In the former case there is little in the way of demand uncertainty as existing levels of demand are known. There may however, be some technology uncertainty if there is a risk that the new technology will not deliver those efficiency benefits. When a firm invests to create a genuinely new service, then it faces both demand and technology uncertainty.

For example, were eircom to replace its copper network with fibre to the home, it could offer the same services, at both wholesale and retail level, as it does today for which the level of demand is known. Its efficiency gain would come from lower operational cost. However, if it used the fibre network to offer new services, say 100 Mbps, demand levels would be unknown ex ante and so the firm would face demand uncertainty.

When considering whether to allow a differentiated WACC, therefore, ComReg should consider the real level of risk faced by the firm. Simply allowing a higher return for an existing product because it is delivered over a new technology may encourage inefficient investment.

One problem with a differentiated rate of return is that it still leaves the regulated operator only able to earn its cost of capital on the new service, but it still faces the risk if that service is not successful. In economic terms, if a firm is only able to earn its cost of capital, it earns zero profit. Faced with a choice of earning zero profit on both services it is indifferent between the two services and so has no incentive to invest in NGB.

As discussed earlier, one way to overcome this problem and to allow a higher return for higher risk is anchor pricing. Under this scheme, eircom would be obliged to offer existing regulated products at existing regulated prices regardless of the technology it uses to deliver them. However, it would then be free to price new services at the level it sees fit. This approach has the benefit of protecting wholesale and retail customers from abuse of eircom's current dominant position, whilst allowing it to earn positive profits where it is exposed to demand and technology uncertainty.

If such an approach were considered by ComReg, however, it would have to ensure that the anchor product set can develop as the baseline quality expected by consumers increases. For example, when broadband was first launched, the anchor product may have been considered to be dial-up access. Today a 2 Mbps or even 10 Mbps service may be considered the baseline, but would need to be continually reviewed as technologies and market take-up develop. The full range of alternative regulatory means for encouraging and supporting new and innovative products should be reviewed.

10. HeaNet



Next Generation Broadband in Ireland

Response by HEAnet

Section 2: Next Generation Broadband – What is it and why does it matter?

Question 1: What speeds and other quality of service parameters will be demanded by businesses and consumers over the next 3 to 5 years? Please explain your reasoning. Do you believe the market itself will deliver these capabilities, and within what timeframe?

HEAnet, based on our work with other leading European and world-wide research networks, is convinced that **future telecom services in Ireland must be underpinned by a fibre-optic based open-access infrastructure**. This would provide the optimum platform where available leading to effectively unlimited bandwidth.

Our client base of 50+ education/research institutions is connected via Ethernet links at capacities of 100Mbps, 1Gbps and 10Gbps; so far, one is at the top end of the scale, with others to be upgraded soon. Total access capacity of all institutions has been doubling approximately every year since records began, and there has been no reduction in this rate of late. On that basis, we anticipate access capacity at 100Gbps within three years.

Within the HEAnet network, we sometimes physically separate functionally different types of traffic. In general, traffic associated with the “education” function of the network is aggregated as being due to many thousands of moderate streams of data. By contrast, some research users need high capacity point-to-point links for specialist applications. These might include the interoperation of distributed but tightly coupled high-performance computing and storage systems. For such users, we offer dedicated point-to-point circuits, originally at 1Gbps, but more recently at 10Gbps. This type of capacity is not yet available commercially.

The demand for data storage has escalated significantly in recent years. One project group, e-INIS, has hundreds of Terabytes of storage around the network. These and other strategic resources must be accessible at high bandwidth and low latency.

We see increasing demand, from institutions big and small, for greater availability and consequently for more resilience in the access network, as well as in the core. Typical SLA values are currently 99.9% uptime, but we will be moving to 99.99% for some clients. These levels of performance and availability are currently not available to government and the private enterprise sectors.

Aggregation is important for the schools network, which is operated by HEAnet. To connect all 4000 schools in the country, a range of providers - and of technologies – is required. Traffic from seven access providers must be aggregated for internal and onward connectivity and, crucially, for uniform and guaranteed implementation of the security policy of the Department of Education and Science. Without full central filtering, it would be extremely difficult and costly to manage this policy. Equally, the market is not yet in a position to deliver the requisite 25Mbps per primary school and 100Mbps for secondary schools; we are only in a position to rollout the de facto range of 2Mbps to 7Mbps in the access network.

Question 2: Do you agree that NGB network deployments can provide a socioeconomic benefit? If so, who are likely to be the greatest beneficiaries and why? Should the policy framework explicitly favour the development of NGB in Ireland, and with what specific socio-economic goals in mind?

Yes. In recent years, our NBE (National Backbone Extension) programme has helped to connect many off-campus sites and affiliates to HEIs. In several cases, this has entailed the deployment of broadband infrastructure in remote regions. The result is that many outlying facilities are now integrated with campus IT and e-learning services; this has had a significant impact in terms of outreach and inclusion.

A specific case has been the off-campus sites of several of our academic institutions in West Galway and Clare. These include academic centres of learning, resource centres, and research stations (both manned and unmanned). The requisite circuits were not available from the market, so HEAnet, on behalf of its clients and Udarás na Gaeltachta together funded the construction of a high-speed (NxSTM-1) wireless network. This now serves off-campus sites in Galway and Clare, fully integrating them within the campus LAN service and support infrastructure.

In many ways, the western wireless research and education network resembles California’s high-performance wireless research and education network (HPWREN – see <http://hpwren.ucsd.edu>) in terms of genesis, function and capacity. Both were built and designed by the academic community in default of market availability, both are funded by the research/education budgets, and both have STM-1 capacities.

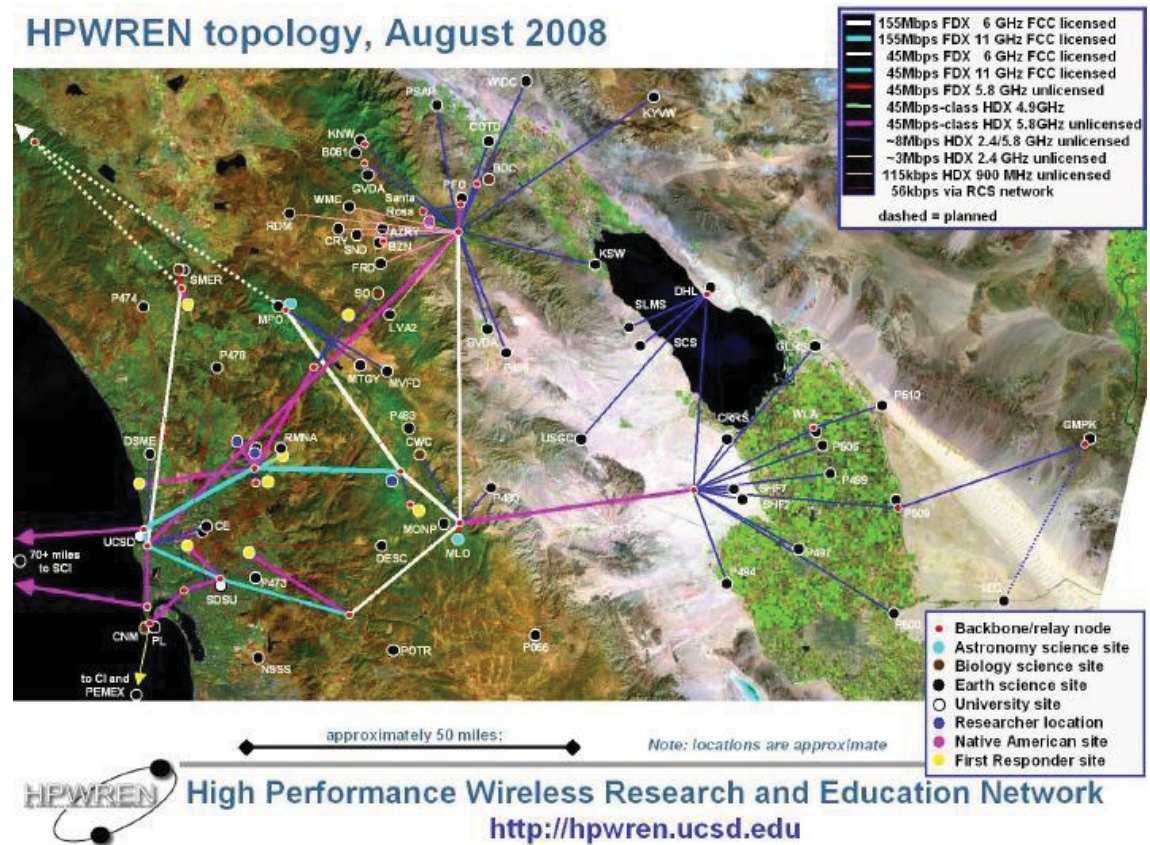


Fig 1. HPWREN, California, USA

This network has helped to rectify the digital gradient somewhat in this part of the country. Market forces were not sufficient to provide the necessary infrastructure, whereas HEAnet and Udarás na Gaeltachta were able to deliver on this particular socio-economic objective.

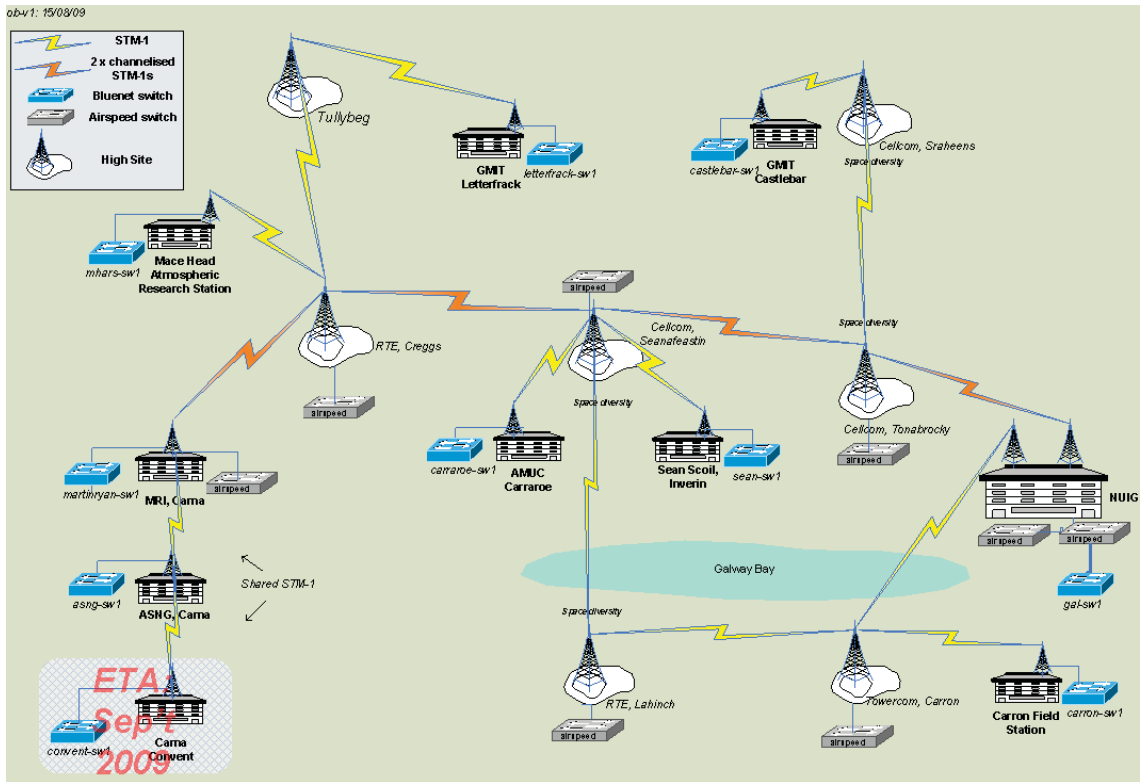


Fig 2. HEAnet' wireless network in Galway and Clare

Section 3: Broadband Developments in Ireland

Question 3: How important will cross-platform competition be to the development of NGB Networks? Do you consider that all broadband platforms are capable of supporting NGB? In what circumstances might some such platforms be more suitable than others in providing timely and efficient NGB

For fixed broadband to business, to the institution and to the home, our preference has been for fibre connections. By virtue of its capacity, and more significantly, because of the capabilities of optical transmission technology, **dark fibre is far ahead of other technologies in the scale and scope of services it can deliver**. This has been recognised most recently in Australia, where the federal government has taken the initiative to build a nationwide fibre network at a cost of 25 billion euro – see <http://www.guardian.co.uk/world/2009/apr/07/broadband-internet-australia>

Wireless technologies offer alternatives in many locations for point-to-point circuits. They also enable, in one-to-many mode, the basics of ubiquity and mobility. Our experience with satellite confirms that it **does not meet the requirements for next generation broadband**. Long latency is perhaps the most salient of its shortcomings, but it is not the only one.

Even without satellite technology, there is scope for healthy intra- and cross-platform competition. However, conformance with agreed standards and metrics is important, so that choice is real and inter-operability is not an issue.

Question 4: Do you consider that substantial (both in cost and coverage terms) private sector led investment in the development of NGB networks is likely over the next 3-5 years? If not, and should a gap occur in comparison to other European countries, what will be needed to encourage such private sector investment in Ireland?

By itself, the private sector has not provided the requisite investment on a national scale, and regardless of the current climate it is unlikely that the business case will exist in the foreseeable future, in the private telecom sector.

Our own experience with the schools network has shown the need for structural initiatives. Due to lack of investment, there were large gaps in the physical infrastructure. This led to a predominance in numerical terms of satellite connections in the first phase, and this was a frustration for many and an inhibitor of uptake and progress in primary schools in particular. Access to fibre-optic based infrastructure on a scale needed for our higher education and research networking, and indeed for

the development of NGB networks, is limited in the current market and this situation is unlikely to improve if we must rely on private sector led investment.

The practice of public-private partnership (PPP) has potential for the next generation broadband. It has had significant impact on the roads infrastructure, in cases where it was well planned and managed. Tax reductions and other incentives also have a role to play. The Australian initiative (see above and see also <http://www.guardian.co.uk/world/2009/apr/07/broadband-internet-australia>) of state development followed at a later stage by selling assets to the commercial sector, should also be borne in mind.

Section 4: International Approaches on Next Generation Broadband

Question 5: In what circumstances would any of the above (or other) approaches be appropriate in stimulating NGB roll-out in Ireland? How might such interventions safeguard the development of competition?

It is not clear that deference to competition is not carried too far in some cases, to the detriment of the development of NGB services. At a national level, for instance, utilities such as ESB, CIE and An Bord Gais have been used by the State and by the private sector to leverage the rollout of dark fibre at a macro level. At a metro level, the State's franchise has been used to deploy dark fibre in certain urban areas. More generally, though, local authorities, which have the greatest domestic ubiquity, have been reluctant to take any meaningful initiative here.

It would seem entirely appropriate for the State to intervene as it has successfully done in the instances above, since Ireland as a whole would be the beneficiary in terms of the economy, foreign direct investment, education and Ireland's reputation of having the fibre based infrastructure to delivery the ICT needs for a modern economy.

The open access approach could extend the remit of e-Net to roll out fibre to pass a target percentage of homes. Moreover, at a national level, there is already demand for managed services from e-Net to include backhaul and interconnection of the MANs. At the same time, uptake must also be incentivised at consumer and provider levels.

There needs to be a change in position with the configuration of the previous incumbent as the operator with significant market power (SMP), if we are to improve competition in the marketplace. This should be functionally split into wholesale and retail operations, so that wholesale fibre will be more readily available nationwide in the commercial market.

Section 5: Next Generation Broadband Enablers and Inhibitors

Question 6: Do you consider that the issues identified are the main enablers and inhibitors of NGB developments or are other issues of greater relevance? Who are the key stakeholders who might be in a position to influence these issues and how might they best do so?

The enablers and inhibitors identified in the discussion paper are indeed salient. We would see geography or demography – however one wants to consider it – as a major inhibitor. The lack of business cases in many areas adds to the digital gradient. Existing and new methods of encouraging private sector investment are needed.

Other drivers to be considered, such as:

- HEAnet, as the national education and research network, has been central to network research and development in the past decade. It has delivered gigabit service to its member institutions around the country, and has helped to stimulate the Internet market. This role needs to be sustained as the new broadband evolves.
- Cloud computing and storage, as enablers of low entry cost and scaled access to IT resources for domestic and business markets
- Developments such as e-goods and e-services, use of sustainable power and cooling, reduction of greenhouse gas emissions through teleworking and videoconferencing can provide synergies and drive the green agenda.
- There are barriers due to market segmentation, product differentiation, and the lack of trust model for recognised authentication. The need to consider single sign-on, with a scalable model for federated access, must be considered, and with it the area of identity management.

Key stakeholders in the years ahead will continue to be ComReg itself, as well as the Department of Communications, Energy and Natural Resources, IBEC-TIF as the collective voice of the industry, INEX on the operational side, and the government as a whole, which as stated, would be a key beneficiary.

Section 6: The Role of Regulation in Facilitating Next Generation Broadband Development in the Irish Market

Question 7: Are the areas identified the relevant tools available to ComReg for accelerating NGB investment in Ireland, or could other regulatory levers be as or more effective? What might be the impact of these activities on both the level and timing of NGB developments?

The role of ComReg is a positive and important one. It has seen the importance of communicating with industry. Closer and more interactive cooperation with the market should be developed, in addition to the more formal channels of publishing position papers and inviting input. For instance, focussed workshops with TIF would provide a one-to-many channel that could leverage the collective expertise of the industry.

Question 8: Do you see a role for collaborative industry approaches in seeking to agree wholesale models for open access to SMP operator NGB networks? Will infrastructure sharing be critical for early deployment of NGB in Ireland? What do you see as being the appropriate regulatory response in such circumstances, particularly in light of the need to promote effective competition, innovation and incentivise investment?

Yes, there is a role for collaborative industry approaches in operational terms. And yes, sharing of infrastructure will be a vital part of the equation. We would iterate the need to give effective recognition to the two separate functions of the SMP, and thus enabling to give the market access to national infrastructure.

Question 9: What role has the regulation of investment incentives such as wholesale pricing to play in stimulating the development of NGB networks?

This is a very important to optimising the market for technological advance. It is all the more important in a small country like Ireland, where the telecoms industry is more exposed to external forces with different agendas than NGB in Ireland. The European Commission can sometimes manifest itself as such an external force, and we need to make sure that their rulings make sense in the Irish context.

Question10: Is there a case for allowing a differentiated regulated rate of return for Eircom in relation to risky NGA investments, and would this in fact be effective in encouraging early and widespread development of NGB fixed line networks?

There is a case, provided Eircom functions are separated, and their wholesale and retail operations are split.

31st August 2009

11. Hutchinson 3G Ireland Limited

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Ms Marie Cussen
Commission for Communications Regulation
Irish Life Centre
Lower Abbey Street
Dublin 1
BY REGISTERED POST AND EMAIL: marie.cussen@comreg.ie

1 September 2009

Dear Marie

SUBMISSION RE: COMREG 09/56 NEXT GENERATION BROADBAND IN IRELAND

Hutchison 3G Ireland Limited ("H3GI") welcomes the opportunity to respond to ComReg's discussion document "*Next Generation Broadband in Ireland – Promoting the timely and efficient development of high speed broadband infrastructure and services*". As the fastest growing provider of mobile broadband in Ireland (with in excess of 160,000 mobile broadband customers), the first company to launch mobile broadband in Ireland and the winner of the National Broadband Scheme, H3GI believes that it is well placed to comment in respect of Next Generation Broadband in Ireland and ComReg's document.

H3GI believes that ComReg needs to compensate other operators, apart from eircom, for the risks involved in Next Generation Broadband in Ireland eg indefinite 3G licences (as recommended in the final Digital Britain report¹). Otherwise, ComReg will create an unfair playing field in favour of eircom and replicate eircom's current dominance in the wholesale broadband market in a Next Generation Broadband environment. Please see attached responses to ComReg's consultation questions.

Yours sincerely


MARK HUGHES
Head of Regulatory

¹ <http://www.culture.gov.uk/images/publications/digitalbritain-finalreport-jun09.pdf>.

Canning Fok, British
Susan Chow, British
Frank Sixt, Canadian
Edith Shih, British
Robert Finnegan, Irish
Kevin Russell, British



ANNEX

Question 1: What speeds and other quality of service parameters will be demanded by businesses and consumers over the next 3 to 5 years? Please explain your reasoning. Do you believe the market itself will deliver these capabilities, and within what timeframe?

Over the next 3 to 5 years, H3GI believes that businesses and consumers will demand:

1. A range of speeds, from 1 MBps to 25 MBps;
2. National coverage; and
3. Sufficient capacity.

This is based on the current Irish and global economic outlook, international experience of Next Generation Broadband, as set out in ComReg's discussion document and customer knowledge and experience. H3GI believes that the market will meet these demands within this timeframe.

Question 2: Do you agree that NGB network deployments can provide a socio-economic benefit? If so, who are likely to be the greatest beneficiaries and why? Should the policy framework explicitly favour the development of NGB in Ireland, and with what specific socio-economic goals in mind?

Yes, H3GI agrees that Next Generation Broadband network deployments can provide a socio-economic benefit. However, H3GI does not believe that the socio-economic benefit of Next Generation Broadband is clear at this stage. It is therefore not possible to identify the greatest beneficiaries. The policy framework should explicitly favour the development of Next Generation Broadband in Ireland. This is because of the importance of Next Generation Broadband to Ireland's international competitiveness. The policy framework should explicitly favour the development of Next Generation Broadband in Ireland with the following socio-economic goals in mind: (i) the promotion of competition; (ii) the promotion of the interests of users; and (iii) the development of the internal market.

Question 3: How important will cross-platform competition be to the development of NGB Networks? Do you consider that all broadband platforms are capable of supporting NGB? In what circumstances might some such platforms be more suitable than others in providing timely and efficient NGB

Cross-platform competition will be vital to the development of Next Generation Broadband. Mobile technology is capable of supporting Next Generation Broadband. Given the costs of rolling out fixed Next Generation Broadband to rural areas, mobile technology will be more suitable than fixed technology in providing timely and efficient Next Generation Broadband to rural areas.



Question 4: Do you consider that substantial (both in cost and coverage terms) private sector led investment in the development of NGB networks is likely over the next 3-5 years? If not, and should a gap occur in comparison to other European countries, what will be needed to encourage such private sector investment in Ireland?

H3GI does not believe that it is possible to identify at this stage whether substantial private sector led investment in the development of Next Generation Broadband networks is likely over the next 3 to 5 years. Please see the answer to question 5.

Question 5: In what circumstances would any of the above (or other) approaches be appropriate in stimulating NGB roll-out in Ireland? How might such interventions safeguard the development of competition?

Generally, the following approaches would be appropriate in stimulating Next Generation Broadband roll-out in Ireland:

1. Providing the private sector with access to Government owned infrastructure.
2. Opening up access to bottlenecks in privately owned infrastructure.
3. National certification schemes and public information campaigns to allow consumers to check network coverage (and suppliers) in their area.
4. Making certain Government funded services available online (e-health, e-education) and encouraging similar private sector enterprises to do so.
5. Regulatory authorities generally facilitating the promotion of competition by opening up access to bottleneck infrastructures operated by dominant operators.
6. Companies themselves opening up their networks and providing services on a wholesale basis to other parties.
7. Companies (including local municipalities) entering into joint ventures to build networks in order to share the risks of making the required investments. Such networks are then opening up voluntarily to other parties on a wholesale basis and provide non-discriminatory access.

In the event of market failure, the following approaches would be appropriate in stimulating Next Generation Broadband roll-out in Ireland:

1. Investment either in terms of funding (fully or co-financing) or loans for infrastructure development, in some cases in return for the creation of an open access network.
2. Availability of tax relief's for private sector led investment.



3. Demand aggregation initiatives whereby communities are brought together to create the critical mass required to encourage private sector Next Generation Broadband development.
4. Regulatory authorities approaches on the level and type (if any) of wholesale pricing regulation taking into account the degree to which SMP players open up their networks.
5. Regulatory authorities examining if and how Next Generation Broadband risks can be factored into wholesale pricing of Next Generation Broadband services.

Question 6: Do you consider that the issues identified are the main enablers and inhibitors of NGB developments or are other issues of greater relevance? Who are the key stakeholders who might be in a position to influence these issues and how might they best do so?

H3GI considers that the issues identified are the main enablers and inhibitors of Next Generation Broadband developments. The private sector, Government, ComReg and consumers are the key stakeholders who might be in a position to influence these issues. Please see our comments in the covering letter accompanying this annex.

Question 7: Are the areas identified the relevant tools available to ComReg for accelerating NGB investment in Ireland, or could other regulatory levers be as or more effective? What might be the impact of these activities on both the level and timing of NGB developments?

Yes, the areas identified are the relevant tools available to ComReg for accelerating Next Generation Broadband investment in Ireland. However, as Next Generation Broadband developments are unclear at this stage, it is not possible to identify what might be the impact of these activities on both the level and timing of such developments.

Question 8: Do you see a role for collaborative industry approaches in seeking to agree wholesale models for open access to SMP operator NGB networks? Will infrastructure sharing be critical for early deployment of NGB in Ireland? What do you see as being the appropriate regulatory response in such circumstances, particularly in light of the need to promote effective competition, innovation and incentivise investment?

Where possible industry should agree open access to SMP operator Next Generation Broadband networks. Infrastructure sharing will be critical for early deployment of Next Generation Broadband in Ireland. ComReg and the Competition Authority should continue to enforce competition law. ComReg should continue to ensure access under the European Communities electronic communications regulatory framework. In the absence of market failure, it should not provide eircom with any 'risk premium'.

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Question 9: What role has the regulation of investment incentives such as wholesale pricing to play in stimulating the development of NGB networks?

In the absence of market failure, ComReg should not provide eircom with any 'risk premium'.

Question10: Is there a case for allowing a differentiated regulated rate of return for Eircom in relation to risky NGA investments, and would this in fact be effective in encouraging early and widespread development of NGB fixed line networks?

Please see the answer to question 9.

12. Imagine Communications Group

Next Generation Broadband

Imagine Communications Group Response to the Discussion Document

1. Introduction

Imagine welcomes this opportunity to contribute to the debate about how best NGB networks and services can be delivered in Ireland.

2. Imagine Response

Question 1: What speeds and other quality of service parameters will be demanded by businesses and consumers over the next 3 to 5 years? Please explain your reasoning. Do you believe the market itself will deliver these capabilities and within what timeframe?

Irish business and consumers are demanding access to real broadband to-day. This is not being delivered by the existing solutions that are prevalent in the market.

By way of example, Imagine recently assessed 4000 lines for coverage and DSL line speed. Of this sample, 34% could not get DSL broadband, 50% of lines could not get more than 3Mbps broadband and 70% could not get more than 6Mbps. This indicates to us that there is a serious issue regarding line quality that cannot be easily resolved.

Experience of mobile broadband is not much better. In the UK a recent survey from Broadband Genie has shown that just 11.5% of consumers are satisfied with their mobile broadband speeds. Given that mobile broadband propositions in Ireland are based on similar technology, such trends can be expected to emerge in this market.

In our view, genuine broadband speeds of 10-20Mbps will be demanded by Irish businesses and consumers in the next 5 years. However, do not believe that current technologies being deployed in the market will be capable of meeting this demand leading to frustration among users.

Imagine believes that WiMAX offers a genuine opportunity to address this emerging gap in customer requirements:

- WiMAX is available to deploy to-day with relatively small incremental investment.
- Spectrum is available and allocated to for WiMAX deployments to-day
- Imagine's wireless network has in excess of 70% population coverage in Ireland. This network can be readily and speedily upgraded to provide WiMAX services
- Existing networks are unable to provide for existing needs, let alone emerging requirements for broadband.
- Quality of Service is also being demanded by customers as the fusion between Internet technologies and telephony becomes a reality. QOS is increasingly also being demanded by customers as the fusion between Internet technologies and telephony becomes a reality. Customers want all the advantages of Internet integrated telephony packages while maintaining toll quality. This is only achievable

by implementing QOS particularly on contended or shared internet connections. Video demand and Secure VPN demand is also driving other required levels of QOS which need to be implemented particularly on these shared and contended section of any network.

Imagine believes that Wimax with its inherent 5 levels of QOS meets todays demands for customer demands with capacity for extra levels for future deployment of QOS hungry application types."

Question 2: Do you consider that NGB network deployments can provide a socio-economic benefit? If so, who are likely to be the greatest beneficiaries and why? Should the policy framework explicitly favour the development of NGB in Ireland, and with what specific socio-economic goals in mind?

Advanced telecommunications services have been shown to promote quality of life improvements through improved social inclusion, education benefits, and income and wealth enhancements. Next Generation Broadband networks are also agents for social inclusion and for improving access to education and other social services. As such they can be shown to offer maximum benefits to lower socio-economic groups.

In particular, the availability of NGB networks will help to improve IT literacy throughout Ireland. This is particularly important to ensure that Ireland remains an attractive location for inward investment from technology-oriented multinationals as well as fostering local innovation.

Question 3: How important will cross-platform competition be to the development of NGB Networks? Do you consider that all broadband platforms are capable of supporting NGB? In what circumstances might some such platforms be more suitable than others in providing timely and efficient NGB?

Cross platform competition is essential to ensure that there is a market-based incentive for firms to develop next generation capabilities.

Imagine believes that WiMAX is the most suitable platform for providing NGB in Ireland. WiMAX builds on the unique success of fixed wireless technologies in this market and will enable Ireland to become a success story for the development of next generation wireless broadband services in Ireland.

In our view WiMAX offers the only viable option for rapid deployment of next generation broadband to a wide spectrum of population in Ireland, and not just in high density pockets.

Imagine's wireless network covers >70% of the population. €60m of investment has been sunk to date building a core network, access network infrastructure, management systems, expertise, and a customer base. This can be upgraded readily to WiMAX with an incremental investment.

Question 4: Do you consider that substantial (in both cost and coverage terms) private sector led investment in the development of NGB networks is likely over

the next 3-5 years? If not, and should a gap occur in comparison to other European countries, what will be needed to encourage such private sector investment in Ireland?

Imagine does not expect significant development of NGB networks in Ireland in the next 3-5 years from the main fixed and mobile networks providers.

On the fixed side, any NGB deployments are likely to be concentrated on limited urban areas where there are competitive factors at play between cable and fixed line providers.

On the mobile side, it is unclear that investment in LTE will materialise within a 5 year time horizon. In our view it is more likely that mobile providers will incrementally invest in HSPA technology it is unlikely that Ireland will see LTE deployment in the next 5 years.

WiMAX deployment should be supported through release of appropriate spectrum. This has already happened through recent FWALA allocations and this will help to ensure that WiMAX helps to fill the gap between Ireland and other European countries.

Question 5: In what circumstances would any of the above (or other) approaches be appropriate in stimulating NGB roll-out in Ireland? How might such interventions safeguard the development of competition?

A number of the listed options may be of interest to operators that are developing NGB platforms in Ireland. Some of the options that may be worth exploring further are the development of Government as an advanced customer of such networks, availability of development financing, and tax relief for users.

Question 7: Are the areas identified the relevant tools available to ComReg for accelerating NGB investment in Ireland, or could other regulatory levers be as or more effective? What might be the impact of these activities on both the level and timing of NGB developments?

ComReg should ensure that spectrum necessary to provide high quality next generation broadband service is provided to operators that have demonstrated that they are actively deploying next generation services throughout Ireland and are providing a significant input into development of the national telecommunications infrastructure.

Question 8: Do you see a role for collaborative industry approaches in seeking to agree wholesale models for open access to SMP operator NGB networks? Will infrastructure sharing be critical for early deployment of NGB in Ireland? What do you see as being the appropriate regulatory response in such circumstances, particularly in light of the need to promote effective competition, innovation and incentivise investment?

Cost efficiencies are essential to ensure that NGB networks will be developed in Ireland. Infrastructure sharing among operators should be encouraged where possible to ensure costs are reduced.

Question 9: What role has the regulation of investment incentives such as wholesale pricing to play in stimulating the development of NGB networks?

Wholesale pricing should be maintained to ensure there is adequate competition in any deployed Next Generation Broadband networks. A vibrant wholesale model is to be encouraged for all Next Generation Broadband platforms including fixed and wireless. Imagine supports the provision on open-access networks and intends to ensure that its WiMAX services are available to wholesale providers on a reasonable basis.

Question 10: Is there a case for allowing a differentiated regulated rate of return for Eircom in relation to risky NGA investments, and would this in fact be effective in encouraging early and widespread development of NGB fixed line networks

Development of NGB networks should not be at the expense of a competition. A rate of return should be set that ensures that competition can be further enhanced for NGB services.

13. Ireland Offline

Ireland Offline¹

We would like to observe that we find it very difficult to approach this document as it appears to proceed from the core assumption that there are no NGN assets in the state.

There are a number of operational NGN networks already , particularly the ESB and eircom core .

Yet no data is forthcoming on their operation and traffic growth and on the advantages that appertain to their being operational .

We have had an operational NGN in Ireland for 6 yearssurely we must have learnt something from that and from which we can push its advantages closer to all stakeholders.

Because of this that the consultation appears to be a greenfield exercise where a greenfield exercise is not appropriate in this instance . In fact it is quite infuriating at times .

Consultation.

Question 1: What speeds and other quality of service parameters will be demanded by businesses and consumers over the next 3 to 5 years?

Please explain your reasoning. Do you believe the market itself will deliver these capabilities, and within what timeframe?

Irelandoffline . We believe universally or near universally available speeds should be in the region of 25Mbps or greater, with at least 10Mbps upload , tail length permitting .

Furthermore Net Neutrality is an important concept . That is often ignored. Operators should allow any IP protocol on their systems and should not prioritise one protocol over another or shape arbitrarily .

The market can never realistically deliver these speeds as the market in Ireland is very underdeveloped. We have waited 10 years for LLU which still does not function smoothly as an industry process.

The only possible way anything like these speeds is through government intervention in the market as is clearly seen in most other developed countries where NGN have been deployed and through clear sighted regulation.

We also feel that Comreg should have bitten the bullet and stated outright that NGN is Ethernet ...which it is . Comreg should also have pointed out that there is a great deal of unanimity in the industry on Core Ethernet and its workings but that there is some disagreement and a consequent protocol was on Metro and Last Mile segments .

Furthermore we believe that Comreg has to state what infrastructure it envisages pushing nearer the end customer to achieve these speeds and state how long the metro and last mile

¹ Note: The response was provided directly in an email but has been transferred into a document format for ease.

uncertainty may be allowed to last before a decision is made . It will certainly be a live issue over the the next 3-5 years but should be put to bed by then .

Question 2: Do you agree that NGB network deployments can provide a socio-economic benefit? If so, who are likely to be the greatest beneficiaries and why? Should the policy framework explicitly favour the development of NGB in Ireland, and with what specific socio-economic goals in mind?

Irelandoffline . NGB is less costly than traditional SDH and Docsis deployment , being simple ethernet . As Comreg is still struggling with basic competition 101 issues and with industry matters we feel that socio economic goals may be too abstract for Comreg until some clarity and vision is apparent in their approach to fundamental competition and to its delivery .

Question 3: How important will cross-platform competition be to the development of NGB Networks? Do you consider that all broadband platforms are capable of supporting NGB? In what circumstances might some such platforms be more suitable than others in providing timely and efficient NGB

Irelandoffline . Through pushing a state owned and fully lit NGN network to within 50km of each citizen over the period in question . This extension of backbone allows easy entry to the market nationwide. At present the only meaningful competition is coming from Cable which is an urban technology with spotty availability .

Final mile technology normally delivers an ethernet layer to a core , it is somewhat irrelevant what that is of what encapsulation is performed .

Question 4: Do you consider that substantial (both in cost and coverage terms) private sector led investment in the development of NGB networks is likely over the next 3-5 years? If not, and should a gap occur in comparison to other European countries, what will be needed to encourage such private sector investment in Ireland?

Irelandoffline . Functional separation of the eircom retail and wholesale functions.
A clear and unambiguous regulatory environment

The lack of such an environment , together with patchy rollout of NGN assets such as ESB/Aurora fibres and pops, is the chief structural deficit now as it was 5 years ago .

Question 5: In what circumstances would any of the above (or other) approaches be appropriate in stimulating NGB roll-out in Ireland? How might such interventions safeguard the development of competition?

Irelandoffline . Extending state owned NGB networks (ESB/ IE / Bord Gais to within 50km of each citizen to a local handover point. A stated objective to get it to 30km within 5-7 years would also be a help .

All fibre assets in the state (private and publicly owned) be joined up into one overall network and with NGN interconnect and transparent end to end operation .

If these were achieved over the next 3-5 years it would be wonderful , sadly they are not even envisaged by Comreg ,

Question 6: Do you consider that the issues identified are the main enablers and inhibitors of NGB developments or are other issues of greater relevance? Who are the key stakeholders who might be in a position to influence these issues and how might they best do so?

Irelandoffline . Equipment makers and different ethernet protocols and interoperability issues . They are currently in a spat over MPLS/PBBTE which is likely to resolve itself shortly . This leads to clarity of standards from which investment may be planned .

Question 7: Are the areas identified the relevant tools available to ComReg for accelerating NGB investment in Ireland, or could other regulatory levers be as or more effective? What might be the impact of these activities on both the level and timing of NGB developments?

Irelandoffline . Comreg cannot blissfully sit on a fence for ever. It has to lay down standards and aspirations and hard targets and not to wallow in permaconsult . The fluffy aspirational nature of this consultation with no reference to standardsnot even ethernetleaves us in a position where we are eyeing up the starting gate but not actually entering it .

Question 8: Do you see a role for collaborative industry approaches in seeking to agree wholesale models for open access to SMP operator NGB networks? Will infrastructure sharing be critical for early deployment of NGB in Ireland? What do you see as being the appropriate regulatory response in such circumstances, particularly in light of the need to promote effective competition, innovation and incentivise investment?

Irelandoffline . Where else does meaningful employment generating and employment maintaining competition in Ireland come from (paltry as it is) , certainly not from LLU .

Early NGB deployment in Ireland was achieved years ago by carriers who use ESB fibre . Surely some lessons have been learnt from that by now ???? Yet we are being asked to model a model that existsand which should be extended further and maybe improved .

Question 9: What role has the regulation of investment incentives such as wholesale pricing to play in stimulating the development of NGB networks?

Irelandoffline . A key role but Comreg have not chosen to share any real vision of this role with anybody , have they ??? . What have other countries done ???

Question10: Is there a case for allowing a differentiated regulated rate of return for Eircom in relation to risky NGA investments, and would this in fact be effective in encouraging early and widespread development of NGB fixed line networks?

Irelandoffline . There is , again the vision thing would be useful and we should have some idea of whether these deployments would be universal or merely designed to compete in cities with cable . We feel that such an approach cannot work in the absence of functional separation in any case.

14. Irish Rural Link

Irish Rural Link became involved in trying to address the disadvantaged situation of rural areas regarding broadband because over the past number of years many rural community groups have been hugely frustrated by the failure to make broadband available in rural areas. However, they have also been frustrated by the apparent lack of a coherent leadership and 'voice' on rural broadband and ICT issues. The idea behind Connect Rural Ireland, an initiative of Irish Rural Link, was to give rural communities a vehicle to campaign on rural broadband and other rural ICT issues. At all times Irish Rural Link attempts to be neutral in its approach and consider a wide range of views with the ultimate aim of delivering an efficient, future proofed, equitably priced broadband product for all rural areas.

IRL accepts that the combination of a large, dispersed rural population and the sale of Eircom's fixed line business presented a unique set of challenging circumstances for addressing the broadband situation in rural areas. However IRL do not consider the National Broadband Scheme adequate, these are outlined in our analysis of the Scheme "The Good, the Bad and the Inadequate". While wireless and other solutions have a role to play, particularly in isolated rural areas, high quality NGB will have to be based on a fibre cable network reaching throughout the country.

Next Generation Broadband has a key role to play in helping to secure the economic and social future of this country and in delivering balanced regional development. The social benefits of a genuine national high speed infrastructure as well as the implications of an expanding digital divide cannot be ignored. The condition of the existing fixed line provision to the residential sector is a factor in delivering NGN broadband. This will require sustained Government back haul and last mile investment.

In order to ensure our International competitiveness, create and maintain jobs in rural areas and achieve balanced regional development we must meet the rural broadband standards achieved in other countries outlined in the Discussion Document.

Job Creation, SMEs and Tourism

The digital divide must be embraced as a critical obstacle to the fair and balanced development of the economy and society in significant parts of our island. The digital divide is a serious impediment to job creation, SME development and a balanced society that has equal access to services. There must be a commitment to helping meet the broadband demands and expectations of the Small and Medium Enterprise/tourist sectors in rural areas.

The Government's vision for Ireland's future economic growth "Building Ireland's Smart Economy" (2008) aims to build a "digital services export economy which will only require a high speed broadband network, a renewable electricity supply and our own ingenuity to succeed". Rural Ireland's ability to contribute to this smart economy is severely constrained by the lack of broadband and IRL do not believe the NBS will allow rural SMEs fully realise their potential. Next Generation Broadband will also present opportunities to reduce greenhouse gas emissions via teleworking. It is disingenuous to suggest that the NBS will allow rural businesses to compete on a level footing with other businesses currently served by broadband in Ireland and beyond. This is a major concern in view of the competitive disadvantage rural businesses have suffered historically.

Irish Rural Link are concerned that rural Ireland will be left behind in the "Knowledge Society Strategy" promised by the Government by mid-2009 as rural Ireland lacks the high speed broadband allowing rural areas to further Ireland's enterprise, educational and environmental objectives. "Building Ireland's Smart Economy" describes broadband as "a key enabling infrastructure for the knowledge-intensive services activities on which future prosperity will

increasingly depend". "Building Ireland's Smart Economy" also outlines a number of supports for SMEs and reiterates the Government's commitment to "continue to provide the best possible range of supports through these [public] agencies while removing barriers to business start-ups where they exist".

"The Framework for a Pact for Stabilisation, Social Solidarity and Economic Renewal" agreed with the Social Partners in 2009 restates the importance of entrepreneurship and business start-ups to the changing Irish economy. IRL are of the opinion that rural based businesses and entrepreneurs cannot fully benefit from any supports or contribute to national prosperity if they are forced to make do with an inadequate rural broadband service.

More emphasis must be put on laying down passive infrastructure (e.g. civil engineering works such as ducts, and other network elements such as dark fibre. Indeed much dark fibre is already available and unused at present) including synergies with energy, transport and water networks. IRL believe these have been ignored in favour of 'quick fix' solutions in the past.

Fostering and Harnessing Local Communities to Deliver NGB

Allowing local communities a greater role in enabling their local exchange needs to be available as an option in the delivery of effective broadband, based on the experiences of the people on Bere Island.

In 2006 the community - aware of Eircom's delay in deciding to enable their exchange and mindful of the constraints of alternative technologies due to the local topography - decided to explore the possibility of enabling the local exchange. When looking at the possibility of delivering broadband by enabling the local exchange a number of factors had to be considered. These included: the condition of the main line linking the exchange with the outside network, the amount of technological upgrading required on the exchange itself and the upgrading of the network and the strengthening required of the service to the individual houses and businesses in the area.

A proposal was put to the Enterprise Board to seek funding and this resulted in a commitment of 50% funding to support the initiative. The case put forward to the Enterprise board highlighted the benefits of this type of broadband for the area with its unique topographical constraints augmented by the fact that both the tourist and business sectors operating in the area would benefit greatly from an effective broadband service in the area.

The broadband Director within Eircom was then contacted regarding the proposal and a commitment to complete the work together with an initial estimate of €90000 was received. The community has identified the lack of a template or model for allowing this type of 'community enabling' as a significant barrier. The necessary work to complete the work was less than initially anticipated and the final bill for the project was actually €14000, i.e. €76000 less than the original estimate.

Because the local exchange is now enabled the islanders can now choose from the many server providers that can operate on the phone-line network. A variety of high quality, competitive deals are available to the islanders. True broadband with speeds of 7mb is now available.

The Bere model also addressed the issue of how far broadband was available from the exchange. This has been maximised by inserting a sub-station (mini-exchange or mini-RSU) along the line allowing those more distant from the exchange to receive quality broadband. The ADSL loop extender or ADSL repeater is a device that a telephone company can place midway between the subscriber and central office to extend the distance and increase the channel capacity of their DSL connection.

With something of the order of over 200 exchanges left to enable in Ireland the option to replicate the Bere model should be available to rural community's bases on the merits and cost effectiveness of this model.

Mini RSUs

With regard to mini exchanges/RSUs, there is a lack of knowledge amongst local communities whose local exchange is enabled but who are too distant from the exchange that such a unit might address the issue. If a number of people can benefit from the service a scheme whereby they are allowed install the mini RSU should be developed. Information, as well as regulatory permission, is vital here.

Advancing this cooperative model will require a ringfenced fund dedicated to provide the partial (or whole) cost of upgrading exchanges or providing mini RSUs.

Role of Regulator

Irish Rural Link are concerned that the current regulatory approach does not do enough to ensure broadband operators deliver the speeds (and crucially high quality service) they advertise. Also IRL are concerned that a Dublin-centric approach, neglecting the broadband needs of the rest of the country damages balanced regional development.

References

Irish Rural Link (2009), *The Good, the Bad and the Inadequate: Irish Rural Link's Evaluation of the National Broadband Scheme*, available at <http://www.irishrurallink.ie/publications/IRL%20analysis%20of%20NBS.pdf>

15. Magnet Networks

Introduction.

The ITU defines NGN in Recommendation Y.2001 as follows:

“Next Generation Network (NGN): a packet-based network able to provide telecommunication services and able to make use of multiple broadband, QoS-enabled transport technologies and in which service-related functions are independent from underlying transport-related technologies. It offers unrestricted access by users to different service providers. It supports generalized mobility which will allow consistent and ubiquitous provision of services to users.”

This is a very loose definition and Magnet Networks believes what constitutes NGN would be:

1. It's a packet based network – This means based on IP transport and control mechanism and possibly MPLS.
2. The networks QOS enabled in order to provide differential treatment to the mix of various protocols.
3. Envisioned to replace the legacy PSTN networks providing the current telephony and fax services.
4. Capable of providing equal-access type of access – for example ISP A owns the physical infrastructure connecting the end customer, and multiple other ISP (B, C, D) provide the actual services – ISP B the internet access, ISP C the voice service and ISP D the TV service. ISP B, C, D are utilising the ISP A NGN network.

In summary when you hear NGN network you should imagine a network where all possible telecommunication services (internet, voice telephony, IPTV, VPNS and all other) are all transported over a converged IP/MPLS core which is providing differentiated quality-of-service treatment according to the priority of the services. This allows the operator to maintain a single backbone network and decommission the old legacy PSTN and any other overlay networks, thus optimizing the maintenance costs, to provide equal-access access to third-party providers.

In this sense Magnet Networks believe that the speed of any communication link per se cannot qualify the link as NGN-ready or enabled.

Section 2:Next Generation Broadband – What is it and why does it matter?

Question 1: What speeds and other quality of service parameters will be demanded by businesses and consumers over the next 3 to 5 years? Please explain your reasoning. Do you believe the market itself will deliver these capabilities, and within what timeframe?

i. Speeds

In 2006 the fastest asymmetrical business broadband offering available from the Incumbent Telco was 5Mb/512kp¹ now its 24Mb/1Mb. Thus the increase in 3 years is on average 500% which would lead us to believe that in 3 years times the speeds being offered by the incumbent will be around 100MB.

Based on our experience of customers requirements, Magnet Networks would see that the 30Mbps and 100Mbps or greater would be required in 3-5 years time. Utilising the OECD

¹ http://www.forfas.com/media/forfas061130_broadband_performance.pdf

Communications Outlook 2009² which states at Page 106 “the speeds offered in 2005 are no longer available from operators in 2008”, it must deduced that current offers will not be available in 2012 thus 24/1 will not be acceptable to 2012 customers.

ii. Quality of service

Magnet Networks see reliability and consistent uptimes together with quick repair and response time as important parameters and would be something demanded by business going forward. Ease of switching is an important quality of service parameter as in the mobile sphere it takes on average 2 hours to transfer and thus people can't understand how it can take weeks not hours for a phone line to be transferred from one provider to another. As we live in an 'on demand' age people are expecting an on demand service.

iii. Market Delivery

Speeds may be market driven but reliability on a backbone that is owned by an SMP will require a strong regulatory hand to ensure KPI's and SLA's are strictly enforced. Speeds will be driven by bandwidth demand due to media and new applications however, if there is a failing backbone these speeds and quality of service requirements will not be delivered. It is now upon the regulator to insist a minimum quality of service through SLA's and KPI's.

iv. Timeframe

This is a moveable feast. Magnet Networks cannot see any of these speeds or quality of service issues being implemented in the short to medium term due to the slow movement of eircom to implement new processes.

From Magnet Networks experience in the LLU sphere it is very difficult to see any development in NGN due to the lack of development in the LLU marketplace. In order for NGN to develop regulation needs to dramatically change.

Question 2: Do you agree that NGB network deployments can provide a socioeconomic benefit? If so, who are likely to be the greatest beneficiaries and why?

Should the policy framework explicitly favour the development of NGB in Ireland, and with what specific socio-economic goals in mind?

i. Socio-economic benefits

Socio economic benefits will be provided due to higher speeds which, ensures more convergence of products i.e. on line procurement, ordering and e-commerce activities. High speeds also allow home working as well as online medical services in rural areas. High speeds also ensure that there is greater communication and easier interfacing with services including medical, mental health services and government departments. Businesses can benefit from conference calling and home workers which feeds into lowering people's carbon footprint feeding into a whole 'green agenda' currently advocated by the government.

ii. Beneficiaries

Initially it is only cost effective to upgrade or install NGB in higher density areas thus urban dwellers will be the main beneficiaries. As time goes on it will trickle out into the fringes. This can be evidence by the location of unbundled exchanges in Ireland with a few exceptions the majority are in high density urban areas.

² www.oecd.org/sti/telecom/outlook

iii. Favourable Policy

If a favourable policy is put in place that includes tax incentives, it would make Ireland a more attractive business location especially to service industries i.e. financial services etc. Due to the high cost of manufacturing including transport (as an island nation exporting will always be expensive), we need to be attracting more service based industries. These companies require high speed connectivity with low ping and latency times. The goals would be to promote jobs leading to more e-commerce transactions and all the socio-economic benefits outlined in (i) above.

Section 3: Broadband Developments in Ireland

Question 3: How important will cross-platform competition be to the development of NGB Networks? Do you consider that all broadband platforms are capable of supporting NGB? In what circumstances might some such platforms be more suitable than others in providing timely and efficient NGB

Cross platform competition is extremely important to kick start the investment in NGB, however, not all platforms are capable of supporting NGB. Using the definition as set out by ComReg of 25Mbps as being NGB then realistically only Ethernet, copper (utilising VDSL technology), cable (DOCSIS 3.0) and fibre are capable of providing these speeds. Radio technologies such as Wimax and LTE may be able to providing these speeds however, the reliability of such may be compromised due to weather i.e. equipment being damaged in storms and high winds. Also radio is expensive due to spectrum requirements. Rural areas are most likely to be the beneficiaries of high speed NGB utilising radio. Alternatively, where fibre or Ethernet is too expensive to deploy a radio may be used. However, it must be noted that a good backhaul service is required to ensure the high speeds of that radio signal and again this will normally be provided utilising fibre.

Question 4: Do you consider that substantial (both in cost and coverage terms) private sector led investment in the development of NGB networks is likely over the next 3-5 years? If not, and should a gap occur in comparison to other European countries, what will be needed to encourage such private sector investment in Ireland?

Magnet Networks doesn't believe that there will be substantial investment by private investors that will cover a substantial area of Ireland. As has already occurred investors will invest in high density urban areas where a guaranteed return of investment can be accrued and this investment will trickle out to the fringes but not in the three to five year time frame discussed by ComReg. The only way such investment may occur is if there is a re-occurrence of a building boom in the time frame and fibre is placed in these Greenfield sites. This is a highly unlikely situation.

A gap is inevitable with other EU countries due to the lack of LLU takeup in Ireland. Firstly to encourage an investor to invest it is necessary to have a stable regulatory environment. Currently Ireland does not have such regulatory stability due to the numerous outstanding consultations and decisions e.g. intra migrations, lines share pricing and LLU pricing consultations. LLU companies cannot plan products, services or even what exchanges to potentially invest in due to the continuous flux in the LLU regulatory environment. This instability has to be resolved in order for investors to even consider investing in Ireland. The next step would be a strong regulator who is not afraid

of making tough decisions and not afraid of any potential litigation. . An investor will not invest when it cannot be sure of what regulatory environment it will exist in.

A more high level approach should be considered and this would involved tax incentives, tax breaks or rebates for investment in NGB. It could be similar to Section 23 investments. Alternatively a cataclysmic shift in direction could address the situation; this shift would be to functionally separate eircom into 3 distinct parts, wholesale, access and retail. This would create a leveller playing field. It would also encourage competition. As seen in the UK Virgin Media and other operators are competing with BT Openreach to extend their fibre footprint and the number of homes passed for fibre. If ComReg were to take such a bold step and LLU pricing was to fall significantly (current and proposed pricing is still too high and discourages investment) LLU would flourish leading investors up the ladder of investment with NGB being the next rung on that ladder.

Again, Magnet Networks experience in the LLU sphere shows that strong regulation is required to encourage investment. It is very important that the regulator acts in order to prevent margin squeeze, predatory pricing and unfair product bundlings by the incumbent.

Section 4: International Approaches on Next Generation Broadband

Question 5: In what circumstances would any of the above (or other) approaches be appropriate in stimulating NGB roll-out in Ireland? How might such interventions safeguard the development of competition?

Magnet Networks believe that adopting the ‘best bits’ of other more progressed NGB countries it will allow NGB rollout to be stimulated. It also allows Ireland to avoid the mistakes of others. The following are what Magnet Networks feels are the most advantageous use of other countries plans.

1. Korea UKMP (Ubiquitous Korea Master Plan) focuses on transforming work methods across the public and private sector within the continuing theme of improving national competitiveness. These objects don’t require major investment in infrastructure, they require process and procedural changes within companies and state bodies. It is suggested by Magnet Networks that the government lead by example and reform departmental processes to ensure they capitalise and utilise broadband and the internet to conduct business. This will assist in educating a population as well as stimulating operators to invest in areas where government departments are located.
2. In Japan investment is encouraged through incentives such as tax relief, funding and loans and ensuring a promotion of infrastructure improvement. It is up to the government to implement tax incentives etc (and of course this requires an EU approval as not being classed as state aid). Legislative changes are required to promote infrastructure improvement i.e. changing the building regulations to ensure that all new houses have a minimum cable requirement installed in the houses or unit. The government have already suggested a ‘one stop shop’ in relation to infrastructure access and this should be expedited in order to ensure an immediate infrastructure co-ordination plan.

3. Magnet welcomes Denmark's incentive to home workers as the socio-economic impacts align with the reduction in an individual's carbon footprint.
4. Greece's system is admirable however, the government may not have the relevant capital to invest in such a public private partnership. Alternatively investing in such a scheme may reap incalculable rewards.

The Korean and Japanese models of government led changes in work practices would require the government and their departments to develop more efficient work practices and then tendering for services which would require competition and private investment. All other suggestions above would encourage investment and Greece's efforts would appear to the nationwide ubiquity of high speed broadband that the government seem to favour.

Section 5: Next Generation Broadband Enablers and Inhibitors

Question 6: Do you consider that the issues identified are the main enablers and inhibitors of NGB developments or are other issues of greater relevance? Who are the key stakeholders who might be in a position to influence these issues and how might they best do so?

Utilising headings as outlined by ComReg in the discussion paper Magnet Networks will outline what it feels are inhibitors or enablers or make no impact on the rollout of NGB in Ireland.

Asides are items that have an impact and have not been mentioned by ComReg in the discussion paper.

A more significant worry for the service providers is the current stream of litigation that is being brought against operators for being information conduits. This has and will become an inhibitor to investing in Ireland.

1. Market Certainty

The lack of market certainty and take up of services would have been said when the original phone lines were being installed. However, nowadays there are better prediction tools and also companies such as Magnet Networks are doing converged services i.e. triple play (phone, broadband and TV) over fibre and these are popular in our fibre areas. Also in other countries e.g. France and UK where fibre is available these converged products are also popular services. Thus, market certainty, if guaranteed is of course, an enabler; however, the lack of market certainty is not an inhibitor. In the OECD Communications Outlook 2009³ at page 106 it states "The number of DSL subscribers in Korea fell by 16% in one year between June 2007 -08. The situation was similar in Japan with DSL subscribers declining 11% across the country as others upgraded to faster fibre-based subscriptions. This trend is visible as well among incumbent operators upgrading copper lines to fibre to households. Verizon's DSL subscriptions fell by 286,000 (4%) between June 2007-2008 during which time fibre subscribers grew by 900,000 (82%). The growth in Verizon's fibre subscribers has more than compensated for the decline in DSL." As can be evidenced from this quote upgrading attracts greater number of subscribers. Also the provision of converged services will stimulate further demand.

³ Ibid.

2. Competition

There are several aspects to competition and providing to the end user is one however revenue can also be generated through wholesale partnerships (e.g. recent BT/Vodafone deal). Again every marketplace and investment requires careful thinking and taking competitors into account. An investor is front loading their investment but in Magnet Networks experience if an investor is investing that amount of money they have done their research into competition markets, regulation together with demand and potential return and most of all there must a product distinguisher that separates their offering from their closest competitor. Thus, SMP competition inhibits investment due to the advantage the incumbent has with brand recognition, network, access etc, however, comparable small competitors do not inhibit investment.

At clause 5.19 Comreg seem to be putting a lot of faith in wireless as the NGB solution. However, a fibre or Ethernet backhaul is required to ensure the download speeds that the customer requires and expects. Also ex ante regulations are required if wireless is to become a substitute for fixed line. Thus ComReg stating a preference is an inhibitor.

It must be reiterated that the incumbent must not be allowed abuse their dominant position by imposing a margin squeeze or unfairly bundling products in the marketplace. If the incumbent were allowed abuse their dominance then competition would be destroyed across the NGB and LLU Market.

3. Risk sharing, investment and competition concerns.

Risk sharing is neither an inhibitor nor an enabler. At Section 5.22 Comreg states that where co-investment and risk sharing occurs, a separate legal entity encompassing that risk sharing company should be set up to prevent competition infringements and not place any competitor utilising these systems at a disadvantage. Based on this premise it would lead Magnet Networks to believe that this same principle should be applied to eircom limited. This functional separation would ensure transparency; equivalence and all competitors would be on an equal footing. Magnet Networks envisage co-investment only taking place in greenfield sites. Magnet Networks do not see co-investment as the way forward, what Magnet Networks believes is the future will be more wholesale agreements similar to BT/Vodafone relationship. Also, if providers were allowed cross connect in an exchange maybe more exchanges would be unbundled. By allowing cross connection in an exchange there would be no duplication of resources i.e. building into an exchange leading to the currently unbundled exchanges being more competitive and driving operators to unbundle more exchanges. This would allow a reasonable competition in LLU spaces which could possibly lead investors up the ladder of investment.

4. Regulatory Risk

Regulation as it currently stands in Ireland is an inhibitor. The reasons are outlined in the answers to questions 4 and 7. Magnet Networks feels that the regulator has all the requisite powers bestowed on it via legislation, but these powers have not been used forcefully enough. Thus regulatory instability has left companies adopting a 'wait and see' approach which feeds into the delay of investment in NGB.

5. Demography

Demography is not an inhibitor. Realistically investment will only take place in high density areas and will trickle out to the fringes of these urban areas. It will have to be assumed that initially an urban/rural divide will exist where other telecom services will be available such as wireless radio in rural areas. However, speeds between both areas will be dramatically different.

6. Government Policy

Government policy can be a major enabler. However it is important to note that regularity stability is more important than government policy. It is necessary for the government to take the first steps to promote usage. The main steps have been outlined in question 5 above.

7. Demand Aggregation and user network

Demand aggregation feeds into government policy and is a mechanism to teach the population the uses of a high speed broadband leading to the circle of learning and increase demand. If an incentive such as one that allows government employees to work from home would increase demand for high speed broadband in residential areas and decrease that employee's carbon footprint. Also if a tax incentive as previously mentioned was implemented it would hopefully increase employment. By introducing initiatives in schools we educate our future employees whilst providing them with a tool that may lead to innovation and new inventions or new IP based applications.

8. Application driven demand.

Applications will be written for the technology rather than the technology for the application. To re-iterate the adage of the dot come era "if we build it they will come", at the time it was dealing with websites but this adage is apt in the context of NGB. The more bandwidth that is available the more bandwidth intensive applications that will be built to utilise it. Thus, this is more a side effect neither an inhibitor nor an enabler. Applications outlined by ComReg in their discussion paper are really more government led aggregation and government policies more so than stand alone applications.

9. Consumer engagement

Again neither an inhibitor nor an enabler but can be viewed as inhibitor if the service provider does not educate its market. However, sometimes demand has nothing to do with the service provider or government intervention put purely down to media hype. Application such as youtube, iplayer, twitter and facebook have more to do with consumer engagement by the media rather than by the ISP. Also new digital equipment such as digital cameras, smartphones e.g. apple iphone, gaming equipment i.e. ps3 and wii interactive have educated people and created a demand for higher bandwidths.

The key stakeholders are:-

1. Regulator
2. Government
3. Service Providers
4. Application creators
5. Hardware creators i.e. Sony play station, Apple, Nintendo etc.

Section 6: The Role of Regulation in Facilitating Next Generation Broadband Development in the Irish Market

Question 7: Are the areas identified the relevant tools available to ComReg for accelerating NGB investment in Ireland, or could other regulatory levers be as or more effective? What might be the impact of these activities on both the level and timing of NGB developments?

This question is broken down into the headings identified by ComReg in their discussion document.

1. Spectrum policy
This policy is helpful but not the panacea as ComReg seems to think it is. Mobile/wireless figures fail to take account that these may be secondary or backup resources and fixed line is still primary internet access. The test and trial policy for spectrum is commendable and allows innovation.
2. Wholesale access pricing and risk premium.
Wholesale access pricing does require regulatory intervention but as mentioned ComReg needs to successfully regulate the LLU environment first in order to accelerate and understand how to regulate an NGB access network.

It is Magnet Networks suggestion that WACC and risk premium should be split. Maintaining them together is effectively only assisting an incumbent and is not encouraging alternative investors into the NGB environment. People who make big early investments are aware of the risk they are taking but they know if the product is successful they come out big winners. Magnet Networks decided to invest in laying fibre in greenfields sites around Ireland. It is now up to Magnet Networks to market, sell and generally make a success and a return on investment on these Fibre To The Home/Fibre to the Office business. This needs to be done to ensure the success of the product and give the investor his expected return. Likewise an incumbent who upgrades their network outside their core should not be subsidized by their competitors to do this.

At Section 6.34 ComReg seems to state that NGB will not take place until eircom decides it will. This effectively is stating that ComReg are not regulating on an ex ante basis but more on an ex post based on waiting to see how eircom does NGB. Already eircom receive a WACC of 10.21%. No other investment in the current climate would give that sort of return. The energy regulator mandates a 5.2% WACC for Bord Gais and 4.53% for ESB. Though it may be argued that they have longer life expectancy for their assets based on ComReg's recent decision on asset lives it would seem that eircom's WACC of 10.21% may be reduced to the lower end of the WACC spectrum i.e. 7.77% as outlined in ComReg's decision D01/08.

3. Infrastructure Sharing
As far as Magnet Networks are aware no industry member being contacted in relation to the DCENR (Department of Communication, Energy and Natural Resources) 'one stop shop' to outline infrastructure sharing.

Magnet Networks agrees that duct sharing is a superb option in order to lay fibre backhaul between locations and it's a great way to get into industrial areas that are not already fibred. Based on the models outlined in the discussion paper Magnet Networks believe that the French model is the most effective so far. The Dutch model has fallen into financial trouble and may not be able to continue without some form of government investment. The Australian model that though is commendable at the current time may not be suitable for the Irish government. The Swedish mobile model may be suitable to address some of Ireland rural problems but may not be the overall solution for Ireland.

Question 8: Do you see a role for collaborative industry approaches in seeking to agree wholesale models for open access to SMP operator NGB networks? Will infrastructure sharing be critical for early deployment of NGB in Ireland? What do you see as being the appropriate regulatory response in such circumstances, particularly in light of the need to promote effective competition, innovation and incentivise investment?

Magnet Networks feel collaboration is very important in going forward. It is going to be the only way to agree a wholesale model for open access to the SMP operator network.

Infrastructure sharing is an imperative and this feeds into the need for DCENR to invite the industry to an infrastructure open access forum.

The quickest and most appropriate regulatory way to promote competition, innovation and investment is to functionally separate the incumbent.

Question 9: What role has the regulation of investment incentives such as wholesale pricing to play in stimulating the development of NGB networks?

Current regulatory pricing has not gone far enough to encourage operators to invest in LLU and until this has been resolved Magnet Networks can't see how ComReg can regulate NGB effectively without effectively regulating LLU.

Question 10: Is there a case for allowing a differentiated regulated rate of return for Eircom in relation to risky NGA investments, and would this in fact be effective in encouraging early and widespread development of NGB fixed line networks?

An investor in NGB should want to invest and be encouraged by the ultimate rewards and not the subsidy to get them to invest. Magnet feel regulation and a fair price will encourage demand for eircom products and a differentiated rate of return should not be allowed.

16. Open Optics

Next Generation Broadband in Ireland

Promoting the timely and efficient development of high speed broadband infrastructure and services

Ref: Document 09/56

Submission from OpenOptics Ltd.



Foreword

Nine years ago our firm embarked on creating, designing, building, and is now operating Ireland's first Open Access Platform™ for the efficient, future-proofed delivery of next generation broadband (NGB) services in Dublin's prestigious Spencer Dock development. We went on to successfully proliferate our concept and model to multiple and equally significant mixed-use developments of similar stature. We now carry eight of Ireland's leading fixed-line telecommunication operators and/or private telecommunication network providers on our wholly-neutral and open managed fibre optic networks. We service four of Ireland's largest multi-national firms which represent in excess of 6,000 jobs. Our network also services the distribution of residential based service packages to over 1000 residential units. Our project is now extending to include a wireless platform to operate in tandem with our fixed line network, and this is scheduled to come online in the second quarter of 2010. Upon completion of our neutral, open wireless network, we will be supplying and managing network infrastructure to as many as twenty license operators. To our best knowledge, this is the most successful project of its type in the state.

It is with this experience and success that we offer our views in relation to the pertinent discussion of the future of next generation broadband in Ireland and the infrastructure and business models necessary to support NGB services.

Independent Site Management Limited (ISM) the original innovator of our concept has merged with Next Generation Networks Limited (NGN) to form a new enterprise called OpenOptics Ltd.. ISM combined telecommunication property experience with NGN's experience and knowledge of fibre optics to produce the ultimate team to advance real change in the way telecommunications and property development work together.

Over the last decade, the directors of OpenOptics have come to realise that the current infrastructure deployed by the telecommunications operators using legacy networks (e.g. copper and co-axial) would be unable to support the delivery of more advanced services, including NGB. We also arrived at the conclusion that in order to allow a development to offer true neutrality and competition, combined with future-proofed access to various telecommunication operators, it was essential that the developer and the stakeholders control the "last metre."

The debate with Ireland's telecommunication providers as to which technology (e.g. fibre, copper, coaxial, wireless, hybrid, etc.) is best suited to cater for NGB in the near future is flawed from the onset because each provider will defend and put forward arguments that support their legacy network. If true change is sought, a departure from this debate is needed. OpenOptics, with respect to Comreg, would suggest that the true stakeholders in this endeavour are both developers and local authorities as opposed to telecommunication providers. If the last metre was regulated by building code and urban planning laws it could insulate customers from the financial ups and downs and market whims that are associated with large telecom firms.

It is in this respect that OpenOptics proposes a different view and suggests that the most important stakeholders are the property holders and the local authorities, each of whom control the most important part of any given network – “the last metre.”

OpenOptics believes that it is time to move away from regulating EIRCOM, often a fractious, expensive and unrewarding endeavour, and move towards shaping government policy to adopt the best and most ubiquitous medium of delivery, FTTX.

If the debate can be moved from regulating privately owned legacy networks (e.g. unbundling exchanges (LLU) and infrastructure sharing by between telcos) then the stakeholders of this country will have the opportunity to shape the delivery of NGB themselves. This can be done by unbundling the fibre infrastructures owned by the taxpayer alongside the creation of new building codes and regulations, as seen with electricity distribution. This is far preferable to relying on telecommunication providers who, like all businesses, are accountable to their shareholders and have no obligation to the people of Ireland or to achieving EU averages, promoting foreign direct invest, or developing high end ICT industries.

Lastly, but most importantly, is the issue of cost. The widespread adoption of open access technologies will offer huge cost savings whereby previous estimates of costs running to the 100's of millions of euros are no longer relevant. Any required capital investment will be attracted through the consequential return on investment and will be shared by all operators. Our self-financing model has proven that a neutral, managed, layer-one fibre optic network can provide a reasonable return on investment whilst maintaining competition and offering an unlimited capacity to deliver NGB to the end users. To date this has been achieved by working with the property sector and local authorities that afforded the opportunity to bring the future of telecoms to Ireland

Christopher Plockelman, Director – OpenOptics Limited; Managing Director – Independent Site Management Limited

The following represents OpenOptics specific responses to the questions posed in Section 7.1 of the Discussion document entitled “Next generation broadband in Ireland (09/56)”

Re: Section 2: Next Generation Broadband – What is it and why does it matter?

Question 1: What speeds and other quality of service parameters will be demanded by businesses and consumers over the next 3 to 5 years? Please explain your reasoning. Do you believe the market itself will deliver these capabilities and within what timeframe?

It is the experience of the market that the lifecycle of technical products is about 3 years. As the development of new technologies accelerates, it is felt that the assessment of the speeds and quality of service parameters required by the market is subjective and difficult to accurately specify. What is clear, however, is that expectations in these areas will rise considerably. Given the current economic climate, there will be an increase in the use of technology by business to reduce costs through, for example, video conferencing and home working. In the consumer space, we are on the threshold of the deployment of high definition IP television, and we are experiencing an exponential increase in the amount of video and gaming type content sought by our younger population. For example, comscore reports that video streaming has increased by 100% since 2007 with YouTube providing 41% of this content. This points to a situation where it is difficult to accurately forecast demand.

As a result, it is suggested that a strategy for the support of NGB in Ireland should not focus on the services and bandwidths required to deliver future service. Instead, we should be focusing on the medium over which these services will be provided and we should ensure that this medium is future proofed in terms of capacity. We suggest that the strategy should focus on a clearly defined next generation access network (NGA) to support next generation broadband (NGB) and that the only medium capable of delivering this is fibre optic cable.

The position of OpenOptics, given current economic conditions, is that it is not possible for these networks to be delivered solely by the market. It is often cost prohibitive for competing operators to deliver fibre to the office/home outside of high density urban areas, for example much of rural Ireland. Even in suitable areas the cost of delivery of high grade transmission media to business and consumers is excessive due to the duplication of networks and the myriad of media types used to deliver services, including twisted pair, cat 5, co-ax and fibre. It is unrealistic to assume that this behaviour of providing competing networks rather than competing services can be changed in the short-term. It is clear, however, that Ireland cannot afford this wasteful approach to delivering networks. An intervention is required by government to clearly define how best to deliver high specification services and products to consumers, focussing on the area of urban planning and property development, if NGAs are to be delivered in support of NGBs. It is imperative that we "unbundle the telecommunication assets of the State" in support of this strategy as we cannot leave a key economic lever which is central to the economic development of the country solely in the hands of the market.

Question 2: Do you agree that NGB network deployments can provide a socio-economic benefit? If so, who are likely to be the greatest beneficiaries and why? Should the policy framework explicitly favour the development of NGB in Ireland, and with what specific socio-economic goals in mind?

The obvious answer is yes, and the greatest beneficiaries of NGB will be consumers at all levels e.g. government, healthcare, industry, large medium and small enterprise, as well as residential retail consumers.

Open Optics, however, would also like to offer the observation that the real benefits will not be accrued from setting the NGB bar at a finite band-width limit (e.g. 25 megabits per second), but rather from actively working towards the nationwide adoption of open access networks. Modern fibre technology will, by virtue of its enormous capacity, future-proof against all reasonable increases in bandwidth demand.

The policy framework should favour the development of NGB, provided that the resulting networks are developed using the open access ethos and fibre optic technology rather than the obsolescent¹ legacy methods. Our fear is that deployment of legacy networks will take place at the expense of our nation's ability to evolve to meet changing circumstances and increasing demand.

Open access NGB networks will have a broad and positive effect on all levels of customers, for example:

- **Property Developers** – By making their developments much more attractive to foreign investment and commercial and residential tenants by giving them the means to choose their service provider from a broad range of operators.
- **Domestic/Multinational Employers** – For the same reason as above, they multiply their choice of operators. It gives them control over their provider, rather than the current situation where their choice is limited to the operator with adjacent network. In short, it makes Ireland a more attractive place to do business with all the positive benefits that will accrue to our open economy.
- **Operators** – The open access model gives operators access to virtually any potential customer without the need for costly and disruptive civil works in order to install their own infrastructure.
- **A Green Technology** – Fibre optic NGAs offer us the opportunity to deploy passive networks in many instances.

¹ SEE APPENDIX I

Re: Section 3: Broadband Developments in Ireland

Question 3: How important will cross-platform competition be to the development of NGB Networks? Do you consider that all broadband platforms are capable of supporting NGB? In what circumstances might some such platforms be more suitable than others in providing timely and efficient NGB?

In effect, there are only two competing platforms available in Ireland today to deliver wide scale reasonable operating speeds and QOS in the short-term – VDSL and DOCSIS 3. These technologies are fundamentally limited in performance because they are developed for deployment over bandwidth limited networks i.e. co-axial cable and twisted pair. These technologies will meet demands in the short-term and will provide some element of NGB in the medium-term; however, without the deployment of fibre, this will not be true NGB.

It is important to understand that the deployment of a fibre NGA does not limit in any way the types of platforms that can be used to deliver broadband services. The NGA becomes a neutral network over which operators compete on product and services.

It is our view that an intervention is required in the area of urban planning and property development if NGAs are to be delivered in support of NGBs. This intervention should include:

- The clear specification of fibre networks as the only acceptable medium in all future developments and redevelopments,
- The development of minimum telecommunications standards for all future developments and redevelopments to be included in the building regulations,
- A clear statement that these networks should be Open Access and not managed by interested parties,
- The only tradable item should be the dark fibre and equipment location space on these networks and that bodies licensed to manage the networks should not provide any managed bandwidth services,
- The full telecommunications assets of the state should be available to support this strategy including dark fibre and ducting/containment in all government, local government, semi-state and PPP organisations – "Unbundle the telecommunication assets of the State",
- The strategy should encompass both Core and Access Networks including back-haul, and
- Industry regulation should ensure that the internal processes of all operators should be able to deliver the full range of their services and products over fibre cable at a similar price point as those offered on their own legacy networks.

Question 4: Do you consider that substantial (both in cost and coverage terms) private sector led investment in the development of NGB networks is likely over the next 3-5 years? If not, and should a gap occur in comparison to other European countries, what will be needed to encourage such private sector investment in Ireland?

We firmly believe that the telcos do not have the funds to invest in the development of the proper medium of an NGB network. In order to encourage the growth of NGB's, OpenOptics believe that the process should be driven by local authorities and by property owners and developers rather than telecoms companies.

The primary function of the telecom companies, in common with all business, is to make profit for its shareholders. To rely on the telecoms companies to develop and install such a potentially vital part of our national infrastructure would, in our opinion, be to encourage the retention of their obsolescent and costly legacy networks which are in no way capable of evolving to meet the demands of the 21st century.

Once again, the mantra must be "fibre optic, open access networks."

To this end, we feel that the installation of open access networks should be mandatory in all new developments and property developers should be assisted by the relevant regional authority regarding said installations.

Section 4: International Approaches on Next Generation Broadband

Question 5: In what circumstances would any of the above (or other) approaches be appropriate in stimulating NGB roll-out in Ireland? How might such interventions safeguard the development of competition?

By privatising Eircom in the mid-nineties, the government decided that private capital, market forces and regulation could provide the networks and services to support our open economy. What has evolved instead is an uncoordinated deployment of network by multiple providers using different media types. Activity has been limited to urban and commercial locations that offer high revenue opportunities with duplication of networks resulting in competition on access technology rather than service and leading to significant increases in costs. This is evidenced by UPC's recent upgrade of its coaxial network which has provided better speeds and superior delivery of service than present copper networks. They have now surpassed copper-based services in uptake by the consumer because of their network as opposed to the pricing or service offering.

Ironically, the Government has continued to invest in telecoms infrastructure deployed through its semi-state organisations, such as ESB, CIE, Bord Gais and Coillte, who recognised the commercial opportunities presented. Their networks are deployed mainly in the back-haul space with little or no coordination concerning specification or reach. These organic networks have provided only limited opportunities to break up the near monopoly of access to back-haul by Eircom and BT.

The managed access networks (MANs) represents the recognition by Government that the state needs to play a substantial role in the development of telecoms infrastructure in rural Ireland if it is to facilitate high level IT applications and services in those areas. OpenOptics would argue that this should be a nationwide policy.

The MANs were promoted as delivering broadband to residential and business customers, however, they have only been successful in a limited but important way. Analysis of the MANs indicate that they functioned as a catalyst to force movement on back-haul pricing and availability through negotiations with providers such as ESB and BT and through the development of back-to-back SLAs.

However, the MANs do not answer the "last mile" or "metre access" problem due to the high costs of civil works. The concession winner may also have entered into providing managed bandwidth and mast access services in a bid to increase revenue – products that most bidders understood were excluded during the initial bidding process. This has the effect of placing the managing entity in direct competition with the operators it is supposed to be supporting.

It is our opinion that a hybrid approach be adopted by the government regarding the strategic planning of an NGB. Private capital (property stakeholders), in parallel with unbundling the states telecommunications assets², will still be required to develop NGB network; however, the true facts of operating in the telecoms market must be recognised. These are:

- Multiple operators building parallel networks using different media types is wasteful of capital at a time when sources of capital are in short supply and business cases are being rigorously assessed,

² It is our assertion that this could reduce the investment necessary to deploy these networks by 75%. This is evidenced by the success of our own Open Access Platform™.

- Operators are building networks into areas where their maximum penetration rate could be as low as 40%. This just amplifies the waste of investment in the absence of true open access networks rather than promoting leased networks over owned networks, and
- Access to ducts and the high cost of civil works are a significant barrier to entry to capital investment in NGA networks

Re: Section 5: Next Generation Broadband Enablers and Inhibitors

Question 6: Do you consider that the issues identified are the main enablers and inhibitors of NGB developments or are other issues of greater relevance? Who are the key stakeholders who might be in a position to influence these issues and how might they best do so?

The debate in the context of this discussion is the greatest inhibitor of the development of NGB networks. Instead the discussion should be targeted towards the lack of government policy in and around urban planning laws, including building codes and regulations, combined with the under use of state assets. We firmly believe that regulating private enterprise (the telcos) is not the way forward as they are the least likely to influence the development of open access NGB networks (for reasons given in our answer to Q4).

The people who should be leading the charge towards national adoption of open access networks are the property stakeholders and local authorities who must be encouraged at every turn to install such infrastructure in every new development. They should, in our opinion, be incentivised to do so.

Re: Section 6: The Role of Regulation in Facilitating Next Generation Broadband Development in the Irish Market

Question 7: Are the areas identified the relevant tools available to ComReg for accelerating NGB investment in Ireland, or could other regulatory levers be as or more effective? What might be the impact of these activities on both the level and timing of NGB developments?

This discussion paper relates to the roll out of NGB throughout Ireland and our main contribution is to highlight the need to deploy fibre as a medium of first choice to support NGB over NGAs.

It is our opinion that regulation in the telecommunications area can be significantly improved by focussing activities around unbundling the State's telecommunications assets to support NGA roll-out in the back-haul and local access space. Regulation should strive to ensure all network deployed in the future is open access and managed by an entity that only offers dark fibre and equipment space as a product. Open access means that competition must be based on services and products rather than network. In too many cases there is duplication of network reach with a myriad media types. There is no economic benefit to the state if two operators build closed networks to deliver service to the same customer. Consider also the huge costs incurred by operators trying to navigate along our streets and highways. Again, there is duplication at every step of the way. A new paradigm is required and our regulators must clearly state, "No more duplication of network. Networks should be accessible to all and competition should be focussed on service or product. We need to optimise the use of the assets we currently possess."

Regarding the last metre, we have demonstrated that the property holder, in conjunction with suitably qualified management entities, can deploy and manage networks to the benefit of their tenants and stakeholders. This approach enables the property stakeholder to increase the value of the asset by deploying state of the art network and offering tenants cost effective access to a wide range of telecommunications services and products. Proper planning can reduce the deployment of network considerably and once it is open access it offers significant benefit to operators who can deploy demand-led services rather than speculative roll out of network. As pointed out earlier, operators can often only expect to achieve 40% customer penetration. This is the new reality of service provision in Ireland that mitigates against new network build. We feel that regulations for new building development or re-development should support this goal.

Question 8: Do you see a role for collaborative industry approaches in seeking to agree wholesale models for open access to SMP operator NGB networks? Will infrastructure sharing be critical for early deployment of NGB in Ireland? What do you see as being the appropriate regulatory response in such circumstances, particularly in light of the need to promote effective competition, innovation and incentivise investment?

A collaborative industry approach would be beneficial to developing wholesale models for open access to infrastructure; however, this must take place against a background of regulation that defines open access to fibre as the norm in future network roll out.

We have made the point that open access to fibre and competition on product and service is the best way forward. To that end, we have made proposals regarding unbundling state assets, building regulations, defining minimum specification of new telecoms build and the need to empower the property owner in the last metre. The objective is to optimize telecoms investment in network, thus it is our view that infrastructure sharing is critical for efficient and early deployment of NGAs in support of NGBs.

The regulatory response regarding network share could be around the creation of a market for shared infrastructure. If state assets are to be unbundled some sort of pricing mechanism must be developed if operators are to lease access. This pricing mechanism could be extended to encompass other operator networks that are made available for sharing, and opening an operator's network could possibly be a prerequisite for allowing them access to unbundled state assets.

Regarding the management of state telecoms assets the managing entity should have no vested interest in selling on managed services and should focus exclusively on selling dark fibre and equipment space.

Question 9: What role has the regulation of investment incentives such as wholesale pricing to play in stimulating the development of NGB networks?

OpenOptics was able to create a successful, neutral, open, competitive, and future-proofed fibre optic network whilst offering dark fibre to operators at reasonable prices. The management and maintenance of this service is incorporated in the self financing model and affords the developer, who invested the capital cost, a reasonable return on the investment. Upscaling and repeating this model nationwide³ is what we advocate as the way forward.

Wholesale pricing of dark fibre or other such regulatory measures has to be done in such away as to promote the capabilities of these open access networks to be self-financing and to provide return to the investor. The incentive to stimulate development of NGB networks will be diminished if prices are artificially set at levels that prohibit the successful model.

³ Within the context of the environmental, demographic and social factors.

Question 10: Is there a case for allowing a differentiated regulated rate of return for Eircom in relation to risky NGA investments, and would this in fact be effective in encouraging early and widespread development of NGB fixed line networks?

The whole point of insisting on open access to networks is to reduce risk to the operators by removing network duplication and proposing they compete on services rather than infrastructure. Network should be deployed to areas where there is a demand for services and a reasonable rate of return can be obtained.

In these circumstances there is no need to ask any operator to make risky network deployment decisions where shared access is available. The objective of our proposals is to offer operators the ability to lease rather than own network.

APPENDIX I

Author unknown (2009) "The decline of the landline. Unwired". The Economist [internet] 13th August, Available from: <http://www.economist.com/opinion/displaystory.cfm?story_id=14213965> [Accessed on 21st August 2009]

IF YOU want to save money, cut the cord. In these difficult times ever more Americans are heeding this advice and dropping their telephone landlines in favour of mobile phones (see Article "Cutting the cord <http://www.economist.com/displaystory.cfm?story_id=14214847>). Despite some of the flakiest mobile-network coverage in the developed world, one in four households has now gone mobile-only. At current rates the last landline in America will be disconnected sometime in 2025.

Good. Mobile phones offer individuals more freedom. Yet confronted by the inexorable march of progress, America's telecoms regulators have failed to respond. In many ways the landline network is still an essential utility. Maintaining landline networks provides thousands of jobs (the landline operators support more pensioners than even the car industry does). Landlines are the platform for many public services, such as emergency response. And taxes on landlines are the basis of the complex system of subsidies to ensure universal service, meaning an affordable phone line for all.

The phone network is thus not just a technical infrastructure, but a socioeconomic one. The more Americans abandon it to go mobile-only or make phone calls over the internet, the more fragile it becomes: its high fixed costs have to be spread over ever fewer subscribers. If the telephone network in New York State were a stand-alone business, it would already be in bankruptcy. In recent years it has lost 40% of its landlines and revenues have dropped by more than 30%.

But copper landlines are now an obsolete technology. Telephony, once the mainstay of the industry, is just one service that can be offered over broadband connections, which will increasingly depend on new fibre-optic and wireless technology, not copper. Rather than trying to keep a 19th-century technology alive, America's telecoms rules must be updated to foster the roll-out of this new, 21st-century infrastructure. Alas, attempts to reform the notoriously bureaucratic Universal Service Fund, the main source of subsidies to make landlines affordable, have gone nowhere. Everyone agrees on the importance of expanding access to broadband—until it is time to hammer out the specific details. Now Barack Obama wants a national strategy. He would do well to concentrate on two things his country needs in the future, not the past: better and more reliable wireless coverage; and more broadband connections, through fibre-optic cables and high-speed wireless links (for both voice and data). America ranks 15th in broadband penetration among OECD countries.

Kept on hold

America's advantage is that so many people have gone before it. To extend wireless coverage to rural areas, where subsidies are inevitable, India has an elegant reverse-auction scheme, under which the supplier who asks for least cash to supply a particular area wins the contract. With broadband networks, the role of the state has less to do with limiting handouts than increasing choice. Fibre-optic networks can be run like any other public infrastructure: government, municipalities or utilities lay the cables and let private firms compete to offer services, just as public roadways are used by private logistics firms. In Stockholm, a pioneer of this system, it takes 30 minutes to change your broadband provider. Australia's new \$30 billion all-fibre network will use a similar model. There are hard choices for Mr Obama's people to make—but sticking with old rules devised for copper wires is not one of them.

17. Satellite Broadband Ireland

Satellite Broadband Ireland¹

Section 2 : Next Generation Broadband – What is it and why does it matter ?

- Q1. The minimum speeds and services demanded by business' and consumers we would expect to be in the region of 40-50Mbps download and 5-10Mbps upload. We believe that this is the minimum expectation required to run a Next Generation Broadband network where business customers and general consumers would be relatively future proofed for accessing such services as IPTV, Digital & HDTV, online streaming of video, VOiP and other emerging services such as 3D-TV. Our belief is that the market will deliver these services as that is the way it is currently headed, with or without state-aid intervention. With regards to satellite services, Satellite Broadband Ireland will be able to deliver minimum speeds of 50Mbps from early 2011 with additional services being offered simultaneously such as VOiP and TV. The expected time period for a NGB network using a multiple of technologies would arguably be done in the next 5years.
- Q2. Having a Next Generation Broadband network deployment with minimum expected speeds from 50Mbps will undoubtedly provide positive socio-economic benefits throughout the country but this is dependent on the deployment and penetration in Ireland. Currently in Ireland cities and the larger towns benefit from a good broadband service, either through fibre or by way of a good quality DSL service due to their proximity to their nearest exchange. The greatest beneficiaries are likely to be the rural population who could avail of a good broadband service which would bring to them opportunities and services that they previously couldn't avail of. Also, historically Ireland has cultivated an entrepreneurial spirit and having connectivity to all parts of Ireland on a NGB service would enhance this and invigorate the once bad rural broadband service.

Section 3 : Broadband Development in Ireland

- Q3. Cross platform competition is vital to ensuring an effective roll-out of a NGB service. In order to effectively guarantee the roll-out to all areas of Ireland you will have to consider a Fibre, Wireless and Satellite service that would be equally important in delivery to the relevant areas, both urban and rural. Obviously the more rural the location the more a wireless and Satellite option will play a part. As I referred to earlier, our next generation satellite service will be delivering speeds of 50Mbps download with 10-20Mbps upload and with the guarantee that we can cover 100% of the country there will be large pockets of populations that will not be able to avail of a fibre based solution, or indeed a good DSL/Wireless network. Satellite must be considered as a viable alternative for the rural and in certain cases the urban population. With the advances in technology, similar to the Wireless and Fibre sector, Satellite technology has evolved significantly from only a number of years ago to today where we can deliver a 3.6Mbps service, anywhere in Ireland at prices comparable to DSL. Another mitigating factor is that our satellite service is in existence and with the launch of KA-SAT in mid 2010 and the speeds obtained from this satellite we could guarantee NGB services years before wireless technology would be available through the proposed LTE rollout.

Section 4 : International Approaches on Next Generation Broadband

- Q5. I had proposed through a semi-public body committed to rural development and improvement a voucher type scheme where the rural population could avail of broadband

¹ Note: The response provided directly in and email but has been transferred into a document format for ease.

through a pre-approved vendor and they could obtain funding from the EERDF. The recent announcement in Europe to make available €1.02b to EU states, with Ireland availing of €26.33m was a welcome step towards delivering broadband to rural areas. This proposed voucher scheme could bring a guaranteed broadband solution to areas un-served immediately.

In summary, a collaboration is urgently required by industry to deliver a NGB network for Ireland. The floated proposals of a FTTC & FTTH network with wireless option of LTE is a good proposal but Satellite should have its place amongst these as a provider to rural Ireland. It is not only geared up to deliver a broadband service, but with the additional value added services such as VOiP and TV it is a vital player in the deployment of NGB.

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18. South East Regional Authority



**South-East Regional Authority
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Submission to the
Commission for Communications Regulation (ComReg)
Discussion Document (Doc. No. 09/56)
“Next Generation Broadband in Ireland”

August 2009

Introduction

The South-East Regional Authority (SERA) welcomes this opportunity to submit its views to the Discussion Document “Next Generation Broadband in Ireland”, the outcome of which should set down a framework through which the State future-proofs its telecommunications infrastructure. Broadband is one of the, if not the, key pieces of infrastructure required for economic and social development, particularly in the context of the development of a knowledge economy with a focus on research and development. Broadband availability has also been identified as critical to ensuring that balanced regional development, a key objective of the National Spatial Strategy and successive National Development Plans, is achieved.

The South-East Regional Authority (SERA)

The SERA is one of eight regional authorities established in Ireland in 1994, under the provisions of the Local Government Act 1991, (Regional Authorities) (Establishment) Order, 1993. The Authority comprises 37 elected members nominated by the six constituent local authorities in the region. The principal functions of SERA include: promotion of co-ordination in the provision of public services in the region; promotion of co-operation, joint action, etc. between local authorities, public authorities and/or others; reviewing the overall development needs and investment priorities of the region; preparation of statutory Regional Planning Guidelines and reviewing Development Plans of local authorities in the region.

The South-East Region

The South-East Region covers the counties of Carlow, Kilkenny, Waterford, Wexford and South Tipperary. The area of the region is 9,406 sq. kms., (which is about 13.5% of the area of the state) and the population is 460,838. The region is predominantly rural in character with the main urban centres being Waterford City, Kilkenny City and the towns of Carlow, Clonmel and Wexford. The region has a balanced urban structure with the main urban centre in each of its five counties having a population exceeding 17,000. In addition, it has a range of smaller towns and villages evenly distributed across the region as well as a strong rural settlement pattern.

SERA and Broadband in the Region

The SERA has been to the forefront regionally in recent years in developing and promoting Information and Communications Technology (ICT) and broadband – from setting out the broadband and associated requirements of the region in policy frameworks to the physical construction of broadband infrastructure throughout the region. Briefly detailed below are some of the principal areas of Authority involvement:

- *‘SEISS’ Regional Information Society Strategy*
The Authority developed an Integrated Regional Information Society Strategy and Action Plan in 2001. Its purpose is to ensure that the South-East Region does not slip behind in the rapid global development of the information society and that the

region at every level is fully geared up to maximise the benefits and opportunities that these developments offer to those that are prepared.

- ***The South-East Broadband Projects - Phases I and II***
These projects, carried out under the government's Regional Broadband Programme, entailed the construction of fibre-optic broadband Metropolitan Area Networks (MANs) in eleven cities/towns in the region – Waterford, Kilkenny, Carlow, Clonmel, Wexford, Dungarvan, Tipperary, Cashel, Cahir, Thomastown and Carrick-on-Suir. This involved the laying of almost 150 kms. of duct, sub-duct and fibre-optic cables and the provision of co-location facilities in these centres.
- ***Regional Broadband Programme - Phase III***
As part of the Department of Communications, Energy and Natural Resources (DCENR) considerations for a Phase III of the Broadband Programme, the SERA has submitted a priority list of nine towns to be a part of Phase III – Enniscorthy, New Ross, Gorey, Tramore, Bagenalstown, Tullow, Callan, Castlecomer and Dunmore East.
- ***County and Group Broadband Scheme (CGBS)***
The CGBS provided broadband to communities with a population up to 1,500, mainly in rural areas or in underserved areas of larger urban centres. It was discontinued by the DCENR at the end of 2006. The SERA employed a Co-ordinator to promote the Scheme and to assist in the preparation of applications. In total eleven projects incorporating 94 communities in the South-East were approved by the DCENR for funding. Roll-out of the DCENR's National Broadband Scheme (NBS), the successor to the CGBS, commenced earlier in 2009.

Issues for Consideration

The following issues/points are raised by the SERA for consideration by ComReg in this consultation process:

- 1) Leadership Role by Government;
- 2) Improving Competition and Availability of Advanced Service Offerings;
- 3) Regional Differences in Broadband Performance – Backhaul;
- 4) Regional Differences in Broadband Performance – Rural Areas;
- 5) Stimulating Demand for Broadband Take-up;
- 6) Strategic and Inclusive Approach to Implementation at Sub-national level.

1) Leadership Role by Government

The Government must continue to provide a clear and strategic leadership role with regard to broadband. It needs to ensure that the availability of broadband is seen as a basic infrastructure utility, in the same light as electricity, water and waste water, and that the

development of Next Generation Broadband (NGB) receives the proper resourcing (policy, financing, etc).

A related point is the role that local authorities can play. Local authorities partly paid for the construction of the MANs and own the MANs (with the State). Despite this close involvement, there is no incentive provided to them to directly participate in the take-up of, or do anything with, the MAN infrastructure. Local authorities exist at the local level and, if correctly utilised and resourced by Government, can 'champion' the MANs. In addition, the rate of connection by local authorities to the MANs has been relatively slow. The local authorities should be leading by example in connecting to their respective MANs and acting as local reference examples advocating the use of broadband.

2) Improving Competition and Availability of Advanced Service Offerings

Competition between and within platforms in the Irish broadband market is gathering pace, but from a very low base. Whilst coverage is still important (particularly to areas without access), speed of connection, resilience and the applications that can be supported are becoming key issues. Government policy and the regulatory environment must ensure that service providers are allowed to compete freely and aggressively across all platforms so that consumers and businesses are the ultimate beneficiaries.

3) Regional Differences in Broadband Performance - Backhaul

A key Government objective in the current National Development Plan is the achievement of balanced regional development. The location of indigenous and foreign direct investment in the regions will be critical to this. The availability of adequate broadband services will be an important factor in the location choice for any investment. The roll-out of the MANs is an important step towards supporting the broadband needs of enterprise in the regional locations. Nevertheless, the MANs will represent isolated "islands" unless they have competitive backhaul capacity to connect to national and international nodes and to each other. For MANs to truly maximise their potential, they must have backhaul that is effective, efficient and not overly expensive. Also, real competition must exist between backhaul providers for their service. The Government needs to implement innovative options to extend and open-up the backhaul network. A possibility in this regard is integrating all existing fibre-infrastructure networks of state-owned utilities to create a comprehensive state-wide fibre broadband backbone network.

4) Regional Differences in Broadband Performance - Rural Areas

Due to Ireland's demographic profile, providing a high-quality broadband service to certain rural areas at a reasonable cost to the consumer is a challenge. But it is one that must be tackled by Government in order to ensure that the present "digital-divide" between urban and rural areas does not widen further. If left solely to the market, rural areas will suffer a market failure in terms of broadband availability. Government intervention is warranted. If properly implemented, the roll-out of the long-awaited NBS will go some way to addressing this.

Mobile broadband and wireless technologies are shoring-up the limitations of fixed-line options in providing last mile solutions to these rural areas. An opportunity exists for Ireland to become “world-class” in the delivery of broadband solutions in areas of dispersed population. The Government should be strongly encouraging and supporting leading-edge research and development by the education and private sectors in such technologies.

5) Stimulating Demand for Broadband Take-up

Further actions are also needed to stimulate demand for broadband take-up. Initiatives to promote more sophisticated use of broadband by the general public and SMEs, enhanced e-government services and a more integrated and intensive approach to ICT education could spur broadband demand and investment.

Collaborative Industry/Government sustained marketing, publicity and demand stimulation campaigns highlighting the benefits of broadband are required. In terms of designing demand stimulation campaigns there is a need to give practical examples in non-technical language of how the ordinary citizen and the business process will benefit from broadband technology – terms such as ‘1 meg. or 100 megs.’ are meaningless to a majority of people other than implying high costs. Another option may be Regional Road Shows and mobile demonstration facilities to demonstrate the usefulness of ICT and broadband.

The present day school-going population represents the future market for broadband services. All school-going children must, equally, be provided with the means, opportunities and facilities to become ICT-proficient. Providing broadband access to schools under the Broadband for Schools Programme must represent only the first step in the integration of ICT into learning and education. Key to achieving this will be the provision of appropriate ICT-related professional development of teachers, provision of adequate time on the school curriculum for ICT activities and the continual upgrading of both ICT equipment and broadband access to keep pace with technological advances.

6) Strategic and Inclusive Approach to Implementation at Sub-national level

While the present consultation process is welcome, the Government and the DCENR should nevertheless adopt a more inclusive and strategic approach for driving forward and coordinating NGB development in Ireland.

In particular, Government should utilise the potential and resources that exist in regional and local authorities and in other appropriate agencies at sub-national level to implement a well-defined strategy for promoting and delivering ICT and NGB initiatives at regional and local level. Good examples of what can be successfully achieved are to be found in the role that the regional and local authorities play in the implementation of the MANs Programme.

The successful implementation of Government policy in this area will depend upon support from a number of different agencies and to achieve that support will require the development of close working relations between these agencies. Appropriate structures to co-ordinate implementation and to facilitate ongoing monitoring and evaluation will need to be put in place. This will involve considerable horizontal and vertical integration.

At national level, there is a need for the DCENR to link across all Departments which are impacted by NGB roll-out, e.g. Education and Enterprise, Trade & Employment. At regional level, an integrated, co-ordinated approach should operate within defined territorial boundaries. It is strongly recommended that the Regional Authority structure be utilised for this purpose. NGB development is a key requirement for the achievement of balanced regional development for which Regional Authorities are tasked to implement at the regional level. Through utilisation of the Regional Authority structure, linkages can also be created with the National Spatial Strategy and Regional Planning Guidelines implementation process. At local level, it will be important that structures to provide local support and linkages are in place. Local authorities, County Development Boards and County/City Enterprise Boards, amongst others, have a role to play in this regard.

Conclusion

The SERA, if requested, would welcome and is available to meet with ComReg to discuss its submission further, in particular, the role that the SERA can play in the delivery and implementation of NGB in Ireland.

19. The Number

Response to Comreg's Discussion Document 09/56:

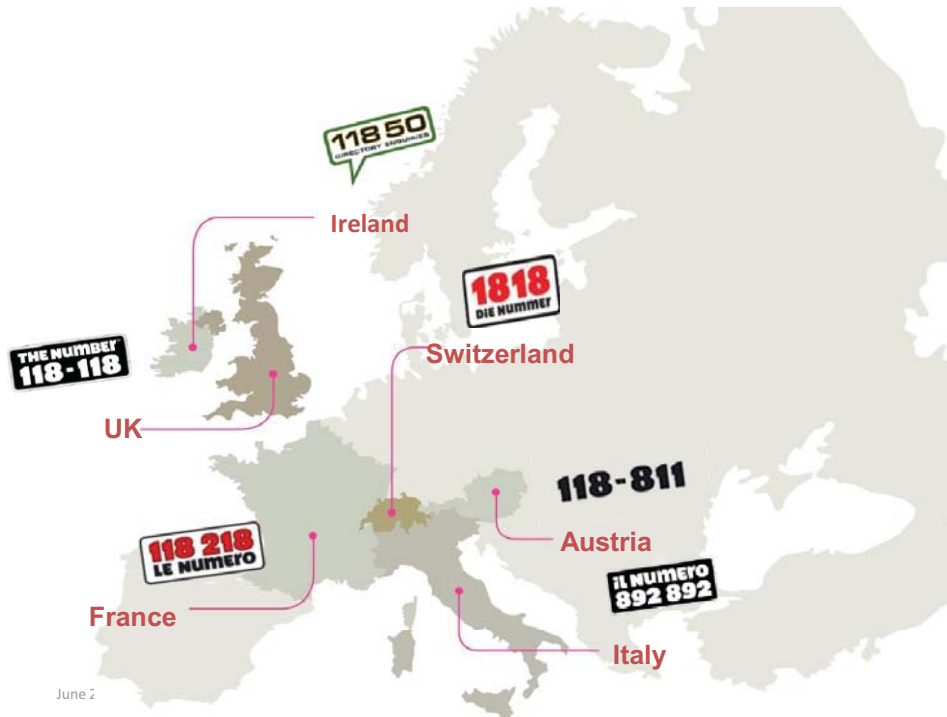
Next Generation Broadband in Ireland



THE NUMBER

Introduction to The Number

The Number is the largest provider of directory enquiries services in Europe with operations in 5 EU Member States and Switzerland. It is best known in Ireland for its 11850 service.



1. PRELIMINARY REMARKS

The Number welcomes the opportunity to comment on Comreg's Discussion Document on Next Generation Broadband in Ireland (hereafter "the Document").

As a directory enquiries provider, the Number has the status of an Electronic Communications Service Provider, has its own infrastructure and interconnects with access operators (either physically or logically). One of the main drivers of its retail price levels are the mark-ups the access operators charge to connect their customers to the directory services of The Number, mobile origination costs being especially high.

As highlighted in an article published in the Irish Daily Mirror on 25 August 2009:

But it is not only the operators of the service who are to blame, phone companies such as Vodafone and O2 are also greedily grabbing a slice of the profits.

It works like this – a customer rings one of the 118 directory enquiries numbers but is charged twice. And that’s without even being put through to the number.

The first charge is for the call to find the number you want, but the second is for the pleasure of using the network run by your phone company.

For a service provider such as The Number, the following issues must be addressed by Comreg in any policy or regulatory instruments it adopts relating to next generation broadband:

- **Open access** must be ensured as services and applications migrate from legacy PSTN to next generation infrastructure.
- **Fair competition** must be preserved and enhanced.
- **Seamless switching** must be ensured during the migration from legacy PSTN
- **Cost-orientated access**, and rebalancing mechanisms to guarantee that the levels of charging for voice services do not increase on either the legacy PSTN or next generation infrastructure
- A clear **prohibition for regulators to inflate the costs** of legacy PSTN/copper costs in order to fund next generation access.

2. SPECIFIC COMMENTS

Question 1: What speeds and other quality of service parameters will be demanded by businesses and consumers over the next 3 to 5 years? Please explain your reasoning. Do you believe the market itself will deliver these capabilities, and within what timeframe?

Broadband should not be defined solely on the basis of a speed threshold, as such a definition is bound to not be future-proof. Broadband should be seen as unfettered data access, and not defined solely on the basis of data rates. It should be about “what” it enables to do, not about the size of the pipe.

Considering the definition of NGB put forward in this Document, i.e. as covering not only fibre but also scenarios where the infrastructure still relies on the copper networks but switches from PSTN to IP with a “significantly” higher bandwidth, it is crucial to understand that any regulation or intervention in the field of NGB must be conceived to address situations already occurring today, and not take into account only heavy fibre roll-out scenarios that may or may not occur in a remote future.

Considering this, it is very important to ensure at the wholesale level that competitors’ ability to provide new services is not foreclosed and that independent service providers have **fair open access** to Next Generation Broadband.

The Number, as a directory service provider operating in 5 Member states, exists purely by virtue of its service to consumers. Our future, as well as the future of many independent service providers is under threat.

This is illustrated currently in the UK, where the incumbent operator BT is using the move from one technology (voice over legacy PSTN) to another (managed VoIP/VOB) to restrict consumer choice and to restrict competition.

Consumers using BT’s managed VoB service (BT Broadband Talk) are being denied the right to access services such as 118118 (the most called phone number in the UK) that are available via traditional PSTN calls on BT’s network. BT has “*over two million registered consumer customers*”¹ for its VoIP-based services of this kind. Only 118500, BT’s own Directory Enquiries (DQ) service is available for customers of BT Broadband Talk. BT does not accept that it has an obligation to enable third parties to provide Directory Enquiry services to customers of BT Broadband Talk – instead treating it as a product where wholesale access is to be negotiated on a purely ‘commercial’ basis.

After a year of negotiations, the lowest proposed charges to The Number for BT customers to be able to call 118118 from BT’s managed VoB access services are over 15 times the level of charges today levied by BT for their customers to call 118118 from traditional landline services.

This is an example of an incumbent’s approach when it believes it is ‘outside’ regulation for wholesale and retail services. The commercial wholesale access pricing is prohibitive and competition between services such as DQ services is eliminated. In light of this case study, **Comreg should pay close attention to the risks associated with deregulating the voice retail markets, as incumbents switch to an all-IP environment.** Regulatory rules on

¹ BT Group - 2008 Annual report

traditional landline networks have been clear and have delivered open, non-discriminatory access to service providers like The Number to offer their services to customers. Most incumbents in Europe charge a regulated, cost-orientated price to bill their customers for 118118 calls made from traditional fixed lines. A similar situation must be replicated when incumbents leverage their market dominance into the IP environment, especially as access will remain an enduring bottleneck.

Achieving open access will **extend** consumer access to improved communications services and content. Failure to create this environment now will mean large operators stifle innovation and competition, and consumers will suffer.

Consumers want phone services that work and are affordable. They do not care about the technologies and regulations that underpin them. Policy and ensuing regulation must focus on how to enable reliable services to be available from phones of any kind, and require regulation that achieves that goal.

Question 2: Do you agree that NGB network deployments can provide a socio-economic benefit? If so, who are likely to be the greatest beneficiaries and why? Should the policy framework explicitly favour the development of NGB in Ireland, and with what specific socio-economic goals in mind?

NGB network deployment can provide a socio-economic benefit but it requires careful monitoring and controlling by the regulator of the migration process from legacy PSTN to NGB. The Number regrets that this Document does not sufficiently examine the challenges that face Comreg and the market during this migration process, and believes more thought should be given to this issue.

Consumers today use electronic communications infrastructure for 3 main purposes: (1) voice (fixed or mobile); (2) SMS and (3) broadband.

Switching to next generation infrastructure will only be wise if consumers gain improvements for these three services. These services should either become better (e.g. higher bandwidth in broadband) or cheaper. At worst, these 3 services would continue to offer the same benefits as today when used via NGB, with added benefits gained from new services in addition. If the move to NGB is managed in such a way that causes consumers to end up with fewer benefits than today for these 3 core communication services, then the policies are flawed and consumers will rightly feel cheated.

In parallel, from an operator's point of view, it is considered that the 3 main NGB drivers for incumbents are:

- (1) reduce operational costs (typically between 30% and 40%);
- (2) enable new services (e.g. HDTV); and,
- (3) protect their market share and launch win-back campaigns by leveraging the fact that they own bottleneck assets and still benefit from legacy advantages.

Voice is typically a service that will not benefit from a surge in quality due to the transition to next generation infrastructure. More importantly, it runs a serious risk of becoming more expensive, both on the legacy PSTN infrastructure and on the new fibre infrastructure, if cost calculations continue to rely on LRIC, without rebalancing mechanisms.

In other words, the Number believes that Comreg should issue detailed transitional guidance as regards the issue of migration from current networks to next generation products and networks and put in place safeguards to ensure that service providers such as directory providers do not end up being squeezed out of the market.

This includes specifying that Comreg should be consulted on every step relating to migration by the incumbent in advance, such migration being conditional upon the **prior approval** of Comreg. Moreover, Comreg should conduct a thorough analysis to ensure no double counting or wrongful attribution of costs or risks occurs between copper/PSTN and fibre networks.

For example, Comreg should not allow for costs to, on the one hand, include a “risk” factor based on low penetration expectations for NGB and on the other, an increase of the legacy PSTN costs based on the assumption that demand (including self-supply) for unbundling and bitstream will reduce significantly.

Question 3: How important will cross-platform competition be to the development of NGB Networks? Do you consider that all broadband platforms are capable of supporting NGB? In what circumstances might some such platforms be more suitable than others in providing timely and efficient NGB?

The Number has no specific comments on this issue.

Question 4: Do you consider that substantial (both in cost and coverage terms) private sector led investment in the development of NGB networks is likely over the next 3-5 years? If not, and should a gap occur in comparison to other European countries, what will be needed to encourage such private sector investment in Ireland?

Question 5: In what circumstances would any of the above (or other) approaches be appropriate in stimulating NGB roll-out in Ireland? How might such interventions safeguard the development of competition?

Comreg’s summarises the adopted NGB intervention strategies in Table 3 of the Discussion Document as follows:

Table 3: Summary of A dopted NGB intervention strategies across a range of countries

Government Led Approaches
<ul style="list-style-type: none"> • investment either in terms of funding (fully or co-financing) or loans for infrastructure development, in some cases in return for the creation of an open access network. • investment in applications/content development. • availability of tax relief’s for private sector led investment • providing private sector with access to government owned infrastructure such as ducting, sewers etc. • opening up access to bottlenecks in privately owned infrastructure typically through legislation requiring open access to internal building wiring or amendment of building regulations to require necessary communications infrastructure is installed in newly built houses and is made available on an open access basis to any communications service provider • demand aggregation initiatives whereby communities are brought together to create the critical mass required to encourage private sector NGB development. • national certification schemes and public information campaigns to allow consumers to check fibre network coverage (and suppliers) in their area. • making certain government funded services available online (e-health, e-education) and encouraging similar private sector enterprises to do so
Market Led Approaches
<ul style="list-style-type: none"> • regulatory authorities generally facilitating the promotion of competition by opening up access to bottleneck infrastructures operated by dominant operators (such as ducting, dark/’lit’ fibre) • regulatory authorities approaches on the level and type (if any) of wholesale pricing regulation taking into account the degree to which SMP players open up their networks • regulatory authorities examining if and how NGB risks can be factored into wholesale pricing of NGB services • companies themselves opening up their networks and providing services on a wholesale basis to other parties

The Number finds this description extremely interesting and believes that though many of these approaches have merit, they need to be accompanied by the right safeguards. The Number is a strong advocate of the benefits of requiring open, non-discriminatory access to networks. This approach benefits networks, service providers and consumers.

The most effective way for networks to reclaim investment costs is to accelerate deployment in an open manner which enables access by third party services.

Ad Scheepbouwer, CEO of KPN (the Dutch incumbent) has experienced the benefits of working with open networks. In February this year he said,

“In hindsight, KPN made a mistake back in 1996. We were not too enthusiastic to be forced to allow competitors on our old wireline network. That turned out not to be very wise. If you allow all your competitors on your network, all services will run on your network, and that results in the lowest cost possible per service. Which in turn attracts more customers for those services, so your network grows much faster. An open network is not charity from us, in the long run it simply works best for everybody.”

In terms of Government led approaches, the key principle should be that state aid should only be granted if there is open access for services, application and content

In other terms, the beneficiary of state aid should be mandated to offer a non-discriminatory wholesale access product and state aid measures must be conditional upon:

- (1) third party services such as directory services being accessible to all customers based on fair wholesale call origination terms and conditions, including cost-orientation;
- (2) an ‘any-to-any’ connectivity obligation being imposed on the beneficiary.

Moreover, **beneficiaries of such state aid should have to comply with these obligations on their entire network** - both on the state aid funded NGB part and on the rest of the broadband network (be it NGB or copper based). Fibre based access products are a continuum to copper based ones – they are not distinct services - and the networks built using state aid will not function “in closed circuit”. Build out through state aid in underserved areas is not an isolated initiative. The resulting network interconnects to the rest of the network of the infrastructure provider. An open access obligation that covers services, applications and content therefore needs to apply to that entire network to ensure that it is meaningful. The access network remains a bottleneck irrespective of the underlying technology and speeds and all physical or virtual access products are in the same markets, market 4 and 5 respectively as defined under the Relevant Markets Recommendation.

From a Directory services perspective, **users should be offered the opportunity to have their contact details included in a directory**. In line with the principle of technological neutrality, users that use a voice service, regardless if it is provided over legacy PSTN or over an all-IP NGB network, should have the right to be included in directories and should be clearly offered that opportunity as is requested under the EC Universal Service Directive.

In terms of Market led approaches and the need for the regulator to intervene, we refer you to our answer to question 6 below.

Question 6: Do you consider that the issues identified are the main enablers and inhibitors of NGB developments or are other issues of greater relevance? Who are the key stakeholders who might be in a position to influence these issues and how might they best do so?

The Number is pleased to see the repeated emphasis put by Comreg in this Document on the beneficial role played by competition, notably in the statement that *“Competition and the threat of competitors making crucial investments first, can also drive companies to commit to investment in NGB”* (pg. 7).

Equally, we fully agree with Comreg’s remark that highlights the importance of demand *“Notwithstanding the existence of an NGB network, (...) consumers will not necessarily use it unless they see a compelling need to do so. This need typically manifests itself in the desire to use a key service or application which requires NGB (a derived demand)”* (pg. 42).

Comreg should consider that preserving the derived demand for NGB created by the innovative services and applications made available over broadband, often at no or little cost, is one of its priorities. By stating that *“there may be a role for risk sharing both between communications firms but also with companies that expect to benefit from the ability to sell their services directly to consumers over NGB networks”*(pg. 45), Comreg seems to indicate that it is considering a tiered Internet model that would put an end to the current “best efforts” model in place. Many service, application and content providers will **not** see an increased benefit for their services to be delivered over NGB, as compared to the current legacy infrastructure. This is true for directory enquiry providers, but more generally for most of the non high-bandwidth consuming service, application and content providers that make up most of the Internet offering available to users. For them to be penalised for a risk taken by the access providers they have not asked for, certainly seems absurd and unacceptable.

The Number believes that competition is crucial in the delivery of choice to consumers. In every market, The Number, as a DQ service, must be accessible from every network (both fixed and mobile) for either legal reasons (e.g. universal service obligation for directory services to be reachable from all networks) or simply commercial reasons (it makes little sense for a directory service provider, in light of the volume of traffic it attracts, to only be reachable on certain networks). At the same time, in most if not all markets, The Number’s main competitor is usually the directory service provider from the vertically-integrated incumbent.

The Number therefore needs access conditions to be reasonable, fair, and cost-oriented, to ensure that consumers can (1) reach its services (2) at an affordable price. So it’s all about access!

The focus of Comreg's interventions and monitoring should be on a continued consumer access to an infrastructure that is open and ensures choice for consumers and the possibility for Communications Providers to deliver new services over infrastructure as innovation occurs. This approach is equally true for next generation infrastructure at core and access levels.

It is therefore very important to ensure that at the wholesale level competitors' ability to provide new services is not foreclosed and that independent service providers have **fair open access** to Next Generation Broadband, with the ability to bill for services and set fair and consistent prices for all customers. **Without this, competition in telecoms is threatened and consumers suffer through lack of service availability and increased prices.**

Question 7: Are the areas identified the relevant tools available to ComReg for accelerating NGB investment in Ireland, or could other regulatory levers be as or more effective? What might be the impact of these activities on both the level and timing of NGB developments?

Question 8: Do you see a role for collaborative industry approaches in seeking to agree wholesale models for open access to SMP operator NGB networks? Will infrastructure sharing be critical for early deployment of NGB in Ireland? What do you see as being the appropriate regulatory response in such circumstances, particularly in light of the need to promote effective competition, innovation and incentivise investment?

Multi-operator deals are in principle a positive scenario, but the model that would be considered acceptable should be analysed in-depth to avoid gaming by dominant firms and to ensure that it is genuinely compatible with the competition law concept of 'effective competition'. Multi-operator deals should not be considered as contributing to effective competition unless the terms and outcomes resulting from such arrangements are found through a market analysis to genuinely indicate absence of significant market power.

It should certainly be the case that Comreg should not consider that duopolies or oligopolies are an acceptable outcome of the switch to NGBs.

Question 9: What role has the regulation of investment incentives such as wholesale pricing to play in stimulating the development of NGB networks?

Question 10: Is there a case for allowing a differentiated regulated rate of return for Eircom in relation to risky NGB investments, and would this in fact be effective in encouraging early and widespread development of NGB fixed line networks?

The emphasis given by many policy makers and regulators to the risks taken by the operators investing in NGB seems to indicate that the electronic communications sector has some kind of specific set of circumstances whereby upgrading one's infrastructure and adapting to demand is unusually risky and should be rewarded, whilst sweating out obsolete assets that were largely funded by taxpayers should be seen as the norm. Incumbents are facing heavy investments because they have, to a large extent, not invested enough in the past.

The switch from copper to NGB will require investment but entails marginal risks when incumbents (as is the case in most if not all Member States) continue to have a predominant market share and control over the last mile bottleneck.

AT PSTN LEVEL:

NRAs should take care not to allow over-recovery on traditional PSTN networks on the basis of arguments that traffic has reduced yielding linear effects in static cost models. Price calculations are generally smoothed and should already have factored in asset lives or should be appropriately forward-looking. This implies that, where the copper network is expected to be phased out, Comreg will have to put in place a transitionary scheme to avoid over-recovery by incumbents.

AT NGN/NGB LEVEL:

Logically, since next generation infrastructure should imply additional capex costs (but decreased opex) but also higher functionality than the legacy PSTN, operators must utilise the new functionality to collect revenue from a wider range of services, thereby ensuring an economically viable investment. This is why many operators have a "triple play" strategy, involving delivery of Internet, television (Video on Demand, VOD or Live Stream) and voice on the next generation infrastructure.

Determining a "cost based" price for voice on an NGN will be difficult using the conventional economic (LRIC) approach and, if implemented, may lead to pricing anomalies between voice and broadband NGN services, which may not be priced on the basis of network resource usage, if incumbents are allowed to use charging mechanisms that rely on the perceived value of a service to the end-user rather than the real cost associated to that service.

For example, Video-on-Demand (VOD) may use massive bandwidth resources, but the service price is likely to be set by the comparable cost of hiring a DVD or subscribing to a conventional television service. In comparison, Voice over Broadband may use very little bandwidth, but may be of much higher value to the end user than VOD on a per kbit/s basis. Incumbents argue that if NGB voice service prices were regulated to a very low level, based

on network resources used, the impact on the market could be a corresponding reduction in the ability of operators to invest and to re-coup their existing investment in widespread broadband infrastructure. The rollout of NGB should not result in higher charges for voice services than would be fair and reasonable (based on bandwidth usage, and in comparison to landline pricing today), but a subsidised, artificially low cost of bandwidth for VoD, then it would be a perverse outcome and would question why NGB migration should be encouraged for consumers.

For a consumer, VoIP calls have been synonymous in most cases to free or very cheap calls. The reason is that, the cost of delivering a VoIP call to an IP user today is principally borne by the called line in terms of its ongoing broadband access and traffic charges. This is how things work now, and it would be unacceptable if, as a result from switching to NGB, voice over IP calls suddenly became much more expensive, or for that matter voice over any platform calls.

We also understand that certain claims have been put forward by incumbents and even policy-makers to artificially increase the cost of voice traffic over the legacy PSTN network once migration is initiated and we would like to address 2 of the main claims.

False claim n°1: the claim that so-called incentives must be set in place for providers to switch from legacy PSTN to next generation access, and that if copper/PSTN remains too cheap, voice providers would never switch to NGB.

The appropriate incentives in any market to encourage change are to offer:

- a) more compelling products
- b) better priced products
- c) more widely accessible products
- d) better communication of the benefits of products

These incentives seem just as valid for NGB. If service providers, networks operators and consumers cannot be persuaded that NGB will offer these benefits, then NGB is unlikely to be a wise step forwards. Service providers and networks should not be forced to move, they should be attracted to move by the NGB operators offering better, cheaper, more widely available access to services. If this cannot be achieved and requires substantial subsidies or regulatory initiatives, it suggests that the NGB business model is flawed and should not be progressed.

It will be critical that a move to NGB is driven through demand-led initiatives that persuade service providers, networks and consumers to **want** to change to NGB rather than due to

compulsion to move off the current infrastructure. It would be wholly inappropriate to force users to switch to next-generation networks via increasing the price of the legacy PSTN network.

If NGB progresses successfully, the legacy PSTN voice network will likely be switched off over time, making full migration inevitable. This raises the issue of the withdrawal in due time of a legacy SMP product and the fact that the SMP operator should bear the burden of proof to justify this withdrawal² and that clear timetables and processes must be set, and controlled by the regulator. Ensuring that there is no excessive return in the pricing of the legacy copper loops above cost is important in setting in place the right incentives for SMP operators to encourage efficient migration, rather than creating a scenario where the incumbent operators may desire to force migration to NGB to seek potentially higher returns through NGB networks that may have different, higher access pricing rules.

False claim n° 2: the claim that legacy PSTN revenues should be artificially increased or kept high to generate extra revenue that would in turn fund the next generation infrastructure

Such reasoning would imply that in order for mobile operators to switch from 2G to 3G infrastructure, mobile customers should pay more. Practice shows this is not the case and regulators have tended to regulate mobile operators more over the last years regardless of the required investments in 3G. At the same time, roll-out of 3G, though cautious, has not seemed impossible nor required heavy taxes or “risk premiums”.

Moreover, should Comreg accept that such a “tax” be levied on copper networks to fund NGB, Comreg would have to force the incumbent operator to effectively invest the additional revenues per minute from copper into the next generation infrastructure, and only if the upgrade to NGB is proven to be efficiently done.

In conclusion, Comreg will play a vital role in determining the success of the transition – including through establishing the right regulatory framework to encourage fair competition and seamless switching. Comreg will also need to understand the incumbents’ plans, provide for transparency with affected parties and carefully manage the transition including by addressing questions over the pace of transition, cost recovery and any requirements for parallel running of networks. In setting prices, it is also vital for Comreg to ensure that cost-savings are passed on in a non-discriminatory manner and that costs in establishing interconnect and access are not loaded onto service providers.

² Some of the arguments that could be considered relevant if sufficiently demonstrated include the fact that providing the service over its legacy network has become uneconomic, or that the SMP operator no longer has SMP in a relevant market after a market review has been undertaken.

We thank you in advance for taking consideration of these views. Feel free to contact Nik Hole, Executive Director, Government and Business Affairs – Europe for The Number, by phone (+44 7973 748952) or email (nik.hole@118118.com) should you need further information.

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20. UPC Ireland



**UPC response to ComReg discussion document 09/56 on
'Next Generation Broadband in Ireland'**

Background and overview of UPC's footprint and network capabilities:

From a residential standpoint, UPC currently operates two networks:

- A national MMDS (Multipoint Microwave Distribution System) uni-directional wireless network operating in the 2500-2690Mhz. The UPC MMDS network passes 83,600 homes and is restricted by virtue of its ComReg licence to offering TV services to subscribers on this platform.
- An HFC network which passes approximately 800.000 homes in the State.
✂ [REDACTED] ✂

UPC is more than half way through a 350 million euro upgrade of its HFC network and expects this upgrade to be complete by mid 2011. By that time UPC expects that it will be in a position to offer its triple play services to over [REDACTED] [REDACTED] % of homes passed. UPC's cable footprint already covers most of the gateway and hub towns in the Spatial strategy and its future build will encompass any remaining towns (of size) not currently covered.

With respect to its residential broadband offerings: UPC currently offers 1Mb, 3Mb, 10Mb and 20Mb at different price points depending on whether these services are bundled with TV and or voice services (see www.upc.ie for more information).

During the course of 2010, UPC hope to deploy DOCSIS3.0 on a phased basis which will enable the offer of speeds of up to 100MB broadband on its upgraded network.

From a business standpoint, UPC offers the following services under its B2B division:

- Data Services over fibre that include:
 - Metro Ethernet (2mb to 40Gb)
 - SDH (2Mb to 10Gb)
 - Microwave (10Mb – 1.2Gb)
- Internet Access
 - Dedicated Internet Access (2M – 1Gb) over Fibre
 - IP Transit over Fibre
 - SME Broadband (2Mb – 20Mb) over hybrid fibre coax network
- Voice
 - Primary Rate ISDN
 - Voice over IP
 - Carrier Pre Select (CPS)
 - Non Geographic Numbers
 - Universal Access Numbers
 - Premium Rate Services

UPC Business offers the above services nationwide which includes the five major cities and over fifteen regional towns. UPC also offers data and voice services over the UPC owned AORTA network that connects into ten countries across Europe and into the US where UPC has local presence.



Question 1: What speeds and other quality of service parameters will be demanded by businesses and consumers over the next 3 to 5 years? Please explain your reasoning. Do you believe the market itself will deliver these capabilities and within what timeframe?

A: Private sector investment kick-started the Irish market with respect to delivering competitive packages and speeds. The most competitive markets in the world are those that have intense platform competition. It is therefore of little surprise to UPC that there is a direct correlation between our arrival in the market, the increase in broadband penetration and subsequent decrease in the pricing for the same. Competition means increased choice on product and price for the end user (residential or business).

We believe that continued investment by ourselves and our competitors will continue to drive this demand and where there is a business incentive to meet that demand (i.e. business can expect a reasonable return on its investment).

It follows therefore that as long as a business has a sustainable business model it will offer service. There has been considerable public debate on the urban versus rural divide in Ireland and the impact that this may have on service availability or indeed variety of choice on the same. The commercial realities are such however that the law of economics will always have an impact on the provision and availability of services between urban and rural areas.

The telecommunications market and Ireland itself are no different to any other commercial sector or geographic market and this needs to be taken into account in any public debate that sets targets of 90% population coverage for all types of broadband services on offer.

Notwithstanding this, the fixed wireless and mobile sectors have done much in recent times to address this divide and will continue to do so. It is true that there may be limitations with respect to the types (or speed) of services that will be technically feasible over a fixed wireless or fixed line network but again this is not unique to the broadband market.

Question 2: Do you consider that NGB network deployments can provide a socio-economic benefit? If so, who are likely to be the greatest beneficiaries and why? Should the policy framework explicitly favour the development of NGB in Ireland, and with what specific socio-economic goals in mind?

A: UPC would caution against over-emphasising the potential socio-economic benefits of high speed broadband services. The consumer benefits of high speed broadband are obvious: connectivity, ability to offer greater number of services, use bandwidth-hungry applications and so forth. From a business perspective, UPC is of the opinion that the market is well served and highly competitive. From a residential perspective, broadband services are continually evolving in choice, price and availability of services.

With respect to a potential upside to socio – economic benefits we do not expect (nor have experienced elsewhere) seismic changes in those countries where high speed broadband services have been rolled out – ie trends such as working from home do not appear to be any different here (where we currently only have speeds of 20MB) and elsewhere. The use of broadband services for home networking or by SMEs may well increase but again, we don't expect these to bring any particular socio-economic benefits other than what is already experienced today.

We do not therefore think there should be any particular policy framework to bring about or generate any particular socio –economic benefits.



Question 3: How important will cross-platform competition be to the development of NGB Networks? Do you consider that all broadband platforms are capable of supporting NGB? In what circumstances might some such platforms be more suitable than others in providing timely and efficient NGB?

A: UPC firmly believes platform competition is *the* driver to enhanced competition and introducing diversity in choice and price of products on offer.

Platforms that we believe will be capable of offering high speed broadband services include VDSL, DOCSIS 3.0. We do not believe regular copper or DSL services will be capable of offering such services. LTE via mobile will be capable of delivering 173MB from the base station however the actual speed is expected to be 10-15MB. That said wireless either fixed or mobile are the most suitable for rural broadband delivery accepting that this will be at speeds of less than 20MB.

Timely and efficient roll out of these services will very much depend on financial investment by the respective parties involved. UPC expects to be in a position to offer next generation broadband services to subscribers on its cable network on a gradual basis commencing in 2010 and we would expect to be in a position to offer this across our full cable network by ✂

████████████████████ ✂.

Question 4: Do you consider that substantial (in both cost and coverage terms) private sector led investment in the development of NGB networks is likely over the next 3-5 years? If not, and should a gap occur in comparison to other European countries, what will be needed to encourage such private sector investment in Ireland?

A: Yes.

It is important to highlight that despite a late start Ireland has improved considerably in the EU league tables over the past number of years. ComReg's own statistics indicate that our Ireland's broadband household penetration rate is in the top 10 out of the EU27 member states¹ and has passed out the likes of Germany, Sweden and Austria and is now on a par with the UK and France. Ireland has therefore made significant inroads over the past number of years. We do not expect this to change in the near term – those companies that have and continue to invest in Ireland (fixed line, fixed wireless and mobile operators) are global groups that will invest as long as there is commercial incentive to do so and the current indications are that this will not slow down anytime soon.

Question 5: In what circumstances would any of the above (or other) approaches be appropriate in stimulating NGB roll-out in Ireland? How might such interventions safeguard the development of competition?

- investment either in terms of funding (fully or co-financing) or loans for infrastructure development, in some cases in return for the creation of an open access network.
- investment in applications/content development.
- availability of tax relief's for private sector led investment

A: With respect to the above points, UPC would only support government intervention in instances of clear market failure. It would not as a general rule be supportive of the government getting involved at all in this marketplace and any moves to do so would have to satisfy all relevant state aid rules.

¹ http://www.comreg.ie/_fileupload/publications/CP58.pdf



- **providing private sector with access to government owned infrastructure such as ducting, sewers etc.**

A: If this can be provided on an arms length basis (i.e. the government is not directly involved or engaged in the process) and prices are set at market prices, UPC would have no issue with the government pooling together state assets to set up in a form of one-stop-shop (as has been suggested by the DCENR) which would offer access to the infrastructure on an open access basis.

- **opening up access to bottlenecks in privately owned infrastructure typically through legislation requiring open access to internal building wiring or amendment of building regulations to require necessary communications infrastructure is installed in newly built houses and is made available on an open access basis to any communications service provider**

A: UPC would not support this proposal. Any discussions with respect to considering imposing open access obligations on network providers must pay heed to existing legislation (derived from the EU telecommunications Package) which provides that open access can only be obliged on operators that have SMP.

Though for a different market (and one outside ComReg's remit) ComReg should review the Exclusivity Guidance Note the Irish Competition Authority (ICA) produced further to an investigation on foot of consumer complaints in relation to exclusivity deals by pay TV providers. Of note in its findings were the reasons behind these exclusive deals which were primarily driven by business costs (on developers) to fund the installation of infrastructure in these residential premises. Tellingly the ICA did not have any issue with exclusive deals as these were limited in time and scope (to generate the necessary return on investment by the parties concerned) and did not therefore constitute an anti competitive practice.²

With respect to the telecommunications market, which ComReg does have remit for and regulates on the basis of the same competition law principles, UPC does not accept that bottlenecks exist in privately owned premises. Firstly and arguably all premises are wired for eircom (given it has USO) and in most instances premises are wired (or capable of receiving) broadband from at least one other telecommunications provider. As such UPC does not believe there is need for any measure forcing developers to provide internal wiring or infrastructure on an open access basis.

- **demand aggregation initiatives whereby communities are brought together to create the critical mass required to encourage private sector NGB development.**

A: Where there is commercial incentive to deploy NGB networks and services this will be provided by the private sector. It is unclear what aggregation initiatives could be envisaged and how these could work in order to satisfy state aid rules.

- **national certification schemes and public information campaigns to allow consumers to check fibre network coverage (and suppliers) in their area.**
- **making certain government funded services available online (e-health, e-education) and encouraging similar private sector enterprises to do so**

A: UPC has no opinion or objection to these suggestions.

² http://tca.ie/NewsPublications/NewsReleases/NewsReleases.aspx?selected_item=249



- **regulatory authorities generally facilitating the promotion of competition by opening up access to bottleneck infrastructures operated by dominant operators (such as ducting, dark/lit fibre)**
- **regulatory authorities approaches on the level and type (if any) of wholesale pricing regulation taking into account the degree to which SMP players open up their networks**
- **regulatory authorities examining if and how NGB risks can be factored into wholesale pricing of NGB services**

A: UPC does not support the first proposal above.

As ComReg is aware the finding of dominance with respect to the Telecommunications sector is based on significant market power (deemed as having over 40% market share). The broadband market is a national one and one in which only eircom currently has SMP. UPC does not expect this to change in the immediate future since eircom alone has the national coverage for the purposes of providing (next generation) broadband services.

Open access obligations can only be imposed on operators that have dominance. To define markets differently than that which is currently defined under the EU Telecommunications Package will require the consent and approval of the European Commission.

- **companies themselves opening up their networks and providing services on a wholesale basis to other parties**

A: Where there is commercial imperative or operators to seek or create new opportunities they are already engaged in such practices today. This will continue in the future and regulatory intervention should only happen where there is clear market failure in markets as defined under the current EU Telecommunications Package.

- **companies (including local municipalities) entering into joint ventures to build networks in order to share the risks of making the required investments. Such networks are then opening up voluntarily to other parties on a wholesale basis and provide non-discriminatory access.**

A: Municipalities should only invest in instances where there is clear market failure and where they have satisfied state aid criteria and obtain clearance on the same from the European Commission.

Question 6: Do you consider that the issues identified are the main enablers and inhibitors of NGB developments or are other issues of greater relevance? Who are the key stakeholders who might be in a position to influence these issues and how might they best do so?

A: The discussion document is comprehensive in its listing of enablers and inhibitors – we have no other suggestions to add to that list.

With respect to key stakeholders while all parties identified clearly have a role, UPC believes the primary stakeholder is that of the private sector which has to date driven investment and generated market demand for services. As such we believe that the main stakeholder will continue to be the private sector.

Question 7: Are the areas identified the relevant tools available to ComReg for accelerating NGB investment in Ireland, or could other regulatory levers be as or more effective? What might be the impact of these activities on both the level and timing of NGB developments?

A: UPC does not have an opinion on this question.



Question 8: Do you see a role for collaborative industry approaches in seeking to agree wholesale models for open access to SMP operator NGB networks?

UPC does not believe there is a national market in *next generation* broadband networks or services. There are several markets served by ECS providers who offer a variety of services including that of broadband. We do not support the notion that next generation services should be treated any differently to the traditional services nor do we believe there is a separate and distinct market in next generation networks or services in themselves.

To clarify, broadband is one of a number of services we offer over our network. We offer “traditional” broadband over some of our network and high speed internet access over other parts of our upgraded network. We do not however make any distinction between the two product offerings. The only differentiation is based on speed and this is something the customer chooses depending on their needs. We therefore see next generation broadband services as the natural evolution of our more traditional broadband services.

It is true that significant investment is required to upgrade the network to be able to offer customers higher speeds, however the underlying infrastructure is still the same – it is still a cable network, and still limited in geographic coverage. Indeed if anything, as experienced in our other markets, revenue generated on a per subscriber basis actually decreases over time, due to competitive market forces and as the service becomes a commodity. By way of example, 330Kb cost 50 euro in the Netherlands in 1999 - ten years later UPC Nederland is currently offering 90Mb broadband for 40 euro.

**Will infrastructure sharing be critical for early deployment of NGB in Ireland?
What do you see as being the appropriate regulatory response in such circumstances, particularly in light of the need to promote effective competition, innovation and incentivise investment?**

A: Where there is commercial incentive to do so, the private sector will engage in such practices. Indeed such practices already exist today and will continue to do so in the future. The recent deal between O2 and Vodafone on site sharing is an example of such practices (and one that is replicated by the parent groups of both parties in other markets in which they have a presence).

Question 9: What role has the regulation of investment incentives such as wholesale pricing to play in stimulating the development of NGB networks?

A: As indicated in the discussion document regulatory intervention should be based on SMP and provided on the basis of providing regulatory certainty to the market. As previously indicated UPC is a strong proponent of the benefits of platform competition and supportive that anyone that invests infrastructure should get a fair return on their investment. This includes SMP providers since otherwise there will be little incentive for them to invest.

Question 10: Is there a case for allowing a differentiated regulated rate of return for Eircom in relation to risky NGA investments, and would this in fact be effective in encouraging early and widespread development of NGB fixed line networks?

A: Yes – see also answer to Question 9.

Annexes: ✂



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21. Vodafone



Vodafone Response to the ComReg Discussion Document: Next Generation Broadband in Ireland

Introduction

Vodafone welcomes the opportunity to respond to this ComReg discussion document on Next Generation Broadband in Ireland. Our views in relation to the key issues raised in this document are set out fully in response to the discussion questions below.

Response to Consultation Questions

Q.1. What speeds and other quality of service parameters will be demanded by businesses and consumers over the next 3 to 5 years? Please explain your reasoning. Do you believe the market itself will deliver these capabilities, and within what timeframe?

Considerable uncertainty exists regarding the evolution of consumer and business requirements for broadband services over the next 3-5 years. As ComReg has observed, end user requirements will depend to a considerable extent on what innovative new applications and services emerge over this timeframe and the nature and level of take-up of these applications is not readily foreseeable at present. However Vodafone would agree that the general trend toward the increasing use of services that are more bandwidth intensive, such as video downloads, IP-TV and gaming, is now well established and will be sustained and reinforced over the next 3-5 years and beyond. While the extent to which this trend develops may vary across customer segments, with some end-users potentially being content to use applications that work acceptably without very high speed broadband capability, for key customer segments the minimum acceptable broadband speed is likely to increase considerably over the relevant time period. Vodafone considers that it would be prudent to plan on the basis that broadband services with consistently achievable data speeds of 20 Mbps will be demanded by major end user segments within 5 years, with some end users requiring services offering even higher speeds (falling within the NGB definition proposed by ComReg in this consultation) within the same time period. The risks to this forecast would be primarily to the upside.

Vodafone anticipates that as many of the more bandwidth intensive applications that are seen as driving demand for and/or requiring next generation broadband services are relatively latency and congestion intolerant, end users will also place increasing value over the next 3-5 years on broadband services that minimise latency and limit contention.

Vodafone believes that market players will have the primary role in delivering the necessary capabilities over the next 3-5 years but optimal investment in, and deployment of, next generation broadband infrastructure is unlikely to be achieved in the absence of a supportive regulatory and public policy environment. There are a range of measures that can potentially be taken by ComReg and the government to facilitate the development of next generation broadband services in Ireland. A public policy approach that maximises regulatory certainty for market players seeking to make the necessary substantial investments in NGB infrastructure will be vital. In addition specific measures to optimise the economics of NGB deployment in a pro-competitive way and to facilitate migration from legacy to NGB networks should also be implemented.

With regard to facilitating wireless NGB network deployment specifically, Vodafone believes that a technology neutral spectrum policy approach that removes restrictions on the allocation and use of key spectrum bands (900 MHz, 1800 MHz, Digital Dividend) for the deployment of NGB wireless

technologies such as HSPA+ and LTE must be executed in a timely manner to prevent a Digital Divide in NGB service provision in Ireland from emerging. Vodafone's views on the appropriate measures to be implemented are elaborated in the response to subsequent discussion questions.

Q2. Do you agree that NGB network deployments can provide a socio-economic benefit? If so, who are likely to be the greatest beneficiaries and why? Should the policy framework explicitly favour the development of NGB in Ireland, and with what specific socio-economic goals in mind?

Yes, Vodafone agrees with the range of benefits set out by ComReg in the consultation document. The benefits to labour productivity from increased labour mobility and remote working, the environmental benefits of reduced requirements for transportation, and the facilitation of trade in digital services as a source of national competitive advantage will have a substantial positive impact on both economic living standards and the broader quality of life for society in general. In addition next generation broadband networks based on wireless technology platforms in particular offer the potential to deliver substantial benefits to businesses and households living in more sparsely populated rural areas that are currently facing the prospect of a Digital Divide relative to the more densely populated urban areas. Next generation wireless broadband based on technologies such as HSPA+ and LTE can act as a key driver for more balanced economic and social opportunities and development prospects across all regions of the country.

Vodafone agrees that the prospective socio-economic benefits of NGB deployment (across all technology platforms) are sufficiently great that the policy framework should explicitly favour their development in Ireland.

Q3. How important will cross-platform competition be to the development of NGB networks? Do you consider that all platforms are capable of supporting NGB? In what circumstances might some such platforms be more suitable than others in providing timely and efficient NGB?

Competition between fixed, wireless, and cable platforms will have an important role in stimulating investment in NGB networks but it is unlikely that this competitive stimulus will on its own be sufficient to ensure the optimal deployment (from both an economic and social perspective) of NGB infrastructure, particularly within the next 3-5 years. The coverage footprint of cable networks is limited and to a large extent occurs in those areas where the economics of deploying fixed NGA networks is most favourable, primarily the more densely populated urban areas of the country. A move to the provision of next generation cable services is therefore likely to act as a potential stimulus to fixed NGA rollout only in these areas, and in light of the current absence of plans on the part of the fixed incumbent, eircom, to undertake significant fixed NGA network development, the prospects for cross-platform competition between fixed and cable NGB networks will nonetheless remain highly uncertain in the absence of decisive regulatory and public policy action.

The economies of scale and density associated with fixed NGBs appear likely to be as great as, or even greater than, those associated with the legacy fixed copper network. The economics of fixed NGA deployment therefore pose very serious challenges for the emergence of more than a single fixed NGA network with widespread geographic and population coverage. In addition it is clear that Ireland's demographics, with a low density dispersed population distribution, mean that it is very unlikely to be commercially feasible to deploy fixed NGA network infrastructure outside of the more

densely populated urban areas, at least in the medium term. Even in a scenario where there was clear commitment to fixed NGA rollout, it is therefore clear that this would not address the pressing requirement for timely provision of NGB services to households and businesses living in the extensive less populated and rural areas.

Wireless networks are capable of providing NGB services on the basis of use of advanced technologies such as HSPA+ and LTE, including to areas where it is not currently feasible to deploy alternative next generation cable and fixed NGA infrastructure. In Vodafone's view next generation mobile/wireless broadband technologies will represent a key part of the solution to the Digital Divide problem, as well as enhancing competition in the provision of NGB services even in those areas already served by next generation cable and/or fixed NGA networks.

A key obstacle to the early deployment of NGB wireless services relates to the availability of suitable spectrum and existing restrictions on its use. Vodafone believes that to maximise the opportunity represented by next generation wireless technologies to deliver very high speed broadband services on a widespread basis will require ComReg to move quickly to remove unwarranted restrictions on the deployment of technologies such as HSPA+ and LTE using frequencies in the main candidate spectrum bands that have been identified for this purpose (900 MHz, 1800 MHz, Digital Dividend, 2.6 GHz etc.). In addition ComReg must seek to adopt a holistic approach to making available currently unallocated spectrum in these bands in the quantities and the form necessary to allow most efficient deployment of these technologies and maximise regulatory certainty for prospective investors in NGB wireless networks. This policy would minimise the costs and uncertainties of NGB wireless service deployment and will be ultimately to the benefit of end users and society generally in a competitive retail broadband market. Vodafone welcomes in principle many aspects of the actual and proposed measures to liberalise and assign key unallocated spectrum resources that ComReg has already undertaken, but we believe that these proposals must be taken further and implemented in a more timely manner than is currently envisaged.

The lack of any clear plans by eircom to invest significantly in fixed NGB infrastructure in the short to medium term is a matter of serious concern, and it is unclear to Vodafone that the existing model of regulation of the fixed incumbent is suitable to address the challenge of fostering the necessary large scale investments to build a fixed NGB network with extensive population and geographic coverage. At the same time there is an imperative to ensure that robust competition in the provision of retail broadband services to consumers is sustained in a NGB environment. Vodafone considers that measures to facilitate effective access to, and sharing of, existing infrastructure (ducts, fibre etc.) such as those already proposed by the Government are necessary and welcome, however there is also a need to consider additional options such as collaborative risk sharing approaches to the construction and operation of a fixed NGB network by a number of market players. Any such approach, if implemented, would have to be carefully designed to safeguard competition but there appear to be reasonable prospects that an appropriately designed collaborative approach could lead to the timely development of a fixed NGB network with an extensive coverage footprint while also ensuring competition in the provision of high speed broadband services in a fixed NGB environment.

One possible option of this type, co-investment, where a number of operators (at least 3-4) jointly invest in, own, and operate a fixed NGB network on terms which offer each participant equivalent access to the capacity and resources of the network, is outlined in the Annex to this submission in order to stimulate debate about more innovative strategies for overcoming the current obstacles to early fixed NGB network rollout.

Q. 4. Do you consider that substantial (both in cost and coverage terms) private sector led investment in the development of NGB networks is likely over the next 3-5 years? If not, and should a gap occur in comparison to other European countries, what will be needed to encourage such private sector investment in Ireland?

Vodafone considers that there will be substantial investment by mobile network operators in the development of wide coverage next generation mobile broadband networks over the next 3-5 years provided that the current obstacles around availability and use of the optimal spectrum frequency bands for deployment of technologies such as HSPA+ and LTE are addressed. Expediting the implementation of a technology neutral approach to spectrum use in these bands and releasing unallocated spectrum resources in bands with favourable propagation characteristics for employment in the delivery of socially and economically valuable next generation mobile broadband services to end users must be the key objectives of national spectrum policy as it relates to fostering NGB service availability. There is also the potential for wireless broadband providers other than the mobile operators to deliver NGB services in a timely manner arising from such policies.

Vodafone considers that the prospects for substantial private sector investment in fixed NGB network rollout are highly uncertain and innovative alternatives to the current regulatory approach must therefore be seriously explored. Collaborative risk sharing approaches to fixed NGA network deployment, such as co-investment by a number of service providers in a jointly owned NGB network, as described in section 5 of the consultation document may have the potential to address the problems of high commercial risk and capital constraints that are the main current inhibitors of timely fixed NGA infrastructure rollout. The development of cable NGB services may act as a useful stimulus to cross platform competition in the provision of NGB services but this is likely to be true only in a limited number of more densely populated areas over the medium term and may not in itself be sufficient to ensure optimal fixed NGA network deployment.

Vodafone is aware that the IBEC Telecommunications and Internet Federation (TIF) has commissioned the consultancy Analysys Mason to assess the commercial potential for roll-out of a fixed NGB network in Ireland by a single operator or group of operators. The publication of this report in due course should provide additional clarity on the prospects and options for the development of NGB networks in Ireland over the next 3-5 years.

Q. 5. In what circumstances would any of the above (or other) approaches be appropriate in stimulating NGB roll-out in Ireland? How might such interventions safeguard the development of competition?

Vodafone considers that a relatively more market led approach, but with ComReg and the government having a central role in providing a favourable regulatory and public policy environment, is likely to be the most appropriate way to stimulate NGB roll-out in Ireland.

The range of demand aggregation measures pursued in other countries could potentially be beneficially employed in Ireland to mitigate the uncertainty and risk around the extent of end user demand for NGB services and to create the critical mass needed to significantly improve the economics of fixed NGA network rollout in many areas. This would have important positive spillover and externality effects in terms of driving NGB broadband availability for households and businesses in proximity to public sector organisations/institutions. Vodafone also supports

measures to facilitate access to publicly owned infrastructure (ducts, dark fibre etc.) suitable for supporting fixed NGA deployment such as those previously announced by the government.

Government financial assistance in the form of tax incentives to commercial entities engaged in NGB deployment should not be ruled out. Any government assistance of this type should however be carefully assessed on its merits and should be based on objective, transparent, and non-discriminatory criteria.

Variants of joint venture/ co-investment approaches to roll-out of NGB networks, referred to in the analysis of the NGB plans of other countries, appear to be particularly interesting. The major upfront investments required to build out fixed NGA network infrastructure, and the major uncertainty about whether or when demand for NGB services will reach the levels required to allow recovery of costs and the earning of an appropriate risk adjusted rate of return currently present serious challenges to the business case for extensive fixed NGA network roll-out. The involvement of multiple participants in providing funding and operational input into the development/ongoing management of a jointly owned NGB infrastructure could potentially overcome the serious financial constraints that would confront any one firm, while the risk of undertaking the investment which may be unacceptably high for a single firm to bear alone may be acceptable if shared across multiple service providers. Competition could be adequately safeguarded through the involvement of a sufficient number of retail NGB service providers in the network consortium and, for example, through the reservation of some capacity on the network exclusively for resale to other retail providers that may not be direct participants in the financing and development of the fixed NGB network.

Q. 6. Do you consider that the issues identified are the main enablers and inhibitors of NGB developments or are other issues of greater relevance? Who are the key stakeholders who might be in a position to influence these issues and how might they best do so?

Yes. Vodafone broadly agrees with the description of the main enablers and inhibitors of NGB developments as set out by ComReg. It must be highlighted however that the incentives for deployment of NGB networks are not solely negative, the fear of losing out in the competitive battle, which seems to be the primary enabler of NGB development in ComReg's analysis, but are also positive in terms of potential new revenue opportunities from advanced applications and services.

Vodafone agrees that ComReg, the government, and the market players that make up the electronic communications industry all have a role to play in advancing NGB service availability. As previously outlined, ComReg can advance the prospects for NGB rollout by minimising regulatory risk for potential investors in NGB infrastructure from the outset. With regard to wireless NGB development, ComReg can implement a spectrum policy that facilitates timely access to liberalised spectrum in the main candidate bands within which NGB wireless technologies such as HSPA+ and LTE can be deployed. To support fixed NGB infrastructure deployment, ComReg should engage with industry to explore the potential for implementation of collaborative risk sharing approaches that may overcome the key constraints of shortage of capital, and high commercial risk that have been identified as the primary inhibitors of NGB development. ComReg can also provide longer term visibility to industry about the regulatory environment over the time period in which they will need to recover their investment costs and earn a commercial return by conducting a forward looking market analysis prior to the commencement of major NGB investments, and by providing guidance on how specific changes to the market environment might require the regulatory approach to be adjusted over time.

The government can facilitate NGB infrastructure deployment through executing demand aggregation measures wherever feasible, by facilitating access to public infrastructure suitable for supporting NGB deployment (dark fibre, ducts etc.) through the one stop shop as previously announced, and possibly through targeted interventions that may ease the transition from current generation to next generation broadband service provision where these can be effected using objective, transparent and non-discriminatory criteria.

Q.7. Are the areas identified the relevant tools available to ComReg for accelerating NGB investment in Ireland, or could other regulatory levers be as or more effective?

Yes. Vodafone agrees that the areas identified by ComReg of spectrum policy, regulation of access, regulation of pricing, and infrastructure sharing are the relevant ones in establishing appropriate regulatory policy to facilitate timely and substantial NGB investment in Ireland.

With regard to spectrum policy, as outlined in the response to question 3, Vodafone believes that to maximise the opportunity represented by next generation wireless technologies to deliver very high speed broadband services on a widespread basis will require ComReg to move quickly to remove artificial restrictions on the deployment of technologies such as HSPA+ and LTE using frequencies in the main candidate spectrum bands that have been identified for this purpose (900 MHz, 1800 MHz, Digital Dividend, 2.6 GHz etc.). In addition ComReg must seek to adopt a holistic approach to making available currently unallocated spectrum in these bands in the quantities and the form necessary to allow most efficient deployment of these technologies and maximise regulatory certainty for prospective investors in NGB wireless networks. This policy would minimise the costs and uncertainties of NGB wireless service deployment and will be ultimately to the benefit of end users and society generally in a competitive retail broadband market. We welcome in principle many aspects of the actual and proposed measures to liberalise and assign key unallocated spectrum resources that ComReg has already undertaken, but we believe that these proposals must be taken further and implemented in a more timely manner than is currently envisaged.

Vodafone agrees with ComReg's view that different models of NGA deployment may require different responses in terms of the policy toward regulation of access and access pricing. It is appropriate that in assessing the appropriate regulatory approach factors such as the number of participants, structure, and any wholesale access provisions of the possible ownership models that may be used to advance fixed NGA network deployment need to be assessed. While these models could potentially be developed primarily as the outcome of commercial negotiation between interested service providers and then submitted for regulatory approval, ComReg could assume a beneficial role from the outset in setting out the overarching principles for collaborative ownership/risk sharing models that would fulfil NGA investment and competition objectives. Key issues that could be addressed by ComReg in this regard would be to ensure that the participants in, for example, a co-investment model of NGA deployment, would be determined on open, transparent, and objective criteria and to maximise regulatory certainty prior to the commitment of substantial capital by the investor(s). A possible co-investment approach in which ComReg would play a central role is outlined in the Annex to this submission with a view to stimulating further debate on how an effective collaborative approach to NGA deployment that would simultaneously safeguard competition would be formulated.

Q. 8. Do you see a role for collaborative industry approaches in seeking to agree wholesale models for open access to SMP operator NGB networks? Will infrastructure sharing be critical for early deployment of NGB in Ireland? What do you see as being the appropriate regulatory response in such circumstances, particularly in light of the need to promote effective competition, innovation, and incentivise investment?

Vodafone considers that collaborative industry approaches to agreeing wholesale models for open access to SMP operator NGB networks must be explored. However Vodafone notes that circumstances with regard to the roll-out of a fixed NGB network in particular are quite different to the conditions that have characterised the regulation of wholesale access to the existing legacy fixed network of the SMP operator, eircom. In the case of the current generation fixed network, the large up-front investments to develop this network are sunk and have long ago been recovered by the incumbent, so it has been possible to focus mainly in the regulatory approach on providing the appropriate incentives for alternative operators to enter the market and provide sustainable competition to eircom, rather than on providing incentives to the network operator to undertake large additional investments. However as investment in fixed NGA network infrastructure has not yet been undertaken to any significant extent the objective of incentivising efficient investment is now much more prominent and has to be reconciled with the necessary objective of safeguarding at least the current level of competition observed in the provision of current generation fixed services in a new NGB environment.

Vodafone considers that in this context any approach that is adopted will necessitate ComReg to provide the maximum level of regulatory certainty to the investor(s) in a fixed NGA network regarding how regulation of access to the network will be developed. The necessary high level of regulatory certainty would have to be provided in advance of the commitment of significant capital by the incumbent and/or other service providers as investors would have to be provided with a reasonable assurance, in light of the commercial risks, around their ability to recover their costs and earn an appropriate risk adjusted rate of return without facing the risk that heavy handed wholesale access regulation (including wholesale access pricing) ex post would preclude the recovery of the large up-front investments undertaken. In addition, ComReg should provide clear guidance on how the approach to regulation of wholesale access would be conditioned by the manner in which the fixed NGB network would be constructed. For example, ComReg should make clear that if a fixed NGB network is constructed in a way that readily facilitates access to key infrastructure such as ducts, cabinets, dark fibre etc. to alternative operators then it should be indicated that the regulatory approach will be more light handed, in terms of the flexibility of pricing afforded to the network operator and any requirement to provide wholesale product offerings, than would be the case if the network were conducted in a manner which made sustainable competition more difficult. Moreover ComReg should specify as fully as possible how its regulatory approach would differ for various possible approaches to deployment of the fixed NGA network in advance.

It is Vodafone's view that there are circumstances in which, provided that there were provision for a minimum number of service providers (3-4) to have access to a fixed NGA network on equivalent terms, and some wholesale capacity reserved for other participants should they wish to avail of it, then effective competition would be safeguarded on a commercial basis and there may not be a case for intensive ongoing wholesale access regulation of a fixed NGA network.

Vodafone agrees that infrastructure sharing is likely to be important for the deployment of NGB in Ireland. In the first instance this should be the subject of commercial negotiations between the relevant service providers and organisations, but ComReg may have an important facilitating role in this regard.

With regard to wireless NGB networks, Vodafone considers that provided that barriers around the availability and use of the optimal spectrum frequencies for next generation broadband service delivery are addressed, mobile/wireless NGB service provision is likely to be characterised by robust infrastructure based competition between multiple networks (albeit with some infrastructure sharing where this is economically efficient and attractive). Vodafone does not anticipate that any operator or operator(s) providing mobile/wireless NGB services would have SMP in these circumstances and the question of wholesale access regulation of these networks by ComReg would not therefore arise for the mobile/wireless platform. Vodafone considers that differences in the characteristics and capabilities of wireless NGB services versus cable and fixed NGB services are likely to exist at least over the medium term and that the former will consequently remain in a separate market from the latter services at least over the next 3-5 years.

Q. 9. What role has the regulation of investment incentives such as wholesale pricing to play in stimulating the development of NGB networks?

Vodafone considers that the regulation of investment incentives such as wholesale pricing faces considerable challenges in stimulating the development of NGB networks and that its role may be less important under certain scenarios (such as appropriately designed co-investment approaches that can safeguard competition and may limit the requirement for wholesale price regulation).

Vodafone notes that as far less is known about the costs of next generation networks than current generation networks, regulators are likely to encounter much greater difficulties in setting efficient investment incentives that ensure optimal investment in NGB networks while also promoting effective competition. Alternative approaches to the current model of wholesale access regulation of a single network owned exclusively by a SMP incumbent, for example the collective risk sharing approaches to fixed NGA deployment set out in section 5 of the consultation, may be necessary to overcome this information challenge and may obviate the need for ex-ante wholesale price regulation.

Q. 10. Is there a case for allowing a differentiated regulated rate of return for eircom in relation to risky NGA investments, and would this in fact be effective in encouraging early and widespread development of NGB fixed line networks?

Vodafone considers that there may be serious difficulties with proposals to allow a differentiated regulated rate of return for eircom in relation to NGA investments. In particular it may be very difficult in practice to distinguish between existing assets and 'new' assets for the purposes of applying such a differentiated rate of return. Particular care must therefore be taken in the detailed implementation of any measure to apply a differentiated rate of return with the objective of incentivising fixed NGA network deployment. It is unclear whether even a well designed initiative to introduce a differentiated regulated rate of return in a regulated wholesale pricing comparison would actually be effective in encouraging early and optimal deployment of the fixed NGB infrastructure.