

## **CBI submission on Next Generation Access**

### **1. Introduction**

The CBI appreciates the opportunity to comment on the Commission's consultation. Next Generation Access networks (NGAs) could provide a significant platform for the development of innovative and widespread services for businesses and consumers, and a major boost to economic growth, competitiveness and value-adding in the next few years. This will be particularly important given the current economic downturn. But inappropriate or misjudged regulatory frameworks could weaken competition and investment and lead to a strengthening of existing or resurgence of new supply-side bottlenecks.

We broadly support the Commission's overall objective "to foster the application of consistent regulatory remedies to SMP operators throughout the EU ... regarding access to "NGA" networks or in other markets pertaining to NGA.... In order to provide regulatory certainty to investors and foster investment and innovation for the benefit of all parties involved." Our main criticism of the proposals, however, is less with what they say (though we have points to make about this) than with what is left out. In increasing bandwidth at a local level, NGAs create both a qualitatively new competitive communications environment through allowing new services and applications to be offered, and, at the same time, simply an extension of existing competitive forces. The key regulatory task is to distinguish between the two such that measures can be developed that stimulate the former and regulate the latter.

The broad issues of importance that we consider the Commission's document overlooks and that we will comment on are:

- the nature and drivers of demand for NGA in the current and medium term economic context;
- the nature of possible risk sharing between operators and between operators and business users, and the policy and regulatory implications in an all-IP NGA environment.

### **2. The nature and drivers of demand for NGA**

The debate on NGA has been dominated by two concerns. On the one hand, investment is viewed necessary given the expected strategic contribution of NGA to economic growth, service innovation and competitive advantage at a time when other leading economic powers are making major advances in the field. On the other hand, concerns exist over whether sufficient demand exists to provide adequate

returns on investment for network providers, given the sizable investments required, uncertain consumer demand for services and regulatory requirements for competition.

As most operators are at the earliest stages of NGA investment, the issue has been posed as a chicken-and-egg situation whereby investment will be limited until significant demand occurs, and demand will be restricted while network capacity and services are unavailable. The current credit crunch and economic downturn will exacerbate this situation in the immediate term. In this context, the CBI believes a simple evidence or principles-based approach (the latter being that of the Commission's consultation document) is inadequate, as they fail to provide sufficient clarity as to what markets investors will actually be investing in.

Detailed analysis of two inter-related and necessary analyses are missing from the debate. First, an analysis of the demand-side characteristics and conditions amongst business and consumer likely to optimize service development possibilities. Second, an analysis of how investment in NGA networks and services can or should be developed and regulated in order to meet such demand potentialities from as wide a wide range of investors as possible, over timescales for the various forms of investor returns to be realised. This section explores the first of these two issues whilst the next section explores the second.

## **Current consumer demand**

Though the Commission is not so specific, NGA is usually defined as provision of access to the home or (roadside) cabinet at speeds above approximately 20Mbps.<sup>1</sup> With NGA conceived thus in relation to the **household**, demand for NGA services has subsequently been framed almost exclusively in terms of consumer demand,<sup>2</sup> though SOHOs (small offices in the home) have also at times been taken into account. Businesses, it is often argued, can already get fibre connections whenever they want.<sup>3</sup>

The CBI believes this viewpoint is too restrictive and prefers the Commission's more graduated definition. Nevertheless, the focus on NGA as almost solely fibre-optic cable (which the Commission in effect adopts despite its formal definition) skews debate towards forms of service demand and development that do not capture more variable ones that could arise in combinations of fixed/wireless technologies. These will almost certainly play a major part in bringing high speed applications and services to rural areas and may also be significant means of delivery in urban areas, and as combinations of both on-the-move.

While the Commission's definition is not overtly technologically biased, its focus on little else but passive remedies such as duct sharing effectively restricts debate to the economics of fibre-based service development for simple consumer demand (e.g. video-on-demand entertainment services). Yet NGA deployment will enable a raft of applications and services of variable nature and bandwidth, from flexible working to tele-medicine, which rely on consistent levels of quality of service provision and more complex relationships between consumers and service providers. The role of these applications as a

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<sup>1</sup> The Commission refers to "high-speed networks based wholly or partly on fibre optical cable" and refers virtually all its analysis to issues to do with fibre optic cabling.

<sup>2</sup> The Broadband Stakeholder Group (BSG) has provided analysis of consumer demand.

<sup>3</sup> For example, the report by Francesco Caio on barriers to NGA investment for the UK government.

factor of in consumer demand, and of e-commerce services in particular, is largely overlooked. Yet it is questionable that, in current conditions of economic recession, large increases in consumer demand for entertainment services will occur much above current levels or prices such as to drive significant new investments. On the other hand, consumer demand for e-commerce services can be expected to continue growing as transaction costs are reduced through, as discussed below, business demand for greater productivity gains.

As the French EU Presidency has indicated in relation to the i2010 strategy, Europe's prospects for future global leadership in applications and services development will need to exploit new wireless technologies to a significant degree. More precisely, and as underlies current EU spectrum trading and liberalization proposals, dynamic service growth will depend upon combinations of different technologies that respond to differing geographic and economic demand. As the CBI argued in relation to the telecoms framework review, it would be helpful for investment planning purposes if the Commission's NGA proposals were tied more explicitly and comprehensively to its i2010 vision.

### **Business demand for value-adding**

In 2003, a CBI report on business use and demand for broadband found that, even though businesses could get leased line (including fibre-optic) provision for high data transfers, they saw value in development of public broadband provision.<sup>4</sup> This was because, while leased lines could provide high capacity data transfers with particular groups of suppliers or distributors, broadband offered lower per unit prices; and, because it lowered average production costs through replacement of differing legacy systems with common, often off-the-shelf technologies, provided a mass basis for engagement with customers in ways that leased lines could never do. So businesses have an incentive to stimulate demand for advanced broadband applications and services.

NGA services could further lower unit costs for business broadband such that the potential market size for business broadband is increased exponentially. For example, low cost broadband offers the potential to connect all business sites not just regional or corporate centres. Such business demand is not separate from consumer demand. The CBI's survey of how IT services contribute to UK business competitiveness and value-adding, published earlier this year,<sup>5</sup> indicated how consumer centricity was becoming **the** focus of companies' service development. But it also revealed that, while a competitive communications market was considered a major regulatory plus, demand for NGA was currently quite low amongst many companies – the highest at around 25% being amongst medium sized ones. Similarly, a recent Communications Management Association study found that only around 30% of respondents would be prepared to pay higher prices for bandwidth up to 100Mbps – and this combined internal and external uses.

The current economic downturn will undoubtedly reduce overall business demand for higher priced NGA services even further unless applications and services other than traditional consumer entertainment and e-commerce ones can be provided through NGA. ICT demand in general has become increasingly cyclical and more tied to growth in overall GDP. Applications and services are the exception at the

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<sup>4</sup> "Broadband for Business - The Value Proposition in Manufacturing & Retail", October 2003.

<sup>5</sup> "UK Competitiveness: the role of IT services", July 2008.

moment, and will **possibly** be so in the future, depending on the regulatory and policy environment. But the CBI believes the Commission should seek ways to encourage such demand if as broad a range of NGA investors and services as possible is to be developed.

Such encouragement requires addressing NGA development within a wider and more explicit coordination of different policy agendas than the Commission's document currently does. In particular, the sparse focus of the Commission's document on traditional ex ante issues of household demand fails to address the potential future structure of demand and service development in an "Internet of things" - and the broad range of business interests (and potential investors) in such an agenda. As discussed below, this will almost certainly have significant potential impact on business and consumer demand for on-the-move NGA service development, and regulatory implications encompassing local access more widely than proximity to the home.

### **Medium term demand drivers – “the Internet of things”**

Huge demand for communications networks and services will potentially be driven by the development of the Internet of things. Intelligent networking of embedded devices and remote sensors in everything from roads and cars, to packaging and white goods, to retail items and POS systems suggests a need for local bandwidth availability well in excess of today's copper-wire networks. But demand for bandwidth access will be on a much more dispersed, variable and scalable than for inter-connection of devices and sensors amongst households, business supply chains and retail outlets, and public utility infrastructures than for a PSTN.

The French Presidency's i2010 September 2008 conference highlighted the importance of the Internet of things to future demand in an NGA environment. But the Commission's NGA document overlooks the issue of how it will link into and potentially drive and structure network and service demand and development.<sup>6</sup> The issue may be pressing. The technical community has been pointing out for quite a while now that the number of IPv4 domain names and numbers is fast running out.<sup>7</sup> Even if the technical community's calculations are too restrictive, ownership of domain address blocks by registries and registrars within the context of sharply declining overall availability could have a significant impact on demand, availability and pricing of NGA services.

As IPv4 and IPv6 systems are not designed to communicate with each other, governments may need to actively engage the business community in bringing about a timely and broad based transition if the benefits of network effects are to be realised within a competitive environment. Such government action would need to be carefully considered for its implications in relation to competition and ex ante policy regulation of NGA deployment, particularly in regard to the nature of joint ventures and risk sharing between NGA providers. While the Commission has released a draft working paper for consultation on the Internet of things, formal consultation and decision making will need to be

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<sup>6</sup> Within this perspective, its statement that “all existing SMP obligations in relation to Market 4 should not be undone by changes to the existing network structure or topology” seems to beg the question, particularly in regard to its definition of NGAs as “access networks which have been substantially upgraded ... using existing local access infrastructures”.

<sup>7</sup> Within two years, according to an APNET presentation at the OECD Ministerial meeting on the Future of the Internet Economy in Seoul, June 2008.

considerably speeded up if the technical community's calculations of IPv4 address availability are anywhere near accurate.

### ***3. Risk sharing and its policy and regulatory implications***

Estimates of the cost of NGA deployment vary according to the technology used (e.g. FTTC or FTTP) and the penetration rates assumed. The recently published Broadband Stakeholder Group report into costs of NGA in the UK, for example, estimates the cost of delivering an FTTC solution in the UK at approximately £5 billion whereas a full FTTP solution would be nearly £30 billion.<sup>8</sup> These figures only assume about 31% take-up across the UK. Higher take up rates would reduce the cost per home but increase the overall costs. The exact magnitude of financial requirements will depend on how the competitive strategy of operators determines whether they invest on a local, national, regional or international scale, as well as whether they invest in next generation local-loop or backbone networks or a combination of these. Within this context, the nature of risk sharing will be largely determined by the architecture of IP networks and service development, and by the overall regulatory structure.

#### **IP traffic handling, revenue-generation and sharing**

As we are sure the Commission is aware, NGAs will largely be based on Internet protocol technologies whose implementation in network architectures will fundamentally differ from the traditional trunk and branch structure of telecoms networks originally designed for analogue transmission. Control over what passes through a traditional network can be exercised at the switches where branches meet the trunk (the main backbone network). But the structure of the Internet is intentionally decentralized and packets of traffic data determine the best way to transverse a network or networks, rather than the switches (or routers). The fact that intelligence lies less in the network – as with traditional copper-based PSTNs – and more at the edge under the determination of users or the applications or services they are using has implications for service development that the Commission consultation paper overlooks.

Within an IP context, traffic handling, prioritization and quality of service become more challenging for operators. Peer-to-peer communication of video-intensive, multiple formatted and interactive applications can suddenly and unpredictably demand huge bandwidth. This makes meeting increasing business demands for guaranteed end-to-end connection and quality of services assurances (needed to provide customers with high-value services wherever and whenever they want them) particularly challenging without end-to-end network control – i.e., having both an IP-based NGA and an IP-based backbone NGN – through (at least) close and highly trusted inter-connection agreements between operators.

Within such an all-IP environment, internationalisation and aggregation of markets and revenues also become important in order to maximize network traffic handling efficiencies. As a result, risk and revenue sharing arrangements become vital adhesive between partners for assuring performance of the overall system. The important question for this consultation is, at the level of the NGA within the context of demand drivers outlined in section 2, what kind of risk and revenue-sharing arrangements are

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<sup>8</sup> "The costs of deploying fibre-based next-generation broadband infrastructure", September 2008.

possible and optimal in terms of the need for investment and competition as enunciated by the Commission?

### **Vertical vis-à-vis horizontal risk sharing**

The CBI's 2007 NGA submission to Ofcom suggested that vertical investment partnerships in NGA between service providers and operators were often preferable to horizontal ones between operators. Horizontal partnerships may optimize traffic sharing arrangements and network efficiencies (and thus maximize ease of revenue sharing). But as they would generally involve similar and longer term partners than in vertical ventures, they could also prove difficult to remove regulatory constraints from unless the conditions were highly specified. Being limited to network operators, they would not necessarily have the inclination or capability to maximize dynamic forms of service development or marginal pricing - and would thus circumscribe the potential range of demand drivers for other investors.

One of the advantages of vertical partnerships, on the other hand, is that they would allow a much broader range of investors to enter the market, and a greater variability of services to be offered in differing geographic areas. For instance, in higher density areas joint venture partners might consist of a network operator and a media provider, in a medium density area between a network operator and a large retail outlet, and in a low density area between a network operator and a highway provider. This would facilitate stimulating investment in NGAs through a wide range of demand drivers and would maximize development of marginal pricing and thus optimize service development.

A potential drawback could be the degree of regulatory complexity that would arise in relation to risk-sharing arrangements and their competitive implications. For instance, a joint venture between a network provider and a media company would be likely to require different regulatory actions/measures - e.g. a possible need for constraints on exclusive content provision and pricing - than those that would be required for a joint venture between a network operator and a highway provider in a different area. But the range of regulatory complexity would possibly decrease over time as initial and short term entrants left and the market became established and more concentrated.

### **Passive vis-à-vis active infrastructure and risk sharing**

Regulation of an NGA environment will in many respects be the same as in the existing local, copper-based communications environment, and this is the view largely reflected in the Commission's consultation document. However, the emphasis in the Commission's consultation on passive infrastructure sharing (Market 4) overlooks the economic reality of trying to build multiple competing access networks - particularly if these networks are intended to serve business customers who are generally more distributed than residential customers - and excludes analysis of the drawbacks of horizontal partnering and risk sharing in service areas such as domain names and numbering. The limited discussion of active infrastructure sharing and bias in favour of passive remedies (such as duct sharing) mean that many new aspects of regulation in an NGA environment are overlooked. Its discussion of partnering and risk sharing in relation to broadband services (Market 5) omits addressing such issues. This bias inherently favours horizontal over vertical partnering, as extensive development of the latter would require a much greater emphasis on active infrastructure sharing.

A preference for vertical over horizontal investment and risk sharing has potentially significant implications for the balance between competition policy and ex ante regulation, and for the nature of

the latter in an NGA environment. Because of the more varied type of investment partners involved, vertical partnerships suggest a more active engagement of competition policy with ex ante regulation will be required than is currently the case, or than would be so with horizontal partnering. While cooperation between competition authorities and ex ante regulators is not unknown in Europe, its greater prevalence could facilitate greater application of competition policy within communications service markets.

## **Policy implications**

Another area of regulation that will become more prominent in relation to service development and hierarchical partnering within an NGA environment is in intellectual property rights (IPRs) protection. While the separation of network and service regulation is a long established principle of the EU regulatory framework, network operators' own service development has been making IPRs an issue relevant to them – for example, in France's three-strikes policy or the UK's Memorandum of Understanding between ISPs and creative industries. The issue has also arisen in regard to peer-to-peer file sharing that will be exacerbated in an all-IP environment.

While vertical partnering for NGA development is likely to reduce the impact of IPRs on operators, it will also limit their ability to develop the higher-value services through which NGA promises to increase revenues. Hierarchical partnerships, by contrast, will enable operators to share in the rewards of demand for service development other than as simple carriers, but will expose them to increased IPR responsibilities unless traffic management regulations are agreed that are non-discriminatory and containing specified service levels for universal service obligations.