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Much of Scott's published work is interdisciplinary, combining economic, public policy, and technological analysis.

Areas of specialization include:

- Network interconnection (including PSTN,NGN and Internet; Europe and the U.S.) and voice call termination
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NGAs and the single market: the achilles' heels of the digital agenda

Andrea Renda

The brand-new EU Digital Agenda launched in August 2010 promises much to European consumers and businesses[1]. The goals set by the Agenda seem to announce the beginning of a new era for EU citizens, in which prosperity will be achieved by the migration to the use of online public and private services for all, and increased growth and productivity will be secured by the diffusion of IT-enabled services through modern, high-speed telecommunication infrastructure. Achieving these goals is expected to bring unprecedented benefits to the European economy in the years to come: realizing the Single Market for electronic communications – a target that the Council wants to see achieved by 2015[2] – is expected to generate more economic benefits than the 1985-1992 Single Market package – which makes the Digital Single Market potentially the most important reform package of all times for the European Union. A recent study finds that a realisation of the Digital Single Market could have a EU GNP boost of 4.1%, quite apart from the dynamic incentives leading to innovation and new services[3].

At the same time, the Digital Agenda Communication does not explain in detail how these goals will be achieved in practice. In particular, although the Communication correctly adopts a holistic approach by exploring most of the "provinces" of information society policy – from security and trust to critical infrastructure protection, data protection, copyright enforcement, e-inclusion, spectrum policy, public services, e-health and e-government services, role of public procurement etc. – it is quite clear that none of the prospective benefits will ever materialize if Brussels policymakers do not devise a smart way to encourage investment in new high-speed broadband infrastructure – the so-called Next Generation Access Networks (NGAN). Without a fully functioning high-speed network, in particular, those innovative services that can lead to e-inclusion and increases in productivity and efficiency – think about e-health, e-procurement, smart grids, cloud computing – will not reach the market as quickly as they could have. Unfortunately, prospects are rather gloomy: an observation of current developments in the EU27 suggests that a number of important obstacles still stand between the goals set by the Digital Agenda and the reality of the e-communications sector. The most important obstacles can be summarized as follows.

- First, as of today the Single Market for e-communications has not been achieved. As recently observed by Commissioner Kroes, when it comes to e-communications "Europe is still a patchwork of national markets. We no longer have queues of lorries at frontiers but we are still very far from achieving a Digital Single Market"[4]. Price and non-price differentials in the EU27 are so big that no trace of convergence can be convincingly found in the available data[5]. And the fragmentation of national markets hampers investment in NGA networks, since the needed investment inevitably lacks the minimum scale it should display to enable investors to reach the break-even.

- Second, while the Commission was working on successive revisions of the Telecoms Package and various drafts of the NGA recommendation, member States have taken widely diverging avenues in their attempt to encourage investment in NGAs, further fragmenting the Single Market into separate provinces. To quote just one instance, the existence of countries in which the incumbent's network is functionally separated and other countries in which no such remedy has been imposed creates very uneven entry conditions for companies wishing to operate in more than one Member State. At the same time, remedies that have been identified by national regulators in the NGA environment range from mandatory sharing of in-building wiring to access to dark fiber, from bitstream access to duct access, in what constitutes a patchwork of regulatory experiences that is increasingly difficult to reduce to any consistent pattern of regulation. What's more important, while the new NGA Recommendation adopted in September 2010, unlike previous drafts, places emphasis on the immediate availability of bitstream access as a regulatory remedy, a number of Member States already decided to refrain from imposing such remedy on their national territories. Whether they will have to revise these decisions after the adoption of the recommendation, is still hard to predict – but one can reasonably doubt they'd be happy to do so.

- Third, upcoming developments in the world of e-communications that may boost the achievement of the Digital Single Market are still facing a stunning lack of legal certainty. For example:

  - Cloud computing promises almost a revolution in the way IT resources are used especially by small firms, with unprecedented cost cutting potential. However, full migration to cloud computing may be hampered by the absence of clear rules on openness and interoperability, by ambiguity on data and copyright protection as well as lack of coordination of national cyber-security policies.

  - Similarly, the competitive environment between fixed-line broadband and wireless broadband platforms may be revolutionized by the advent of 4G wireless networks, as in the case of the soon-available LTE standard, which promises speeds that are very close to those currently featured by fixed-line broadband. Once this happens, the

1 The Digital Agenda is one of the seven flagship initiatives of the EU2020 strategy launched by the Barroso II Commission. For information on the EU2020 strategy, see http://ec.europa.eu/eu2020.

2 See Conclusions of the European Council, 17 June 2010, available at http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/ec/115346.pdf at 7.

3 See Copenhagen Economics, The Economic Impact of a European Digital Single Market, Final Report, March 2010, at http://www.epc.eu/dsm/2/Study_by_Copenhagen.pdf.

4 See Neelie Kroes, "The Digital Agenda: challenges for Europe and the mobile industry", Mobile World Congress 2010 Barcelona, 15th February 2010.

5 See Pelkmans and Renda, The Digital Single Market as EU Telecoms' Cinderella (2010, forthcoming) for a detailed analysis.

prospects for defining joint fixed-mobile relevant markets (as recently done in Austria and approved by the European Commission) will become way more concrete than they are today, potentially requiring a reworking of the regulatory framework for e-communications in the EU. However, new mobile platforms cannot count on any legal certainty as regards the future availability of spectrum in the most appropriate bands: compared with the US, where additional spectrum has already been made available in the 700 MHz auction and 500 MHz of additional spectrum will be made available in the years to come, in Europe mobile operators are still drowning in uncertainty.

- Fourth, the new high-speed broadband infrastructure is likely to evolve into a more "platformized" offer of applications and services[6]. This, in turn, requires the development of a layered policy approach, in which rules at all layers are consistent with the goal to secure sustainable competition at all layers, and provide incentives to invest in NGAs in the first place. This certainly includes network neutrality rules – already available in the EU telecoms framework, but still to be tested in practice – but also, and significantly, guidance on the future application of competition rules at higher layers, including content provision on different platforms, discrimination on private and public clouds, search neutrality, and the protection of content and personal data over new interactive digital platforms.

Given those persisting obstacles, it was to no one's surprise that the Commission admitted that Europe has fallen behind other countries and world regions in terms of investments in NGA networks. Data on investment in fiber networks are far from reassuring, and show that many non-EU countries and regions have been investing more heavily in FTTx (mostly, in FTTN+VDSL) compared to the overwhelming majority of the EU27. Even more importantly, there seem to be no beacons of hope in terms of future recovery, if the regulatory treatment of NGAs is not radically revisited. This is even more serious since, if NGA deployment is eventually abandoned or delayed, the European Commission will never even get the chance to prove that the rest of the Digital Agenda could deliver outstanding social benefits to European citizens. Simply, one of the key ingredients is be missing, and there is no way of making the recipe work without it.

How is Europe reacting to this situation, which evidently contrasts with the optimism that surrounds the launch of the EU Digital Agenda? A tentative reaction can be spotted in a number of recent initiatives. First, the NGA Recommendation adopted in September 2010 is supposed to reassure potential investors about the rules that will apply to NGA deployment depending on the market and geographical features of the area in which the high-speed networks will be deployed. Second, the treatment of state aids for the deployment of high-speed broadband networks has been clarified in recent Community Guidelines, which follow up on the European Economic Recovery Plan (Europe's stimulus plan adopted during the first months of the financial crisis). Third, the Commission has mobilized funds for NGA deployment from several EU budget sources, as well as from the enormous lending potential of the European Investment Bank. In addition to these initiatives already launched, the Digital Agenda seeks to complete the picture by announcing a new European Spectrum strategy – currently in the European Parliament – and by responding to the recently closed consultation on net neutrality[7]. Finally, there are rumors on an upcoming initiative on roaming – which will announce the elimination of roaming charges by 2015 – and a (less likely) move towards a European broadband wireless space, which should also involve initiatives on a pan-European allocation of spectrum.

Will this be enough? In this paper, I argue that it is not. More in detail, this paper concludes that:

I. The NGA recommendation, by reiterating the "old" approach to telecoms regulation, does not contribute to solving the pre-existing question of how to reconcile the conflicting objectives of investment and intra-platform competition in the EU, and may lead to a "Pareto pessimum" in which all players are worse off – incumbents don't invest, new entrants just fall from LLU (in the "old" ladder) to bitstream (in the "new" one). This is intuitive: if we agree that Europe has a problem of investment in NGA, then replicating in this new, complex environment a regulatory approach that has proven hardly effective for the copper environment seems at best optimistic.

II. The objective of reaching the Single Digital Market becomes more distant with the NGA Recommendation, which –contrary to what was done in earlier drafts – ignores any measure aimed at fostering consolidation in the Single Market.

III. The NGA Recommendation misses the broader picture. The proposed introduction of a "risk premium" to stimulate incentives to invest in NGAs is not going to suffice: the rules that will apply at all layers of the value chain are important for network operators wishing to embark in such a courageous endeavor. Currently, there is no reassurance that these operators will be able to reap the benefits of the NGAs they deploy – in more economic terms, there is no reassurance that operators will be able to internalize the positive externalities they create by putting in place those networks. Accordingly, absent clarity in the rules that apply at higher layers, it is more likely that public funds end up being the one and only source of equity for new ventures in NGN deployment.

The remainder of this paper is structured as follows. Section 1 below explores the rationale for unbundling in a NGA world, and comments on the approach adopted by the Commission NGA recommendation. Section 2 broadens the picture by providing a business model analysis of the current NGA deployment problem. Section 3 concludes by providing an overall assessment of the current state of the Digital Agenda, and suggests policy actions that can minimize the risk of a "new i2010" strategy, i.e. the risk of missing another set of targets.

1 The NGA Recommendation: errare humanum…

Since the launch of the i2010 strategy and the first steps of the review of the EU telecoms package between 2005 and 2007, perhaps the most heavily debated issue in the field of e-communications has been how to encourage incentives to invest in new, high-speed broadband networks. The goal of achieving universal broadband coverage in Europe has been reiterated several times by the European Commission and other EU institutions, and inspired by the belief that such goal would significantly contribute to higher productivity, growth and jobs, at the same time contributing to greater competitiveness of the EU27 in the global context. Available data over the past decade have consistently shown that the

6 See i.a., Ballon, P. (2009) The Platformisation of the European Mobile Industry, Communications & Strategies, 2009, vol. 1, issue 75, pages 15-34; and Renda, A. (2010), Neutrality and Diversity in the Internet Ecosystem, available online in draft form at http://ssrn.com/abstract=1680446.

7 http://ec.europa.eu/information_society/policy/ecomm/library/public_consult/net_neutrality/ index_en.htm

EU is lagging behind the United States and "Asian tigers" in terms of productivity, and that the main determinant of this productivity gap is indeed the investment in ICT and the consequent uptake of new technologies, which directly impact productivity. Against this background, a study carried out for the European Commission by Micus Management back in 2008 also concluded that better broadband uptake would positively contribute to growth in the EU27, creating up to 2 million jobs and up to one trillion of economic activity between 2006 and 2015 (in the most optimistic scenario)[8]. Further studies were drafted for the European Commission on the economic and the social impacts of broadband, confirming the enormous potential of bringing modern interactive digital platforms to all European citizens[9].

The Digital Agenda Communication translates this into a new goal: to bring basic broadband to all Europeans by 2013 and seeks to ensure that, by 2020, all Europeans have access to much higher Internet speeds of above 30 Mbps; and 50% or more of European households subscribe to internet connections above 100 Mbps. Of course, this can only be interpreted as an intermediate goal, rather than a final one. Universal coverage is good only to the extent that it significantly contributes to economic growth and, ultimately, social welfare. In order to ensure that broadband penetration is coupled with economic development, it is crucial that EU policymakers focus on the development of new interactive digital platforms, which bring much more than an empty network to European households and businesses – otherwise, the availability of a high-speed broadband network may translate into a very low percentage of broadband subscribers.

The need for a wide variety of applications and content is as essential as the need for high-speed infrastructure in place to carry those data. Accordingly, the effort devoted by EU policymakers should target at the same time the incentive to deploy next generation infrastructure, policies aimed at ensuring variety and quality of applications and contents on the layered architecture of new digital platforms, demand-side policies aimed at securing e-inclusion, and policies aimed at encouraging the delivery of public services over the new infrastructures.

Against this background, the NGA recommendation was charged with a rather heavy responsibility within the Digital Agenda: that of offering market players a legal framework that would provide reasonable regulatory certainty and enhanced incentives to invest in NGA networks, and particularly on fiber networks. Evidence reported in the Communication on the Digital Agenda shows that Europe is lagging far behind other countries in investment in fiber, and the NGA recommendation was supposed to offer a way out, a remedy to this very difficult and unacceptable situation. At the same time, one would have expected the NGA recommendation to offer information and suggestions on how the "mix of technologies" to which the European Commission refers in the Digital Agenda will take shape in practices.

Since the first attempts to discuss the review of the European telecoms package back in 2006, the need to offer solutions tailored on the upcoming investment opportunity in NGA networks have surfaced, proving immediately difficult to solve. First, the European Commission was under heavy pressure by some stakeholders, who saw the magnitude of the investment needed to bring NGA networks to the EU27 (now estimated at €350-400 bn) as warranting an ad hoc policy approach, possibly oriented towards the granting of "regulatory holidays" for major new investment in high-speed infrastructure. This stance, very much in line with the regulatory forbearance approach adopted by the Federal Communications Commission for investments in FTTx and DSL since 2003, was officially rejected by the European Commission, on the basis that most EU member states do not feature the same level of infrastructure-based competition that the United States can display thanks to the existence of a legacy cable infrastructure[10]. In addition, countries that have tried to depart from the Commission's general orientation by granting regulatory holidays for the deployment of high-speed networks (like the German decision on Deutsche Telekom's VDSL network) have seen a blunt reaction of the Commission, in the form of infringement proceedings.

In any event, the calls for "lifting" regulatory obligations left a mark also in the first versions of the European Commission's Draft recommendation, which aimed at securing that national regulators awarded priority to granting access to the deepest possible elements of the existing fiber networks[11]. This meant, in practice, that those that wanted to use a competitor's infrastructure had to deploy the terminating part of the network by themselves, which in turn made the risk of strategic and uncommitted (some would say parasitical) entry less likely. This early version of the NGA Recommendation seemed more consistent with the idea of "essential facilities" that backs the whole access policy approach adopted by the European Commission, as well as with the need to trigger consolidation in the Internal Market[12]. However, subsequent versions of the draft NGA Recommendation have departed from this approach, and have instead reverted to an "investment ladder" approach, which is likely to create enormous problems in the implementation of the telecoms package in the years to come. When the NGA Recommendation finally saw the light on September 20, 2010, it became clear that after years of debate and a few concessions to the modern economics of NGA networks, the European Commission had finally decided to make a U-turn and get back to the very same approach it has adopted for copper networks since 2003.

What we see in the NGA Recommendation today is, eventually, a reiteration of the good old "investment ladder" approach that dominated the implementation of the 2002 telecoms package in the "copper" years. The Recommendation clarifies that national regulators should open as many access points as possible, possibly encouraging new entrants to gradually invest in their own infrastructure. At the same time, it clarifies that, when setting access charges for the various network elements (both passive and active infrastructure), they should apply a premium that reflects the riskiness of the investment for the infrastructure owner. The final result is, in theory, that new players without an own infrastructure will initially enter the market as resellers to then start climbing the ladder of investment; and at the same time facilities-

8 See Fornefeld, M. et al. (2008), The impact of Broadband on European Growth, Micus Management Ltd., available at http://ec.europa.eu/information_society/eeurope/ i2010/docs/benchmarking/broadband_impact_2008.pdf

9 See the Study by the London School of Ecconomics (2009), The Economic Impact of ICT, at http://ec.europa.eu/information_society/eeurope/i2010/docs/eda/econ_impact_of_ict.pdf; and the study on The Social Impact of ICT by the Universität Siegen, Fachbereich Wirtschaftsinformatik und Neue Medien, Germany, at http://ec.europa.eu /information_society/eeurope/i2010/docs/eda/social_impact_of_ict.pdf.

10 See Viviane Reding's speech 06/422 on June 27 2006, at the annual meeting of Bitkom, stating "that 'regulatory holidays' are not a policy option for the Review 2006, where we want to pave the way for completing the successful process of market liberalisation. We cannot go into the future in reverse gear".

11 See Cave and Shortall, in this Report, for a more detailed discussion of the various drafts of the NGA Recommendation.

12 Renda (2009), Competition-Regulation Interface in Telecommunications. What's Left of the Essential Facilities Doctrine. Telecommunications Policy, Volume 34, Issues 1-2, February-March 2010, Pages 23-35.

based players will be more fully compensated, which will preserve their incentives to invest.

However, this story is just too good to be true. As a matter of fact, these effects are unlikely to materialize. It may be interesting, indeed, to observe that the few large companies operating in a very concentrated market such as the US, having been granted regulatory holidays, are still waiting to see what regulatory treatment they will receive on net neutrality and other issues before deciding to embark into risky investment in fiber to the home (the exception being Verizon's FiOS network, and only in a limited number of densely populated areas). At the same time, investment in FTTH by NTT DoCoMo in Japan has been matched with a rather lenient treatment, and the operator now holds a 75% market share in fiber connections, more than double its share in DSL. Compared with these non-EU companies, European telecom operators face hundreds of small competitors, can bet on intrusive price regulation based on their share in national or even regional markets, and have no clue about what rules will apply to all the layers of the NGN architecture.

Against this background, it is important to recall that the problem of incentives to invest pre-dates the advent of NGA networks in Europe. The 2003 regulatory framework, just like the previous "ONP" framework, has failed to provide telecom companies with the right mix of incentives to match the efforts of US and Asian telcos. OECD data, for example, show an important gap in terms of per capita investment in telecommunications infrastructure between the US, South Korea, Japan and most EU Member States since 1997. One of the most important reasons for this delay was the fact that the EU telecoms framework focused mostly on liberalizing telecoms markets at Member State level, country by country, and failed to approach the issue from a pan-European perspective. I will get back to this issue in Section 3 below.

2 Unbundling NGANs: the broader picture

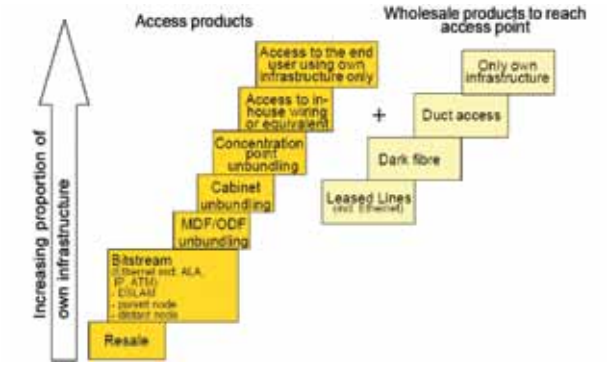
The different architecture of FTTx networks posed more problems than a mere increase in access charges could potentially try to solve. More in detail, a number of problems emerge in the attempt to replicate the "old" scheme of the telecoms package to the "new" world of NGA networks. First, the "ladder of investment" in an NGA environment is radically different from the one featured by copper networks[13]. Second, unbundling would be warranted only whenever the NGA network elements to be shared can be considered as "essential facilities" – i.e. facilities that cannot be technically or economically duplicated[14]. This, in the era of convergence between fixed and wireless networks and with the upcoming advent of 4G wireless networks that can effectively compete with fixed networks, becomes even less likely. Third, the problem of incentives to invest is better approached under a business model approach, which in turn requires a careful balancing of incentives at all layers of the IP-based architecture. Below, I explore each of those problems in more detail.

2.1 Unbundling NGA networks: specific problems

The fact that unbundling practices must change substantially in an NGN environment is practically uncontroversial, and was confirmed by several regulators and field experts in the past years[15]. The main differences that are likely to emerge for what concerns the application of the ladder of investment are the following.

First, the ladder of investment is different in NGA networks compared to copper networks. Access points and conditions of replicability change dramatically from copper to all-IP networks. As explained in a recent note by the Board of European Regulators of Electronic Communications (BEREC), and exemplified in Figure 1 below, both the access products and wholesale products available to reach the access point change significantly.

Figure 1 – The "new" ladder



Source: BEREC (2010)

Moreover, the functioning of the ladder depends on the type of network and the specific technology used. For example, in a FTTC network there is much less space to co-locate equipment and far fewer premises connected to each site compared to traditional networks, since passive access can take place at the street cabinet only. An Ofcom study has found that sub-loop unbundling for an FTTC network will increase the cost of provision by a minimum of 34% and rises to 37% in the case of three additional providers[16]. On the other hand, physical unbundling for a passive optical network (PON) is hardly practical, though it could theoretically occur at the splitter level. The easiest case for unbundling can be made for the most expensive networks, i.e. p2p FTTH networks: however, given that required investments are very substantial, one may end up questioning the opportunity of mandating access to those networks.

Against this background, the emerging approaches in countries that are implementing access policy for NGANs tend to focus mostly on the sharing of passive infrastructure, and in particular duct-sharing, rather than on active infrastructure sharing (such as bitstream or SLU)[17]. The scope and conditions for infrastructure

13 The NGA Recommendation (Staff Working Document) is clear: "Infrastructure-based competition from local loop unbundling (LLU) and cable has made important progress in recent years. However, the market position of alternative providers has developed on the basis of pervasive access regulation, and many entry barriers remain. These barriers may even become more pronounced in an NGA setting. For instance, while today an LLU competitor can connect its own network to the incumbent's access network at the local exchange (unbundling at a distance of several kilometres from the end-user's premises), such interconnection will as a general rule no longer be possible in an NGA setting". See http://ec.europa.eu/information_society/activities/broadband/docs/nga_swd.pdf

14 See Renda, A. (2009) Competition-Regulation Interface in Telecommunications. What's left of the Essential facility Doctrine, cit.

15 See, i.a., Cave, M. (2010). Snakes and ladders. Unbundling in a next generation world, Telecommunications Policy Volume 34, Issues 1-2, February-March 2010, Pages 80-85; and BEREC, Next Generation Access – Implementation Issues and Wholesale Products, BoR(10)08, March 2010.

16 See Ofcom (2010), Review of the Wholesale Local Access Market, March 2010, Annex 9 (Sub-loop unbundling – a detailed analysis), available online at http://stakeholders.ofcom.org.uk/binaries/consultations/wla/summary/wlacondoc.pdf.

17 As already mentioned above, a number of European countries have decided not to impose bitstream as a remedy in order to focus on least replicable assets, but the

sharing, therefore, change significantly, together with the conditions for effective competition between incumbents and new entrants. In other words, whether the investment ladder can be as effective in an NGAN environment, as it has proven to be in traditional copper networks, it unclear at best.

In addition, and also as a consequence of the array of available technologies, next generation access networks call for geographical segmentation in the identification and application of regulatory remedies. This increases complexity in the regulator's everyday activities, as it calls for customized remedies for every portion of territory. As acknowledged by the European Commission in a recent document,

> "The deployment of fibre networks is likely to modify the current network topology and access points (in particular in relation to LLU), thus affecting the investments made. It is necessary that NRAs adopt a proactive regulatory approach which promotes investment by the incumbent and alternative operators, whilst preserving the investments already made by alternative operators in LLU"[18].

This also means that the challenge for policymakers has now become essentially fourfold, as they must seek to:

- Preserve the incumbent's incentive to invest. Deployment of high-speed broadband networks is considered to provide a beneficial boost to the economy in terms of growth, jobs and productivity. The goal of stimulating investment has become even more important in recent times, as counter-cyclical investment in broadband networks was evoked in several countries – plus, international competition to rank high in broadband deployment has become hectic.

- Preserve the incentives of those that have already purchased LLU. Players that have made their way into the incumbent's copper network by purchasing access to unbundled local loop may find it very difficult to jump to different rungs of a different ladder, given the significant size of the investment already undertaken[19].

- Preserve the incentive and viability of "new new entrants". Devising pricing policy aimed at providing incentives to current LLU holders to migrate to the next generation access network is not the same thing as providing incentives to brand new entrants to climb the investment ladder from scratch. This may create substantial problems for regulators in the first years of transition towards new all-IP networks.

- Keep prices down for end consumers. At the end of the story, policymakers also have to ensure that whatever pricing strategy is in place, end prices for consumers are affordable, so that the demand for NGN subscription remains sufficiently high.

Against this background, the NGA Recommendation correctly shifts the attention towards geographical segmentation in order to ensure that national regulators reach more targeted solutions for given portions of territory, depending on local conditions and on the availability (or economic viability) of more than one infrastructure. However, the NGA Recommendation reinstates the need to have all remedies available from the outset, in particular bitstream access, and in doing so reaches a particularly undesirable result: incumbent players will face the prospects of having to implement very unpractical and costly solutions to make certain network elements available to their competitors; alternative operators that had already purchased local loop unbundling in copper networks will find it attractive to fall down to bitstream access in NGA networks; and regulators will be faced with the even more difficult task of having to set prices and organize simultaneous climbing on the new ladder in order not to leave any competitors behind.

One could object that incentives to deploy NGA networks may be preserved due to the risk premium that will make network sharing more attractive. However, as will be clarified in the next sections, the incentives to invest in NGA depend crucially on a number of other factors, which certainly dwarf the availability of a risk premium that regulators have anyway applied overtime in their calculation of the cost of capital to be included in the tariffs. Even more worryingly, some commentators have observed that the availability of a risk premium, together with the stringent rules on margin squeeze contained in the final version of the Recommendation, may even end up reducing price differentiation and lead to a flattening of price schemes in an areas close to the regulated wholesale price. Another undesirable situation that adds uncertainty to already obscure business prospects[20].

2.2 Unbundling in the era of convergence

As already mentioned, the case for network unbundling as the core remedy to promote sustainable and vibrant competition in modern communication networks must today be considered against the competitive dynamics triggered by several dimensions of convergence: not only convergence (and increased competition) between fixed and mobile communications, but also convergence between the telecommunications and the IT and media domains, and convergence between the infrastructure layer and higher layers of all-IP networks. More in detail:

- Convergence between fixed and mobile telecommunications is finally becoming a reality. This is certainly happening, though slowly, in Europe, as confirmed by a recent decision adopted by the European Commission, which authorised the definition of a common fixed-mobile relevant market for retail broadband in Austria[21]. The Commission recalled that "[…] fixed and mobile retail broadband services are normally not belonging to the same market. However, on the basis of the following circumstances closely related to the specificity of the Austrian market, the Commission accepts the inclusion of mobile and broadband connections into the retail residential market for the purposes of the present notification." Further prospects in this direction came from a recent document jointly elaborated by the BEREC and the Radio Spectrum Policy Group, which discusses the main conditions for defining joint fixed-mobile markets[22]. The use of femtocells and the remarkable speed of imminent 4G networks suggests that the substitutability between fixed and mobile broadband access will be on the increase in the months to come. A recent report by Analysys Mason (2010) confirms this trend.

NGA Recommendation seems to have gone in a different direction.

18 European Commission, Staff working document Accompanying the 15th Progress report on the Single European Electronic Communications Market (15th report) – vol. 1, COM(2010) 253, 25 May 2010.

19 See Cave, M. (2010), Snakes and Ladders, cit..

20 See again Cave and Shortall, in this report.

21 For a description of the methodology followed in Austria to reach this conclusion, including data on the hypothetical monopolist test run by the regulator RTR, see Feiel (2010), presentation at the 25th Anacom Workshop "Mobile broadband. A substitute for fixed?", available at http://www.anacom.pt/streaming/25ANACOM2010v2.pdf?contentId=1020729&field=ATTACHED_FILE.

22 See the BEREC-RSPG (2010), Report on market definitions, BoR(10)28, June 2010.

- Convergence between telecommunications and IT is fully realized by the migration towards an all-IP infrastructure, which is bringing new business models, the creation of multi-layered platforms where applications and services dominate user experience, and constantly changing competitive dynamics. Not only fixed broadband platforms are increasingly integrated into the Internet, but cloud computing is shifting most of the computing capacity into centralised servers, which will be made accessible from both fixed and mobile devices. The success of the App stores created by Apple and Google Android promises to revolutionise also the way in which we use computers, not only smartphones. This form of convergence is triggering also the convergence between the infrastructure layer and higher layers of all-IP architectures, such as the logical layer, the application layer and the content layer in the (simplified) OSI representation.

As stated, i.a. in OECD (2009), broadband platforms are much more than simple communications networks, and can be considered as ecosystems that comprise "different elements that use high-speed connectivity to interact in different ways". In these ecosystems, competitive dynamics have become way more complex that it used to be the case when the telecoms sector resembled a traditional network industry, mostly posing problems of third-party access and liberalization. The foundations of unbundling policy become even more shaky when we look at the features of emerging markets, for the following reasons.

First, the emerging substitutability between fixed and mobile has a direct effect on the nature of essential facility often attached to the incumbent's fixed network. Even when reasonably substitutable fixed networks are not available, the existence of wireless solutions that fall in the same relevant market clashes with one of the conditions for a finding of essential facilities, i.e. the impossibility to technically or economically replicate the service. Absent this lack of replicability, unbundling seems to be way less justified.

Second, the assessment of market power is becoming increasingly complex due to (i) "horizontal" competition coming from players that operate in the same relevant market of the fixed-line incumbents (facilities-based cable or fibre entrants, wireless broadband operators, consortia of municipalities, etc.); (ii) "vertical", "intra-platform" competitive pressure exerted from players that provide competing services in a nomadic way (e.g. Skype of Google voice for VoIP services); and "inter-platform" competition by players that propose themselves as platform operators, even if they come from different relevant markets (e.g. Apple's iPhone or iPad, Google Android, Nokia Ovi, and many other nascent platforms). The literature has brilliantly summarised these dynamics of competition – and especially the latter one – by referring to "competition for eyeballs", which is animated by competing platforms that try to conquer the attention (and the bill) of the end user: cloud computing can do nothing but exacerbate this form of competition, with several private cloud managers offering closed, semi-open or fully open cloud services.

Third, a related, procedural problem for regulators and competition authorities is how to define the relevant market. The links between system layers and the lack of fully interoperable standards creates hidden provinces in cyberspace, where substitutability between platforms or platform "complementors" is indeed limited, warranting narrow market definitions. Antitrust authorities have already had their way into this quagmire. For example, in the US Microsoft case the relevant market for Intel-compatible Operating Systems was considered as separate from the relevant market for Mac-compatible OS. The FTC went even further in a famous case, Intel v. Intergraph, by defining Intel as a monopolist for Intel processors, something that should have at least rung a bell. The fact that in the ICT world, "the license is the product"[23], and "the product can become the market"[24] suggests that the notion of relevant market, interpreted the way we have done outside the ICT world, may become completely useless in modern broadband platforms.

Fourth, it is now widely acknowledged that modern broadband platforms exhibit the features of two-sided, or better multi-sided markets. No player can succeed to conquer the attention of new users in those markets without good network connectivity, a large participation of application and content providers, one or more compatible device producers, and of course an established population of users[25]. This peculiarity creates, i.a. also problems in terms of the selection of appropriate remedies. In particular, cost-based pricing is in most cases inappropriate for these types of markets[26], and even asymmetric regulation as a whole can create problems, since behaviours that may be erroneously considered as monopolization strategies are in fact replicated by all players in the market, regardless of their market power.

Where does this leave unbundling practices such as the ones proposed by the NGA Recommendation? My take is that the theoretical foundations of network unbundling are likely to be severely jeopardized by the existing developments. In particular, EU policymakers should reflect a bit further on the elements on modern broadband platforms, the replication of which would be absolutely uneconomical, such that mandatory access is the most appropriate pro-competitive remedy.

As a matter of fact, for the infrastructure layer these elements seem to be heavily dependent on the "where" (geographic area), the "what" (some technologies are way more difficult than others when it comes to unbundling, e.g., GPON) and the "how" (how to arrange the migration to the new ladder for LLU operators, whether to opt for access to in-house wiring, wavelength unbundling at the ODF, access to ducts, dark fibre, etc.). As of today, elements that may be difficult to replicate certainly include passive infrastructure (ducts, masts) and – under more restrictive circumstances – bit-stream or sub-loops. However:

- This reasoning is valid only in "1.x" regions, i.e. areas where there is only one fixed-line broadband network, together with wireless (up to 3G). With more facilities-based competition, replicability is already proven in practice, and the economic justification for unbundling is much weaker.

- Other equally important bottlenecks may be found in other layers – for example, the operating system; the DRM system; killer

23 I refer here to the fact that, given that information can be endlessly duplicated and information goods have negligible marginal costs, it is access to the product, rather than the possession of a physical copy, that determines ownership. See i.a. Gomulkiewicz, R. W., The License Is The Product: Comments on the Promise of Article 2B for Software and Information Licensing, 13 Berkeley Tech. L.J. 891, Fall 1998.

24 This is related to the existence of network and learning externalities, together with system good modularity effects, which can lead to customer lock-in into specific systems, and lead markets to "tip" by creating short-term monopolies, rather than the co-existence of competitors at any given moment in time.

25 See Renda A. (2009), I own the pipes, you call the tune. The net neutrality debate and its (ir)relevance for Europe, CEPS Working Paper; and Poel, M., A. Renda and P. Ballon (2009), Business Model Analysis as a Tool for Policy Analysis, Info Vol. 9, Issue 5, pages 86-100.

26 See, i.a., Renda, A. (2009), cit.; and Wright, J. (2003), One-Sided Logic in Two-Sided Markets, AEI-Brookings Joint Center Working Paper No. 03-10.

apps; privileged/discriminatory access to a dominant cloud; key content; billing/charging functions and even IPR-protected business methods can be seen as candidates for mandatory access policy. Should we impose unbundling in all those layers? And even more importantly, where is market power located? Depending on the circumstances, the degree of freedom that a fixed-line incumbent may have on the setting of price and other conditions of offer for its products can be virtually zero. The key example here is the development of dominant clouds over mobile platforms – who has the market power, Apple's iPhone or T-Mobile? Google Android or Vodafone? Tomorrow, the availability of proprietary clouds may lead to a similar top-down imposition of contractual conditions also on the fixed line. And dominant OS players, content providers, application providers may end up being more powerful than the gatekeeper (the ISP), which may be put at a disadvantage in negotiating with players coming from upper layers. In antitrust practice, independence of behaviour is an essential feature of dominance (SMP). Even dominant companies, when they face a strong countervailing buyer power in vertical relations, are normally not found in a position to abuse. So, what will happen with once-dominant ISPs? Will national regulators be able to detect their actual degree of market power and fine-tune regulatory obligations accordingly?

- An additional problem, which is very often underrated or ignored, is that when we discuss essential facilities in regulation or competition policy, we are normally talking about something that is already in place – be that a press distribution system (Bronner), an operating system (Microsoft) or even a ski resort's facilities (Aspen Skiing). Here, we are attaching the essentiality label to facilities that have to be built – no surprise that the competition-investment trade-off becomes even more urgent. Hence no surprise if, in countries where unbundling is likely to be on the horizon, incumbents have just decided to stay away from investing on NGNs.

To conclude, it seems self-evident that telecommunications network operators are in a very peculiar situation today, which the NGA Recommendation fails to appreciate. Until today, they have been forced to compete with rivals with whom they were sharing their own network at regulated (and often below-market) prices. Today, they know that, as soon as they invest in fibre networks, they will start facing increased competitive pressure from their same rivals (mostly, having purchased bitstream access), rivals in the wireless world, rivals in the applications world – the latter even being able to fully free-ride on this magnificent new fibre network. Would you invest in this situation?

2.3 Unbundling and neutrality in a layered ICT world

As observed in the previous section, the layered nature of new all-IP platforms adds several degrees of complexity to the already delicate assessment that needs to be made by the regulator wishing to impose access obligation on a dominant network operator. One important consequence of the fact that next generation networks, for the most part, still need to be deployed in most countries around the world is the need to take into account the business case for investment, before the positive externalities associated with the availability of bandwidth can eventually be unleashed. The fact that broadband infrastructure conveys positive externalities to the whole economy, and to applications and content providers in the first place, must be adequately considered before a sustainable regulatory approach can be identified. The consequence of keeping a "copper era" regulatory approach in times of all-IP networks – as done by the NGA Recommendation – are at least of two types.

On the one hand, if the focus of the regulatory effort to boost competition in NGANs remains exclusively on the infrastructure layer, then the risk of undermining incentives to invest would be tangible. In particular, if policies at the infrastructure layer are not coordinated with those that affect the higher layers, the result might simply be no investment in infrastructure at all. This would be the case if internet service providers knew that, following a massive investment in NGANs, they would be forced to keep their pipes "dumb", as would be the case under a mandatory net neutrality scenario. The explanation is simple: on the one hand, under current regulatory arrangements and cost-base pricing, they would face very limited return on their investment at the infrastructure layer: any attempt to monetise the investment would be frustrated by the existence of intra-platform competitors that will charge competitive retail prices, being able to rely on a regulated wholesale access charge. At the same time, there would be no guarantee of any revenue coming from higher layers: any attempt to charge for services would result immediately in lost customers, since "best effort" traffic would work for every player in the same way, and any price difference would result in switching. Finally, as an additional remark, mandatory net neutrality would further undermine incentives to invest since demand would likely be low for networks that are still prey of best effort traffic only.

In a different scenario, if the regulator approaches similar competitive problems in the same way on all the layers of the all-IP platform, there may be a significant risk of Internet regulation. Since bottlenecks and market power can emerge at all layers of the value chain, we should get ready for heavy regulatory intrusion into key service layers such as search. This is, to some extent, already happening with antitrust probes on online search firms and online advertising companies, but may be exacerbated to reach episodes of functional separation of multi-product giants that act as platform operators. And with the emergence of cloud computing, there may be scope for preventing exclusionary abuses on the cloud by granting open access to all products. Under such a scenario, it would not be strange to assist to calls for open access to successful semi-open platforms such as Apple's App Store. The absence of product differentiation and innovative business models that this situation would create makes it very undesirable from a social welfare perspective.

As a result, the only solution for a regulator is to fine-tune policy actions with a focus to balancing the incentives of all players involved. The best regulatory approach for the infrastructure layer, thus, may not always be unbundling, and certainly will not be unbundling whenever there is mandatory network neutrality pushed to the extreme (with the only exception of publicly funded networks). This circumstance makes the work of sectoral regulators even more difficult, and the case for unbundling as the mainstream model for future telecoms regulation even more unlikely.

3 The Digital Single Market: how far are we?

Although briefly, it is important to recall that the EU Digital Agenda crucially depends on the achievement of the Single Market for e-communications. In this respect, the approach adopted so far by the Commission – and also reiterated in the NGA Recommendation – does not seem to move in any desirable direction. One of the reasons for this problem is that the current regulatory framework for e-communications is geared towards competition "in Member States", rather than the development of a Single Market, and the

benefits of price reductions and entry of mobile telephony have eventually led policymakers to almost ignore the Single Market, to the extent that in a forthcoming paper Pelkmans and Renda define the Single Market as "EU telecom's Cinderella"[27].

One clear impact of the peculiar approach adopted by EU institutions to telecoms liberalization has been the emergence of very fragmented markets, still mostly dependent on the incumbent's infrastructure, but effectively populated by an almost unbelievable number of players, very few of which have been investing non-negligible amounts in network infrastructure. Accordingly, while the United States are served by not more than 7-8 big players, in Europe at least 150 "major players" – and, some say, 2,000 operators overall – survive in the "Single" Market. A very small portion of them invests in network infrastructure, and the rest operates on an access basis, from resale to LLU.

Available data confirm this observation. Everywhere, and regardless of the indicator used – there are plenty of them available, also in the recent Commission publications such as the European Digital Competitiveness Report – price differentials and market conditions in Member States differ widely and, in some cases, increasingly over time.

This is still the weakest link in the Digital Agenda. While, on the one hand, the NGA Recommendation merely pours new wine into old bottles, reiterating the access policy scheme that has already led Europe to lag behind in infrastructure investment in the past few years, the Single Market situation is even more worrying. As a matter of fact, there is no initiative aimed at creating a Single Market for fixed-line telephony, with a limited number of players investing in local fixed-line infrastructure. If anything, although nothing official has been tabled to date, there may be new rules on abating roaming tariffs and creating a European wireless broadband space, which may lead to a more integrated market at least in the mobile sphere. Perhaps, due to all the delays in adopting the telecoms package and the NGA Recommendation, the European Commission has already concluded that the Single Market goal is going to be exclusively a wireless one, whereas in the fixed-line domain mere convergence of regulatory approaches will be sought, in a field where national governments and regulators will continue to be in charge of their own territory.

27 See Pelkmans, J. and A. Renda, The Single Market as Eu Telecoms' Cinderella, forthcoming, cit.

4 Concluding remarks: a god with clay feet?

The Digital Agenda Communication is a very inspiring document, which contains several indications of the good intentions that animate EU institutions as regards the need to proceed towards a more inclusive, sustainable and efficient information society for all in Europe, after the disappointing performance of past strategies such as Lisbon and the i2010. However, the foundations of the Digital Agenda – i.e. their essential preconditions – appear more fragile than the commitment of those that have shaped this enlightening policy strategy. The problem is that, without the former, the latter will never be realized.

More in detail, the European Commission seems to have moved to a more holistic approach, which addresses also the demand side and aims at removing existing obstacles to a fully functioning Internal Market at higher layers – including copyright protection and validity across borders, online redress, protection of critical infrastructure, etc.; however, the Commission's approach to the problem of infrastructure deployment has remained the same, and there is no sign that the Commission is shifting gear towards the achievement of a more consolidated Internal Market at the infrastructure layer.

NGA deployment is going to be postponed and delayed until the following cumulative conditions are met: (i) access policy is revised in the direction of requiring more substantial investment on the side of new entrants (e.g. sharing of passive infrastructure only); (ii) rules that apply to neutrality and diversity in the whole internet ecosystem are clarified and shaped in the direction of a level-playing field for all players at all layers; (iii) industry consolidation is promoted to ensure that European network operators are given a sufficiently large market that warrants the investment in new infrastructure Brussels is requesting from them.

Only when these conditions are in place, and additional actions by the European Commission (especially on spectrum policy) have paved the way towards a sustainable, layered, infrastructure-based competition in the EU, the resounding objectives set by the Digital Agenda will become attainable. As a result, despite the "vision" provided by the new Digital Agenda, the problems on the Commission's table appear almost unchanged. If anything, they have only become more difficult to solve, and failure to act quickly and innovatively may worsen the situation even further.

The extended gestation and birth of the european commission's recommendation on the regulation of NGAs

Martin Cave, Tony Shortall

For over 100 years, telecommunications operators have relied on copper wires to deliver services to their customers. This imposed a limit on capacity, which was acceptable in the world of voice calls. Now data make up the bulk of the traffic, and the demand for capacity outstrips or will outstrip copper's even theoretical potential.

This entails an historic shift in telecommunications local infrastructure, from copper to fibre, often referred to as next generation access networks (NGA). It poses a financial challenge to operators, which has in some jurisdictions been taken over by the government – entirely in Australia and to a much smaller degree elsewhere. It also poses a challenge to regulators, which have to consider adapting copper rules to a fibre era. One of the key challenges is that, while investment in copper local networks is sunk -- and often fully depreciated, operators have to have a (commercial) incentive to invest in fibre and have the option of delay. In the absence of public funding, this may require a new approach to regulation.

Under the European regulatory framework, the Commission has numerous means of intervening on NGA. It can propose new legislation to Parliament and the Council, as it did in 2008 in relation to the revision of the 2002 Directives on the regulation of electronic communications services; it can veto NRAs' market definitions and market analyses (but not their remedies) through the so-called Article 7 procedure. And it can also issue Recommendations to Member States, of which they must take 'utmost account'.

This paper discusses the origins, development, content and likely consequences of the Commission's Recommendation on the regulation of next generation access networks, published in September 2010 after a tortuous three year process. In particular, we address:

-Tthe context and origins of the Recommendation;

-Why it took so long to deliver the final version;

-Whether the Recommendation implicitly views NGA as transforming regulation or as continuing it with minor adaptations;

-The interaction between the Recommendation and NRAs' previous regulatory decisions;

-Which operators are likely to gain from the Recommendation and which to lose;

-Whether it is in the long term interest of end users of electronic communications services, in terms of harmonisation, investment, commitment, and competition.

In assessing the Recommendation, it is important to recognise that its guidance is, for the most part, predicated on a finding of significant market power. Thus it is not a guide to an overall strategy in the development of networks as a whole. While the NGA Recommendation does stray beyond significant market power (SMP) in some important initiatives regarding passive infrastructures, it should in general be viewed as one part of a broader suite of initiatives. Nevertheless, it is the key instrument to set out the 'ground rules' for private investors and operators, and in this context the Recommendation and its application by NRAs will determine the extent and pace of private sector investments in NGA.

2. Context and background.

Some time before the Commission became active on the issue of NGA regulation, a number of events were taking place around the world which cast the regulatory spotlight on the future evolution of fixed networks in Europe. Already in 2004, the FCC indicated[1] that it was taking a different approach, based on forbearance, to regulating fibre-based networks than it had to existing copper networks. In essence, all fibre-based networks were to be released from third party access obligations previously set out in the Unbundled Network Elements (UNE[2]) framework in the US. The FCC did this because it regarded access regulation as a disincentive to investment in new networks:

"The section 271 unbundled access obligations for broadband have the effect of discouraging BOC investment in this emerging market, diminishing their potential effectiveness as competitors today and in the future, to the detriment of the goals of section 10(a)(1)".

This decision was then expanded on 20 March 2006 when the FCC intentionally let a deadline pass for rejecting Verizon petition for forbearance from common carrier regulation of special access services. This extended the exemption from access obligations to all access lines.

Meanwhile in Asia, both Korea and Japan had implemented a model whereby the state became heavily involved in fibre deployment either through direct investment or indirectly in the form of tax rebates. From 1995, the Korean Government implemented a comprehensive plan for the provision of broadband, known as the Korean Information Infrastructure (KII). It involved government subsidies to competitive private investors initially in a variety of technologies, and latterly in fibre. The task was simplified by the high proportion of the population residing in multi-dwelling units.

1 See **FCC 04-254:** http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-254A1.pdf

2 See http://www.fcc.gov/wcb/cpd/triennial_review/triennialremand.html

The same broad approach, under the title 'Next Generation Broadband Strategy 2010' was adopted in Japan (Ida 2009). Competition in the supply of ADSL, driven by low unbundling charges, was followed by competition in fibre. This allowed high fibre penetration rates to be established without government subsidies, which were largely confined to taking high speed broadband into rural areas.

In Europe, events were also underway which forced the Commission to adopt a position regarding the regulation of NGA. On 11 October 2005, the European Commission received a notification from the German regulatory authority, Bundesnetzagentur ("BNetzA") covering the market for wholesale broadband access[3] in Germany. The notification only included market definition and the designation of the operator having SMP but not the proposed remedies. The key issue in the notification was the exclusion of VDSL (and hybrid fibre/copper product) from the defined market. The implication was that access to such products would not be mandated. The Commission indicated its disagreement with BNetzA by way of a 'serious doubts' letter,[4] expressing its concern about the exclusion of VDSL from the scope of the defined market and, consequently, from the scope of competitive access regulation. As the Commission's intention to block the measure excluding the regulation of VDSL became clear, BNetzA chose to amend the notification so as to include VDSL in the defined market. In turn, the Commission issued a letter[5] leading to the withdrawal of the serious doubts letter and the subsequent adoption of the modified measure.

At around this time an inconclusive general election in Germany led to a 'grand coalition' which agreed to bring forward legislation which would in effect grant a 'regulatory holiday' to fibre-based network investments in Germany. In October 2006, EU Telecom Commissioner Viviane Reding and EU Competition Commissioner Neelie Kroes sent a letter to the then German Minister of the Economy Michael Glos in which they expressed their serious concerns about the draft law and announced infringement proceedings if the law were not brought in line with European law. When the German Government chose to continue with the draft law, formal infringement proceedings[6] were initiated on 26 February 2007.

A clear position was therefore already starting to emerge in Europe whereby the European Commission would not follow the US route of forbearance from regulation of new networks as a means of stimulating investment. This represented a middle course in which competition was to drive investment in densely populated areas while the state could target its resources in less densely populated areas.

Throughout 2005-07, the European Commission was working internally on the development of proposals for the revision of the Regulatory Framework put in place in 2002. As part of that process, Commissioner Reding wrote to the European Regulators Group (ERG) in April 2007 asking for their opinion on the appropriate form of regulation concerning NGA. The opinion delivered was relatively technical in nature[7] and did not specify the form of regulation to be adopted. The Commission adjudged that it needed to act in the apparent vacuum and proposed as part of the package of measures to bring forward its own Recommendation on the appropriate regulation of NGA.

On the 13 November 2007, the Commission announced[8] that it would bring forward by summer 2008 a Recommendation based on Article 19 of the Framework Directive providing guidance to NRAs on the appropriate remedies to be applied in the context of NGA. Specifically, the Commission was motivated ed to give legal certainty for stakeholders, specifically investors:

"The Commission will enhance legal certainty for stakeholders by issuing, by summer 2008, guidance on the application of the regulatory framework to aspects of new fibre investment in the local access network. The Commission will also examine the possibility of issuing guidance in other areas, in particular on sub-national geographic differentiation."

According to the two European Commissioners in charge of the process, Mrs. Kroes and Mrs. Reding, the priorities were to achieve the twin aims of stimulating investment in fibre while also strengthening broadband competition. Their ambition was to reduce the scope for divergences of regulatory approaches across Europe in order to give legal certainty, noting that divergences could damage competition.[9]

3. The Draft Recommendation

The First Draft

In September 2008, the Commission brought forward a draft (the "1st draft") Recommendation[10] for public consultation. Already by this time a number of NRAs had notified decisions under the Article 7 process relating to the regulation of NGA.

The Commission indicated[11] that its aims were now fourfold, to:

1. Give guidance to NRAs on the treatment of regulated access to NGA;
2. Prevent fragmentation of the internal market;
3. Incentivise investment in NGA;
4. Foster competition in the new environment.

The basic principle of the Commission's 1st draft was that NRAs should provide access to the networks of dominant operators at the lowest possible level in the network. In particular, they should mandate access to the ducts of the dominant operators allowing competitors to roll out their own fibre.

However, NRAs were to also impose further physical access obligations (access to unlit fibre) beyond access to ducts where ducts are not available or the population density is too low for a sustainable business model.

Access to active elements, such as "bitstream," would be maintained wherever lower level remedies did not sufficiently address distortions of competition. There was a significant concern that bitstream on NGA could undermine investment incentives if conditions were too lax, in an echo of US concerns.

3 DE/2005/0262 see http://circa.europa.eu/Public/irc/infso/ecctf/library?l=/germany/registeredsnotifications/de20050262&vm=detailed&sb=Title

4 http://circa.europa.eu/Public/irc/infso/ecctf/library?l=/germany/registeredsnotifications/de20050262/2005_206128_enpdf/_EN_1.0_&a=d

5 http://circa.europa.eu/Public/irc/infso/ecctf/library?l=/germany/registeredsnotifications/de20050262/case-2005-0262-withdrawa/_EN_1.0_&a=d

6 Concluded on 3 December 2009 upholding the Commission's position http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:62007J0424:EN:HTML

7 http://www.erg.eu.int/doc/publications/erg07_16rev2_opinion_on_nga.pdf

8 COM(2007) 696

9 http://europa.eu/rapid/pressReleasesAction.do?reference=IP/08/1370

10 http://ec.europa.eu/information_society/policy/ecomm/doc/library/public_consult/nga/dr_recomm_nga.pdf

11 http://ec.europa.eu/information_society/policy/ecomm/library/public_consult/nga/index_en.htm

The 1st draft also provided a common approach to ensure non-discriminatory access, as well as a methodology for calculating a rate of return, including a risk premium.

One final aspect worth noting was that the Commission adjudged fibre-to-the-cabinet, (FTTC, also referred to as fibre-to-the-node FTTN) to be essentially a network upgrade which should be dealt with in the same way as existing DSL-based networks, i.e., with broadly the same access products to be put in place. Specifically, the risk premium envisaged would not apply here:

"A risk premium should not be applied in the case of fibre backhaul from the street cabinets to FTTC (FTTN) the MDF or equivalent in an FTTN scenario. Such a scenario is considered in this context as a modernisation of the copper-based network, which should not encompass a higher risk remuneration than other modernisation and maintenance expenses."

The consultation finished in mid November 2008. The Commission having concluded from the response that significant changes were required, on 12th of June it issued a revised draft Recommendation (the "2nd draft"[12]) which deviated considerably from the approach posited in the 1st draft.

The Second Draft

The basic principle of the Commission's 2nd draft was no longer that that NRAs should provide access to the networks of dominant operators at the lowest possible level, but rather that all remedies should be available in all areas in the presence of a finding of SMP – the so-called 'ladder of investment' approach. While access to the ducts and other passive infrastructures remained, this was no longer a central theme of the 2nd draft. Nevertheless, the 2nd draft was clearer about concrete measure that should be taken to lower deployment costs (for example, on the need for reference offers for ducts and other passive infrastructures).

The 2nd draft also promotes cost-orientation as the preferred form of price control – at almost the exclusion of all other options. . . .

The 2nd draft also sought to include mechanisms to allocate investment risk between investors and access seekers. In particular, it sought to foster market-driven investment outside densely populated areas by encouraging co-investment schemes. The 2nd draft also defined a series of conditions under which co-investment schemes could be deemed pro-competitive avoiding (or limiting) the need for regulation.

The 2nd draft proposed a derogation from the overarching principle of making all access products available in all circumstances wherever a multi-fibre co-investment took place.[13] Specifically, deployment by the dominant operator of multiple fibres could justify less stringent regulatory obligations. The competitive advantage of having multiple fibres in the ground is that it allows immediate infrastructure competition based on a continuation of the existing access regime.

FTTN was now viewed more favourably than in the 1st draft; such investments were no longer simple network upgrades, and the risk premium associated with the fibre investments was advised.

New sections were added to cover the issue of margin-squeeze when considering access pricing, the form and imputation parameters to be included in any margin squeeze test were specified.

The approach proposed by the Commission in the 2nd draft seemed to be fundamentally re-orientated to ensure a seamless migration from copper- to fibre-based networks for third party network operators. Indeed the language surrounding the 2nd draft suggested that ensuring a 'smooth transition' was now one of the primary motivators for the revised draft[14].

The final version

In the period between the second consultation and the 20th September 2010 when the final NGA Recommendation[15] was released, ongoing discussion with the new BEREC[16] body took place, culminating in the publication of a BEREC opinion[17] in May 2010 regarding a (non-public) interim draft. It was becoming clear that the non-public version of the NGA Recommendation had deleted Annex III which listed many of the circumstances in which derogations from regulation might apply and that changes were made to the calculation of any risk premium. A series of specific changes were sought by BEREC, mostly around granting greater flexibility to NRAs in setting the terms of volumes discounts, access charges, the need for geographically de-averaged access prices, the conduct of margin squeeze tests, and so on.[18]

In practice, the changes suggested by BEREC were adopted word for word (where wording was proposed) and equally closely on general points.[19] Other changes were also made, in particular the suggested combination of Article 12 of Directive 2002/21/EC together Article 5 of Directive 2002/19/EC looks very significant in terms of making access to passive infrastructures operational.

Although the final NGA Recommendation has a renewed emphasis on sharing of passive infrastructures together with a greater emphasis on geographic differences, the primary basis of this regulation is to extend the current regulatory model of regulation onto the new networks.

The net result is an NGA Recommendation which bears little or no resemblance to the initial draft and which has altered significantly in terms of the basic mechanisms being put forward for regulating NGA investments. The various changes are recorded in Table I below, which shows (in the first four columns) current policy and what was proposed in the drafts of the Recommendation. The final column indicates whether the final draft makes a change from the current situation. (Where the situation is ambiguous, the entry 'Y/N' is made.)

Viewed in this light, several things become clearer. The first is that the Commission's NGA Recommendation does not give much advice which differs from today's practice. Therefore the clarification takes the form of a restatement of the status quo, i.e., the access regime established for copper networks.

12 http://ec.europa.eu/information_society/policy/ecomm/doc/library/public_consult/nga_2/090611_nga_recommendation_spc.pdf

13 This involved the burying within the duct of, say, four, separate fibres, permitting up to the same number of competitors.

14 http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/09/274&format=HTML&aged=0&language=EN&guiLanguage=en

15 C(2010) 6223/3

16 The successor to the European Regulators Group (ERG)

17 http://berec.europa.eu/doc/berec/bor_10_25.pdf

18 The oddest of these was the opening up of opportunities for the NRA to conduct a margin squeeze test on the basis of either of two cost tests, the 'equally efficient operator' test or the 'reasonably efficient operator' test. Despite the general principle that ECS regulation should converge to European competition law, the latter test is preferred in this ex ante context, despite its express rejection by the Court of First Instance in the well-known Deutsche Telekom case.

19 Based on past precedent, this may have come as a surprise to BEREC, reminding it of the adage 'be careful about what you wish for.'

The exceptions are worth noting. The first exception is the requirement to unbundle regardless of the architecture of the fibre network. In the past, NRAs have taken a view in specific instances that it is not viable to require network unbundling. Cable networks, which would clearly be very difficult to unbundle physically from both a technical and economic perspective, have generally relied for protection from access obligations upon the invocation of a proportionality principle that puts cable access outside the market for unbundled loops. While certain FTTH topologies may resemble a cable network more closely, the opposite route of mandatory unbundling is proposed. Until such a remedy is viable alternative, bitstream offers should apply (although where applied, as in the UK, such remedies are likely to persist for a long time).

The second clear change is the requirement to make full bitstream access available from the very start of the regulatory process. In relation to NGA, many NRAs have already decided for a variety of reasons either not to require bitstream access or to limit its availability. The qualification which might be inferred from the NGA Recommendation, that NGA physical access remedies may be sufficient in themselves, cannot apply in any of these instances since the performance of the NGA physical access remedies is not known. In particular, the Netherlands, France and Portugal have each avoided imposing a bitstream remedy in respect of their FTTH deployments and though each has been criticised for not doing so, that is the current practice[20]. In the case of Spain, access to NGA- based bitstream was mandated, but access was limited to a maximum capacity of 30Mbs.

Although different NRAs have attempted to take different approaches to VDSL, the pre-ordained statement that VDSL falls within a so-called 'chain of substitute' products is not new, having

20 While the Netherlands said fibre based LLU would be sufficient, both France and Portugal indicated they would bring forward a remedy at some point in the future.

Feature Heading	Sub Heading	Current Practice	First Draft	Second Draft	Final Draft	Change from Current Practice
Access products (day 1)	duct access	Y/N	Y	Y	Y	Y/N
	access to the terminating segment of the line	Y	Y	Y	Y	N
	distribution point should be viable	Y	Y	Y	Y	N
	"symmetric access" in-building	Y	Y	Y	Y	N
	unbundled access on any architecture	N	N	Y	Y	Y
	Copper sub-loop unbundling	Y	Y	Y	Y	N
	Bitstream	N	N	Y	Y	Y
	vDSL is a chain substitute.	Y/N	Y	Y	Y	N
	Pre-offer of wholesale offers	Y/N	N	Y	Y	Y
Geographic segmentation	define sub-national markets if stable over time	Y	N	Y	Y	N
	differentiated remedies.	Y	N	Y	Y	N
	unbundled access should only be waived in geographic areas if no SMP	Y	Y	N	Y	N
	bitstream remedies withdrawn if market 4 remedies delivers competition	Y	Y	Y	Y	N
	Existing geographic segmentations should be reviewed in light of NGA	NA	Y	Y	Y	NA
Co-investment		Y/N	N	Y	Y	Y/N
Pricing:	LLU (copper or fibre) cost-oriented.	Y	N	Y	Y	N
	Bitstream cost-oriented (may be retail minus if LLU access is very good)	Y	N	Y	Y	N
Extensive Margin Squeeze tests	N	N	Y	Y	N	
Risk premia	A risk premium is presupposed for FTTH deployments (included in normal way).	Y/N	Y	Y	Y	Y/N
	FTTN/vDSL can have a risk premium	Y/N	N	Y	Y	Y/N
	Long term or volume discounts on (only FTTH) deployments	N	N	Y	Y	Y
Migration: reference offers	Information	Y	Y	Y	Y	N
	Exchange decommissioning requirements	Y	Y	Y	Y	N
	Existing obligations until appropriate migration path	Y	Y	Y	Y	N
	Decommissioning interconnection points	Y	Y	Y	Y	N

Table 1. The development of the regulatory proposals over time. (Y=yes; N=no; Y/N = ambiguous.)

already been stated in the Commission's Recommendation on Relevant Markets (2007). The authors are not aware or any currently identified market in respect of which the NRA is not required to conduct its own analysis in any event and draw its own conclusions, and this is unlikely to change.

While the extensive margin squeeze tests are novel, the requirement to limit retail offers until wholesale inputs are available is enforced in some jurisdictions already (e.g., Ireland) it has limited application today.

In terms of co-investment, the Recommendation does not require NRAs to do anything at odds with current practice. In relation to pricing of access products, NRAs are broadly instructed to carry on as they do today. In setting access prices and determining the allowed rate of return for a price-controlled service, NRAs already include an appropriate risk premium (normally through the CAPM aspect of WACC calculation).

There are two possible interpretation of the lack of new advice. The first is that the Commission has come to the view that the transition from copper to fibre is merely an incremental network development and not some transformational event. The second view might be that since the NRAs had already started to set out their plans for NGA regulation, the Commission has simple adopted the identified best practice into their Recommendation. In practice therefore, the Article 7 treatment of the ongoing market analysis, which tends to be more focused on events today, has determined policy for the medium term regarding NGA deployment. In view of this, a legitimate question can be raised regarding the value of bringing forward a Recommendation at all since the Article 7 precedents are already established and well known.

4 Assessment

The Commission's Objectives.

What objectives did the Commission seek to achieve in bringing forward the NGA Recommendation?

The requirements for certainty and a harmonised approach have been constant themes. The need to generate incentives for investment and foster competition have also been cited. Over time there has a shift in emphasis. Thus in the 1st draft, harmonisation and investment seemed to be the priorities, whereas the 2nd draft seemed to shift the emphasis onto harmonisation and the preservation of the existing structure of competition. One could also argue that the greater flexibility in determining the appropriate remedies that has evolved over the successive drafts has undermined the harmonisation objective which was so influential at the start of this process, leaving preservation of competition as the top priority at the end.

Inevitably, any assessment of the prioritisation of the Commission's objectives is largely subjective, and therefore it would be more productive to consider whole universe of stated goals without prioritisation, and assess to what extent the final measures are likely to achieve those objectives.

Harmonisation

The first observation that might be made regarding the objective of harmonisation is to question the extent to which a harmonised approach is attainable or indeed desirable. Looking at the starting position in Europe today in Figure 1 and Figure 2 below, it is clear that the situation in terms of the form and the strength of competition varies greatly from Member State to Member State. Figure 1 shows that the 55% of broadband lines are with new entrants.

Figure 1: New Entrant Share of Broadband Lines Jan 2010

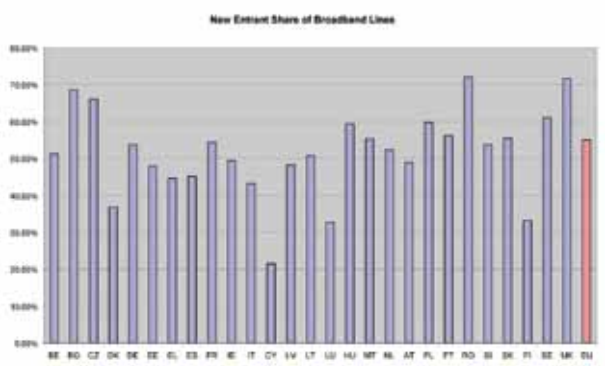
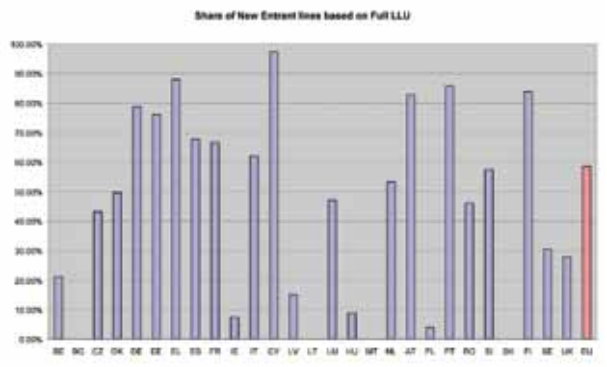


Figure 2 below shows that while the share of these entrant lines based on LLU is high at 58.5%, the deviation from the average is quite considerable across Europe. There appears to be a significant gap in the depth of infrastructure based competition. With some exceptions[21], there does seem to be a significant division between the form and the strength of competition in EU12 (members in 2003) and in the EU15 (members joining subsequently). The latter group principally comprises countries in Central and Eastern Europe, where the coverage of the telecommunications incumbent is limited, access-based competition plays a less important role, and a greater one is played by end to end competition provided often by independent networks. This, combined with lower barriers to entry created by easier planning rules, has created an environment in which fibre-based broadband has been able to flourish.



The goal of harmonisation of regulation was initially set nonetheless, and was to be implemented in practice through a rather prescriptive set of remedies.

Over the course of the drafts, however, more and more discretion was granted to NRAs, up to the point in the final version whereby they enjoy considerable flexibility. This compromise is described as follows:

"It is therefore appropriate to provide guidance to NRAs aimed at preventing any inappropriate divergence of regulatory approaches, while allowing NRAs to take proper account of national circumstances when designing appropriate remedies."

Taking account of national circumstances appears in the form of

21 Notably, Estonia, Cyprus, Belgium, and Ireland

geographical segmentation of markets and the resultant withdrawal of access obligations . . .

Volume discounts and term conditions are in theory possible, though how to reconcile them with non-discrimination rules and margin-squeeze tests in unclear. Previously rigid guidance is now softened in relation to cost-based pricing for bitstream pricing, in the phrase: "NRAs could use other appropriate price control…"

Thus while the Recommendation sets out a common starting point for NGA regulation, the problem (and one we will come back to again and again) is that with very lengthy delays in bringing forward the NGA Recommendation, most if not all NRAs have already moved ahead with regulation at the national level. The discretion sought and largely achieved by BEREC allows individual members of that group to represent their activities as being in line with the Regulation (even though these measures were universally taken in its absence).

We thus conclude that the Recommendation's reasoning is a mixture of inductive reasoning- from what NRAs have already done, and deductive reasoning from the somewhat moveable feast of the principles underlying the European regulatory framework.

Does that mean that the Recommendation came too late to be effective? Clearly with many NRAs acting in advance of the Commission's advice, it cannot be as effective as it could have been had it been delivered earlier. Nevertheless, the NGA Recommendation does now act as a touchstone for NRAs as they revise their market analysis and should over time allow a more harmonised approach.

Investment

In choosing the appropriate form of regulation, there are trade-offs at two levels. The first level concerns choosing between duplication costs and dynamic efficiency. If the access market is viewed from a static perspective, building multiple networks increases the costs of delivery significantly. The additional costs incurred can be viewed as costly and inefficient where each network delivers the same basic services.

From a more dynamic perspective, multiple networks will compete vigorously with each other and will ensure that any inefficiency is competed away on the individual networks and that innovation will be important as network operators seek to differentiate themselves from each other.

In the past, the costs of duplicating a copper-based networks, or PSTN, were so high that considerations of dynamic efficiency rarely arose. With technological evolution and convergence, cable networks found themselves competing with traditional PSTN and with the evolution of DSL. The PSTN could compete to some extent with cable networks. The cost structure of mobile networks permitted much more replication, with good effects on dynamic efficiency.

The first trade off thus requires a view of how large will the costs of deployment be (and can they be made smaller) and how large the effects of dynamic efficiency will be. By facilitating the sharing of passive infrastructures, the Commission can lower replication costs and encourage infrastructure-based competition and investment.

The Commission must also protect competition in the market and in doing so make trade- offs between long-term and short-term competition. This second trade-off determines the extent to which public policy is willing to restrict short-term service competition to achieve the benefits of long-term competition based on different infrastructures.

Consider the following analogy. Suppose at the start of GSM mobile network deployment there is only one mobile network (with an enormous spectrum assignment). MVNO access is given on favourable terms, so that other operators can deliver their services to the exact same degree as the network owner. In such circumstances it is difficult to see what motivation an MVNO has to build its own network. The benefits of dynamic competition in terms of pricing and innovation would be lost.

Public policy makers face an even more difficult decision in relation to NGA deployments. The MVNO equivalent on a fixed network is wholesale broadband access, bitstream and/or unbundling, and such products exist today as a result of the historical balance between duplication costs and dynamic efficiencies. However, that balance has shifted, such that the costs of deploying multiple NGA access networks is significantly lower because of the technological changes and the prospect of sharing civil infrastructures. In addition there is also the potential to deliver a wider range of value added services over the network.

However, regulation has created a whole industry based on bitstream and unbundling, and this forms a powerful interest group bent on protecting its position. Giving access to comprehensive wholesale products that fully reflect the technological capabilities inherent in the NGA infrastructure will weaken the incentives of third parties to make investments in physical infrastructure. Third party operators whose strategy is to invest would also have to consider that they will have to negotiate in the shadow of a regulated product. This is likely to adversely affect their incentive to invest (in addition to the fact that they too will have access to the regulated bitstream product).

The Commission recognises this problem in the different drafts and while initially limiting wholesale broadband access to promote investment, it subsequently sought to relax that restriction but to control investment incentives through more and more elaborate pricing terms and mechanisms. Pricing regulated access so as to preserve competition and maintain an incentive for investment looks impossible to achieve for several reasons. Firstly, regulators must identify the appropriate 'option value' that applies to NGA and then be prepared to apply it.

Even if an appropriate mark-up could be identified, singular prices points necessarily impact the pricing strategy that evolves at the retail level. In extremis, with one wholesale access product and price, pricing above that point will not be possible for the network owner since competitors can come into the market and capture those customers. Similarly, pricing below that price will not be possible for the network owner because of regulatory and competition law obligations relating to margin squeeze etc.[22] The effect of regulated access is to reduce price differentiation and the ability of operators to extract the value under the demand curve, as mobile operators did with the roll-out of mobile networks.

In order to restore incentives, regulators might seek to commit to access pricing policies which encourage investment by competitors. The problem here is that the pricing of wholesale products can change quickly and that regulators have often reneged on commitment to with draw access products or worsen the terms on which they are available.[23]

This in turn means that, absent competitive pressure, incumbents may choose to delay the installation of fibre even when investment in a fibre network has a positive expected net present value as compared with maintaining the copper network in place. This is because

22 See also fn. 20 above.

23 Local loop availability and pricing in the Netherlands and Canada being the most celebrated examples.

delaying the fibre until uncertainties about execution, demand and regulation are removed has an option value to the investor from which it has to be bought out for the investment to go ahead.

On balance therefore the conclusion regarding the impact on investment incentives depends on the view that one takes regarding the desirability and feasibility of competing networks. It is certainly clear at a minimum that the Recommendation ought to lower deployment costs (and thereby encourage investment in some form) if implemented to achieve its stated objectives.

Competition

The shift between the first and subsequent drafts from a reliance on passive access remedies and infrastructure-based competition to having access to all remedies implied a significant shift in the vision of future competition. In the first, the associated vision must be of consolidation and fewer but stronger competitors to the national incumbent. Such a vision takes a clear position in favour of the dynamic benefits of multiple competing networks. In the final draft, the future vision seems to be more concerned about morphing the current structure of competition onto the new networks. Such a vision implicitly assumes that the duplication costs of multiple networks outweighs the dynamic benefits.

The construction of NGA also raises the issue of separation again in a different form, sharpened by the possibility of co-investment. The cost of constructing even the cheapest version of an NGA encourages consideration of different ways of sharing the cost, which can take two 'private sector' forms:

- Vertical: retailers of services provided over NGA could contribute to the cost of its construction, either via some kind of joint venture, or through a contractual commitment; although the Recommendation allows for price differentiation among purchasers of access products in different quantities, it is questionable whether a pure retailer is able to commit over the long term;

- Horizontal: a number of operators could come together to share the costs of building NGA. These could be a group of fixed operators, a group of mobile operators, or a mixed group. In the case of mobile operators, the NGA does not replace the wireless 'last mile', but may provide the backhaul from base stations which will be required when mobile broadband takes off.[24]

In relation to existing copper network based competitors, the Recommendation seeks to set out a coherent migration regime and to set down minimum conditions for migration from copper-based wholesale products to fibre ones. The architecture of a fibre network, however, differs from that of a copper one. Current generation broadband in Europe and elsewhere is often supplied by competitors which have built out to the incumbent's local exchange, where they rent local loops. That point may disappear in a fibre network, being replaced in a FTTC variant by the possibility of interconnection at the sub-loop, a point of access which is technically and commercially more difficult than at the local exchange. If the network is of a FTTH kind, in the version known as point to multipoint, unbundling the fibre is difficult or impossible, but if a single fibre goes to each home (point to point) it can be leased to a competitor.

This causes problems for competitors currently relying on local loop unbundling. They may be forced to revert to the use of bitstream. This prospect may deter them from switching to the fibre network, and prolong the era of inefficient simultaneous operation of both the old and the new networks. Regulators need to devise strategies which will permit the transition to go ahead. Ofcom in the UK have proposed[25] bitstream variant (VULA) as a potential solution to this conundrum. The concern, however, must be that by signalling virtual solutions to a lack of physical competition, such solutions become embedded in the regulatory approach[26].

The duplication in the same area of copper and fibre networks in the same ownership imposes very heavy running costs, and the period of its operation should be limited, by placing pressure on local loop unbundlers to migrate. The Recommendation's proposals on this- a notice period normally of 5 years – seem very lax.

On balance, competition has been favoured over investment. The existing structure of competition will be preserved in the short- to medium-term, and the entrant community has been assured of its survival and welfare. The depth of competition will suffer as a result and the entrant community may start to face a 'ladder of investment'[27] in reverse, such that operators that have built out their own networks on the basis of ULL will be forced to move back along the value chain and accept bitstream and bitstream variants. The long term impact on competition, both the structure and depth, may be weaker as a result.

Certainty

A reasonable assessment of the legislative history of the Recommendation must recognise that at a 'first principles' level, the Commission's position has reversed itself significantly over the course of successive drafts. The original NGA Recommendation had a logic which sought to deliver as much investment over as great a geographic scope as possible. The intermediate and final versions lack this logic; instead, it seems to be driven by a desire to preserve existing competitors to the maximum extent possible even at the risk of weakening the incentives for infrastructure based competitors to enter the market.

The origins of the changes to the first draft cannot be known, but they do not reflect the responses received in the first consultation, which were divided. It is much more likely that concerns were raised about the effect of the credit crisis which really only started to unfurl after the first draft Recommendation was released for public consultation. However, such significant changes reflect a lack of clarity about the best way to proceed to ensure a transition to NGA. This raises another issue which has been the dearth of data driving the policy decisions being taken.

As noted above, several NRAs have taken decisions regarding NGA

24 Participation in the investment by central or local government is another option, not considered further here. Such public funding, which normally occurs in relation to a specific part of the network, often entails separation. See the symposium in Telecommunications Policy, October 2010.

25 http://www.ofcom.org.uk/consult/condocs/wla/wlacondoc.pdf

26 An apparent contradiction which needs to be resolved concerns Recital 60 of the Better Regulation Directive (2009/140/EC) which states that virtual remedies can be a permanent solution in Market 4 whereas Recital 21 of the NGA Recommendation insists that such remedies are transitory and that mandating physical unbundling should be done as soon as technically and commercially feasible. The authors would suggest that this might be explained by the possible future use of Wave Division Multiplexing (WDM) whereby individual light-waves can be unbundled. Light-wave unbundling certainly has the potential to give full technological independence to access seekers in a way that only physical unbundling did in the past. While WDM is not widely used today, it is expected to mature as operators (particularly with PON networks) seek to expand network capacity. Once WDM matures, light-wave unbundling is likely to be equivalent to physical unbundling. However, the authors believe clarification should be given by the European Commission on this point since the deployment of a network which anticipates a future upgrade to WDM may be markedly different from a deployment which does not anticipate such an upgrade.

27 See M Cave, 'Snakes and ladders: unbundling in a next generation world,' Telecommunications Policy,Vol 34 (2010) pp 80-85.

which includes a decision either not to include bitstream, to defer its imposition until some point in the future or else to limit the scope of bitstream that is regulated. Ostensibly at least, these NRAs are at odds with the NGA Recommendation. Since late 2007, all Market 4 and 5 market analysis and remedies submitted to the Commission have been met with a similar refrain, according to which:

"It would be useful to have further guidance in the context of the NGA rollout in order to ensure legal certainty for investors and to prevent undesirable divergences of regulatory approaches in the internal market. To this end, the Commission is working towards a Recommendation on NGA remedies so that a consistent regulatory approach will be applied to such networks across the EU. In the light of this, the Commission invites [the NRA] to revisit its analysis along the lines of this Recommendation once adopted"[28].

Thus all NRAs are obliged to revisit their decision on Markets 4 and 5 and decide whether or their existing analysis complies with the Commission's Guidance. In the event that the decision does not comply then a new suite of remedies (and indeed a new market analysis might be required[29]). In at least some of the cases mentioned above, the conclusion must be that the remedies selected are not in line with the subsequent Recommendation.

The question that must be in operators' and investors' minds is whether the course of action being undertaken by the NRA is driven by national considerations alone, or, at least in some part by a desire to be in line with what appeared at the time to be European policy. Portugal for instance has chosen to defer bitstream on fibre access in potentially competitive market 5 areas, presumably to stimulate investments. The Portuguese market analyses[30] were notified on 4 December 2008 and therefore the current European level guidance was the 1st draft, ANACOM was entirely in line with the approach outlined in the first draft either because ANACOM was trying to be in line with the given guidance or because ANACOM was acting in the most appropriate manner in national conditions.

We would hope (and expect) it was the latter consideration which guided ANACOM, but we cannot be certain. In either case, ANACOM will have a natural reluctance to fall in retrospectively with the final version. Were it to do so, investors would naturally be concerned. However, whether, driven nationally or by the 1st draft, ANACOM will now have to reassess its market analysis and remedies and determine whether changes are required. These pending market analyse can only increase uncertainty in the market.

In addition to such specific instances, it must be assumed that the delay between final adoption and intended delivery, more than two years, cannot have helped certainty in the market. In particular, the fact that almost all NRAs completed market 4 and 5 reviews in the period, often addressing real NGA issues has resulted in a situation where the guidance is coming after decisions have been taken. The requirement to re-examine and as necessary adjust remedies is very much at odds with the Commission's own position in the past. In the explanatory memorandum on the Recommendation on Relevant Markets, the Commission notes that redoing market analysis mid-cycle is not acceptable:

"Allowing a regulatory measure or remedy to run its course, without risk of it

being reversed mid-term, is an important element of regulatory commitment which reinforces the predictability of regulatory intervention".[31]

28 This wording comes form Case FR/2008/0780

29 Indeed, Ofcom might be understandably annoyed if their analysis of June 2010 (UK/2010/1065: Wholesale broadband access market) had to be redone if the geographic market analysis was judged not be in line with the Recommendation.

30 Case PT/2008/0850: Wholesale (physical) network infrastructure access (including shared or fully unbundled access) at a fixed location; Case PT/2008/0851: Wholesale broadband access;

31 Explanatory memorandum of the Recommendation - SEC(2007) 1483

Elements and Principles of Regulation	ERG	Alternative Operators	Incumbents
Technological neutrality	X	X	X
Co-investment	X		X
Ladder of investment	X	X	
Symmetric regulation	X		X
Differentiation of remedies	X		X
Definition of geographic sub-markets	X		X
Cost orientation	X	X	
Margin squeeze		X	
Price flexibility			X
Risk premium	X		X
Transparency	X	X	
Migration		X	

Table 2: Overview of positions of key stakeholders as taken into account by the Recommendation

However, that seems to be the obligation which now faces every NRA in Europe. This is an important contradiction since a revision in many Member States would inevitably reduce predictability and certainty in the market.

We therefore conclude that the NGA Recommendation has failed in respect of delivering certainty and the unfortunate result may even be the creation of several different forms of uncertainty in an NGA context. The Commission could act so as to allay much of that uncertainty by clarifying the apparent contradiction. We believe that the appropriate way to proceed is to allow the existing remedies in place to run their course before revision.

5 Winners and Losers

It is interesting to view the Commission's assessment of what was conceded to whom. This can helpfully be found in a table from the staff working document[32] accompanying the NGA Recommendation, reproduced in Table 2. [33]

One important observation is that alternative operators (and, to a lesser extent, incumbents) are not homogeneous. Many alternative operators who are in a leading position (especially with large LLU customer bases) in their market may have views which are very much at odds with smaller operators (who have little or no network elements under their control). The fact that the Commission views the constituent stakeholders as they do may go some way towards explaining the shift between drafts.

However, the simple tick-box approach suggested belies the degree to which the concessions really are concessions. For instance it appears from Table 2 below that ERG and incumbents 'achieved' geographic segmentation in the Recommendation, in fact there is nothing new which is not established practice. However, if one considers the margin squeeze tests and the preservation (and even extension) of the ladder of investment concept, it is clear that alternative operators are the party that won very significant concessions.

6 Conclusions

To a large extent the Commission allowed outside forces to dictate policy by reacting to events rather than steering its own course.

Even before the Commission announced that it would bring forward a Recommendation on NGA regulation, it had already been forced into a position by events in Germany, meaning that any deviation from the status quo would be very difficult to achieve.

Nevertheless, the Commission did initially propose a more radical solution that sought to compel advancement along the 'ladder of investment' and network competition where possible, by proposing a graded approach to remedies in its first draft. The aim seemed to be to stimulate as much infrastructure-based competition as possible in areas that would support more than one infrastructure.

That this objective should be qualified by global macro-economic events is understandable, but the rush revert to a continuation of existing regulatory practice is disquieting. There is the distinct feeling that reworking the regulatory regime to take advantage of a 'once-in-a-lifetime opportunity' has been missed.

Measured against the objectives adopted, the judgement regarding the overall merit of the NGA Recommendation has to be mixed.

In terms of harmonisation, the regulatory outcomes today in Europe are highly variable, quite possibly depending in part upon which version of the Recommendation was current when the NRA took its last decision. The fact that so many NRAs have already committed to a set of NGA remedies also mitigates the harmonisation impact of the NGA Recommendation. However, as market analyses are redone, the NGA Recommendation should act as a touchstone against which the selected remedies can be judged.

The impact on investment incentives depends on the view that one takes regarding the desirability and feasibility of competing networks. It is certainly clear at a minimum that the Recommendation ought to lower deployment costs (and thereby encourage investment in some form) if effectively implemented. However, the incentive given for infrastructure-based competition is weak.

The effect on competition also depends on the reader's perspective, certainly competition will be preserved in the short to medium term but the form of that competition may be weakened if alternative operators move away from LLU and become more dependent on bitstream based products. The long term impact on competition may therefore differ from the short term impact.

The one aspect where there appears to be a clear outcome is with respect to the issue of certainty. As noted above, it is the one area where the Commission has not only failed but in fact may aggravate the problem. One major source of this uncertainty is the apparent contradiction of the existing requirement for NRAs to let remedies run their course set against the obligation to reassess their Market 4 and 5 remedies in the light of the NGA Recommendation and adjust accordingly. This problem could be mitigated by a careful statement from the Commission clarifying what exactly is expected of NRAs.

The NGA Recommendation has been finalised. The market can now move on and at least that uncertainty has been settled. NGA will be required over time unless well established trends in usage are suddenly reversed. On balance, however, it is unlikely that the NGA Recommendation will make a significant positive impact on this broader outcome.

32 Commission Staff Working Document (accompanying document to the Recommendation on regulated access to Next Generation Access Networks (NGA) - SEC(2010) 1037 final

33 A cross indicates that the relevant party was satisfied on the matter in question.

The U.S. National Broadband Plan: a european perspective

J. Scott Marcus

1 Introduction

With the release by the U.S. Federal Communication Commission (FCC) of the National Broadband Plan (NBP) in 2009, the United States government has made an ambitious and forward-looking statement of its long range plans. This paper explains the current state of U.S. government planning for broadband today, considers likely prospects for implementation, and assesses the degree (if any) to which these U.S. initiatives provide a useful model for Europeans.

The legal basis for the NBP can be found in the American Recovery and Reinvestment Act of 2009.[1] In the ARRA, the U.S. Congress directed the FCC "… to ensure that all people of the United States have access to broadband capability and [to] establish benchmarks for meeting that goal." In support of that goal, they tasked the FCC with (1) evaluating the status of deployment, (2) analysing the most effective mechanisms for achieving broadband access, (3) developing a strategy to ensure affordability and maximum utilisation of broadband access, and (4) providing a plan whereby broadband would further consumer welfare, civic participation, public safety, homeland security, health care delivery, energy independence, education, and host of other public policy goals.

This is, to say the least, an ambitious set of goals. In that light, it is striking that it was the FCC that was tasked with crafting the NBP in the first place. The question arises because most countries make a clear distinction between regulation and industrial policy. In most countries, to be sure, universal service issues are the consideration of the National Regulatory Authority (NRA); however, industrial policy for electronic communications is typically the province of a ministry, and is more closely aligned with a political process than a regulatory one. If the U.S. functioned as most other developed countries function, the NBP would have been produced not by the FCC (i.e. the NRA), but rather by the National Telecommunications and Information Administration (NTIA), a unit of the U.S. Department of Commerce (DoC).

The NBP arguably does a good job of fulfilling its charter. It contains a wide range of goals and mechanisms as regards the supply of broadband, considers at length the application of broadband in the health, education, energy, and public safety sectors, and even includes modest measures to stimulate demand. It deals with a huge range of issues, and for the most part it deals with them well. Taken as a whole, it is an impressive, visionary plan.

All of this must however be seen in the context of American political reality:

- In the context of U.S. politics, there is little support for industrial policy.
- To the extent that there is a history of industrial policy for broadband in the U.S., it is a history of broad pronouncements and little or no follow-up.

The crucial question, then, is not about what the FCC said; the crucial question is, what (if anything) is likely to be done about it?

Talk is cheap; broadband is expensive.

The key questions today, then, relate to the degree to which implementation of the plan will be pursued, and the degree to which is will even be possible. The FCC was tasked with drafting the Plan, but most aspects of the Plan would need to be implemented either by enactment of new laws, or by action by other Federal agencies. Indeed, this is precisely the reason why it was rather unusual for an NRA to be asked to develop the National Broadband Plan.

For those aspects that require Congressional action, one must question whether the Obama Administration will be able to get any meaningful legislation enacted. Enacting legislation is likely to become even more difficult than it has been to date if the Democrats lose seats, and possibly their majority in one or both houses of Congress, in the mid-term elections in November 2010, as now appears likely.[2] Even in the best of circumstances, however, the Democrats have had great difficulty in pushing legislation through in the absence of Republican support, and in this case the Republicans are unlikely to support initiatives that might turn into Democratic successes, even if in principle they might have supported some of the actions in question.

Those actions that require the action of other Federal agencies – such as those having to do with health, education, energy, or highways – might do somewhat better, but there is likely to be strong lobbying resistance.

Even for those aspects of the NBP where the FCC arguably has authority to act, the FCC's own actions over the past decade, together with a recent court decision in Comcast vs FCC, call into question the FCC's ability to enforce the needed actions.

In sum, it remains altogether unclear today how much of the NBP will be implemented.

In sum, this paper reviews the FCC's NBP and a series of related initiatives; considers the likely trajectory of implementation; and considers what lessons, if any, Europeans might extract from the process. Section 2 provides background on the U.S., including demographics, broadband deployment and adoption, and a brief history of previous government initiatives. Section 3 provides background on the NBP, and a summary of actions to date to implement the NBP. Included are (1) a proposed overhaul of universal service, and (2) efforts to revive the "D Block"

1 American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, § 6001(k)(2)(D), 123 Stat. 115, 516 (2009) (Recovery Act).

2 This is being written in October 2010, just a few weeks before the U.S. mid-term elections.

initiative to provide interoperable wireless high speed data services to emergency service workers across the U.S. Section 4 discusses the Comcast vs FCC court decision, its implications for implementation of the NBP, and the steps that the FCC is taking to try to reinstate its authority (including FCC Chairman Genachowski's "Third Way"). Section 5 discusses prospects (and pitfalls) of legislative action. Section 6 provides concluding remarks, and seeks to put the discussion in a European context.

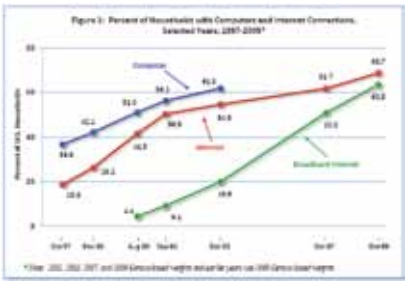
2 Broadband in the United States to date

There are significant challenges in placing U.S. broadband deployment in context for a global audience, but we take a stab at it here. Section 2.1 reviews a sampling of the existing quantitative data. Section 2.2 attempts to place the National Broadband Plan in historical context with prior U.S. industrial policy, such as it was.

2.1 Trends in broadband deployment and take-up

Broadband Internet access has become increasingly ubiquitous in the United States, as can be seen in Figure 1.

Figure 1. Percent of households with Computers and Internet connections.[3]



The United States is a huge and diverse country. Portions of the United States are densely populated, and thus highly conducive to broadband deployment, particularly in the Northeast and along the West Coast. At the same time, portions of the western United States are mountainous and very sparsely populated, and thus less promising for broadband deployment. Alaska poses special challenges.

The United States enjoys many blessings that encourage deployment and adoption of broadband Internet access. It is technologically advanced, and was the first country to deploy broadband Internet access.[4] The U.S. is also among the wealthiest nations in the world on a per capita basis.

Broadband in the U.S. has been largely unregulated since 2005. Many have argued, rightly or wrongly, that deregulation of broadband favours investment in broadband deployment.

The U.S. also enjoys, along with Canada, a nearly unique advantage: a cable television network that reaches nearly all Americans, and that was sufficiently advanced at the dawn of the broadband era to enable rapid upgrading to support broadband.

Taking all of this together, one could reasonably expect the U.S. to have extremely high broadband deployment. In fact, starting from these premises, and knowing nothing else of the history, one should reasonably expect the U.S. to lead the world in broadband deployment and adoption.

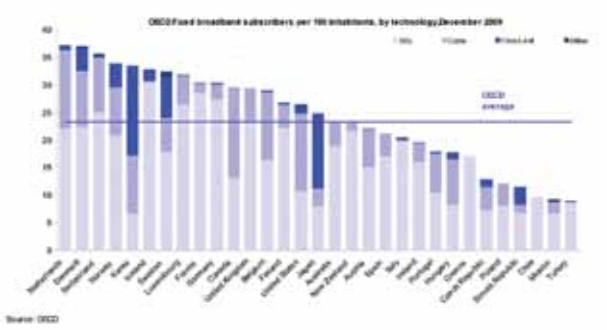
Needless to say, while broadband deployment in the U.S. is quite substantial, it falls well short of that promise.

A rigorous comparison of U.S. broadband adoption to that of other countries is harder than one might expect, in part because the statistics are not what they ought to be. Most FCC statistical reports appeared only irregularly during the years 2005-2008, including the "Section 706" broadband overview reports; fortunately, the summary data reports are available. Even where data was produced, it fails to answer many critical questions. Some have argued that wireless broadband should be considered; however, the FCC counts as a wireless broadband user anyone whose service could conceivably support broadband, irrespective of whether they use the service, irrespective of whether they even know that they have the service, and perhaps most important, without considering whether the service is a meaningful equivalent to fixed broadband access. Some would argue that Internet via WiFi is important, but there are no reliable statistics at all. Many of the services that the FCC statistics historically treated as broadband were slow to the point where most other countries would not consider them to be broadband at all. And historical survey data for most of the Bush years were simply never reported, even though longitudinal data were captured by the Census Bureau.[5]

With all of that said, the best cross-comparison of U.S. broadband take-up to that of other developed countries is the analysis conducted by the OECD. In interpreting the OECD data, one should bear in mind that it reflects the number of subscriptions per individual. This is entirely appropriate, inasmuch as different countries have different cultural institutions which are often reflected in slightly different definitions of what constitutes a household. In any case, the reader should bear in mind that family size in the U.S. is significantly greater than that in many European countries; thus, given that a fixed broadband subscription typically serves a family rather than an individual, OECD statistics could be said to somewhat understate effective U.S. broadband penetration in comparison to other developed countries.

Current OECD statistics would place the U.S. roughly in the middle of the pack in terms of broadband adoption, as shown in the following figure.

Figure 2. Fixed broadband subscribers per 100 inhabitants, by technology.



America's ranking in this chart should raise concerns, not so much in terms of where it is, but rather in terms of where it should have been.

3 NTIA, Digital Nation: 21st Century America's Progress toward Universal Broadband Access, February 2010.

4 This author was, as it happens, the second residential broadband Internet customer in the eastern United States in 1995.

5 A hint of this is visible in Figure 1.

Several distinctive aspects of U.S. broadband deployment are immediately apparent.

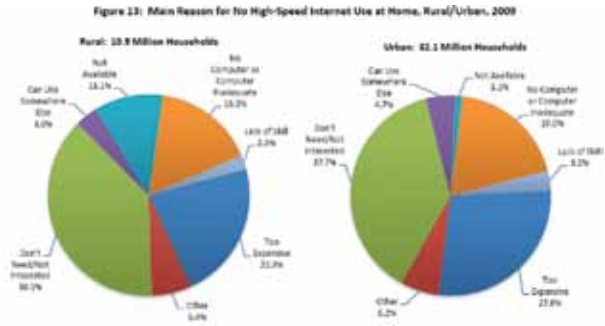
First, one notes that cable television provides the majority of fixed broadband connections. In global terms, this is an oddity outside of the U.S. and Canada.

Second, one notes that take-up of fibre-based broadband is higher than in many European countries (not all), albeit conspicuously lower than in Asian countries such as Japan and Korea.

Viewing the historical trend, one notes a reasonably good (but not overwhelming) take-up of broadband over most of the past decade, but a slowing in recent years.

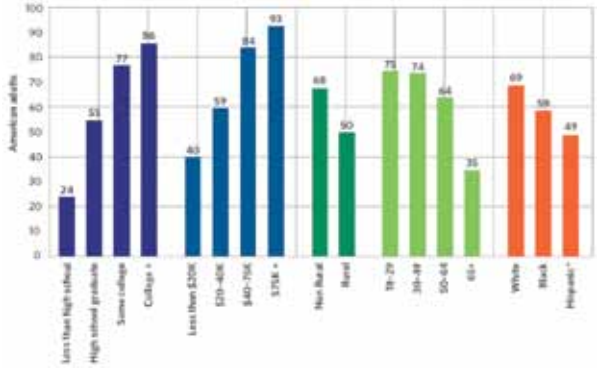
The U.S. NTIA, together with the Bureau of the Census,[6] published survey data under the Obama Administration in 2010, just in time for the National Broadband Plan. The findings indicate a complex story as regards the slowing of adoption. In both rural and urban areas, high perceived expense and/or lack of interest (presumably together representing a failure to be convinced by the value proposition) played a huge role; in both, lack of an (adequate) computer and/or lack of skills played a smaller but still substantial role. It was in rural areas, however, that 11.1% reported that the reason for not having broadband access was lack of availability; in urban areas, the corresponding figure was just 1.1%.

Figure 3. Primary reason for lack of high speed Internet use at home rural/urban.



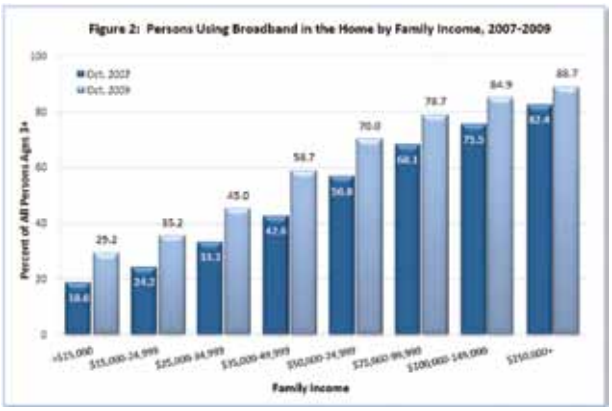
The Census data indicate significant differences in broadband take-up between employed and unemployed individuals; between white and other individuals; and a strong linkage between family income and broadband adoption. The FCC reported a number of these key indicators in the NBP.

Figure 4. Broadband adoption as a function of education, income, rural/urban, age, and race.[7]



The relationship to income is particularly striking.

Figure 5. Persons using broadband in the home by family income in 2007 and 2009.



One particularly noteworthy characteristic of the U.S. broadband marketplace, in comparison with that of Europe, is the lack of effectiveness of procompetitive remedies such as local loop unbundling (LLU), shared access and bitstream access. Procompetitive remedies were largely phased out during the George W. Bush years. Their use peaked in 2002 at roughly 6% of all DSL access lines. Today, they collectively represent less than 2% of all DSL lines. Shared access was eliminated in 2003, together with LLU for fibre-based broadband Internet access.[8] LLU for copper-based access nominally remains, but it alone appears to be insufficient – it is a single rung on the "ladder of investment".

In most of the U.S., multiple broadband access solutions are available; however, very few Americans have a choice of more than two truly competitive broadband network operators. Realistically, most Americans have a choice between one telephone company and one cable television provider, if that.

The evidence is by no means clear cut, but it is likely that it is this lack of robust competitive choice that has undermined the deployment and adoption of broadband in the U.S. The lack of choice has also served to exacerbate concerns about network neutrality.[9]

2.2 Previous government industrial policy

It would be natural to seek to place the NBP in the context of previous broadband planning efforts at national level; however, efforts prior to 2009 are conspicuous by their absence. One is hard put to find a prior U.S. context into which to place the NBP, with the possible exception of initiatives to wire public school classrooms for high speed Internet access at public expense during the Clinton years (1992 – 2000).[10]

This is evident in statements from the U.S. Government itself. The U.S. NTIA in 2008 (i.e. while George W. Bush was still in office) attributed the following to the President: "The role of government is

6 Both are units of the U.S. Department of Commerce.

7 FCC, National Broadband Plan, March 2010.

8 In the Matter of Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers; Implementation of the Local Competition Provisions of the Telecommunications Act of 1996; Deployment of Wireline Services Offering Advanced Telecommunications Capability (better known as the Triennial Review Order, or TRO), adopted 20 February 2003, released 21 August 2003..

9 See, for instance, J. Scott Marcus, "Network Neutrality: The Roots of the Debate in the United States.", Intereconomics, Volume 43, Number 1, January 2008; and J. Scott Marcus, Kenneth R. Carter and Christian Wernick, "Network Neutrality: Implications for Europe", WIK, January 2009.

10 See Reed E. Hundt, You Say You Want a Revolution, Yale University Press, 2000.

not to create wealth; the role of our government is to create an environment in which the entrepreneur can flourish, in which minds can expand, in which technologies can reach new frontiers."[11] They go on to note that the Bush Administration had "… enacted economic incentives and created a regulatory environment to encourage innovation and investment in new broadband technologies, such as: an extension of the Internet tax moratorium, an economic security package that allows companies to speed depreciation schedules for capital-intensive broadband equipment, a permanent extension of the research and experimentation tax credit, and an expanded budget for research and development." There was also a release of spectrum for licence-exempt (e.g. WiFi) use.

The European reader will immediately perceive that this is a rather laissez faire approach, and moreover that it does little or nothing to ensure the deployment of affordable broadband to the more challenging areas of the U.S., i.e. those with lower population density and/or lower disposable income.

The European reader should bear in mind that many Americans have a strong philosophical antipathy to anything that smacks of industrial policy. Many factors contribute to this hostility, including (1) the legacy of the Cold War (against Communist dictatorships with strong central planning); (2) an American propensity to exult the individual;[12] (3) decades of substantial industry investments in lobbying and publicity against all forms of regulation; and (4) a dearth of organised pro-consumer opposition, due in part to the weakness of labour unions in the U.S.[13]

In 2004, President Bush himself announced a goal of providing universal access to broadband access to all: "This country needs a national goal for broadband technology . . . universal, affordable access for broadband technology by 2007."[14] This, however, is best understood as a vacuous campaign promise; one is hard pressed to identify any new actions whatsoever to implement the stated policy.

In the U.S. context, then, the NBP is truly sui generis, and was understood as such when it was announced. Commissioner Copps, for example, greeted the announcement as a long overdue first attempt to implement broadband planning for the United States: "We haven't had a commitment of long-standing to get this important infrastructure of the 21st Century built out. For the last eight years, we kind of doodled on the happy assumption that the private sector would automatically get all of this built out to all corners of America—even where there were no business plans that would encourage that happy result. So, we didn't think we needed a plan … We were probably the only industrial country on the face of God's green Earth that didn't have some kind of a plan to get Broadband out."[15]

11 President George W. Bush, Technology Agenda, November, 2002, cited in the Executive Summary to NTIA's budget request for 2009, at http://www.ntia.doc.gov/budget/NTIA_Budget_FY2009_Summary.pdf.

12 For the ways in which national style might interact with a country's regulatory approach, see Haim Mazar, An Analysis of Regulatory Frameworks for Wireless Communications, Societal Concerns and Risk: The Case of Radio Frequency (RF) Allocation and Licensing, available at: http://www.dissertation.com/book.php?method=ISBN&book=1599427109.

13 Within the U.S. communications industry, unions tend to support the interests of unionized incumbent firms (thus protecting jobs) over those of the general public.

14 President George W. Bush, Albuquerque, NM, March 26, 2004, cited in the Executive Summary to NTIA's budget request for 2009, at http://www.ntia.doc.gov/budget/NTIA_Budget_FY2009_Summary.pdf.

15 Interviewed by Southern California Public Radio, 89.3 KPCC, "FCC rolls out National Broadband Plan", at http://www.scpr.org/news/2010/03/16/fcc-rolls-out-national-broadband-plan-commissioner/.

3 The National Broadband Plan (NBP)

This section provides a brief overview of the FCC's National Broadband Plan. The serious reader is encouraged to review the NBP itself.

3.1 Goals, objectives, and recommendations

It is useful to distinguish between the high level goals of the NBP and the more detailed recommendations.

3.1.1 Goals and objectives

The NBP begins by establishing an enormous number of goals and recommendations. The six over-arching long term high level goals are:

- **Goal No. 1:** At least 100 million U.S. homes should have affordable access to actual download speeds of at least 100 megabits per second and actual upload speeds of at least 50 megabits per second.
- **Goal No. 2:** The United States should lead the world in mobile innovation, with the fastest and most extensive wireless networks of any nation.
- **Goal No. 3:** Every American should have affordable access to robust broadband service, and the means and skills to subscribe if they so choose.
- **Goal No. 4:** Every American community should have affordable access to at least 1 gigabit per second broadband service to anchor institutions such as schools, hospitals and government buildings.
- **Goal No. 5:** To ensure the safety of the American people, every first responder should have access to a nationwide, wireless, interoperable broadband public safety network.
- **Goal No. 6:** To ensure that America leads in the clean energy economy, every American should be able to use broadband to track and manage their real-time energy consumption.

It is worthwhile to take a moment to dissect these six goals before proceeding. Goal 1 calls for ultra-fast broadband to many, but not all, American homes; Goal 3 calls for robust and affordable broadband access for all. In other words, Goal 1 expresses the industrial policy objective, while Goal 3 addresses basic broadband access in terms of universal service. Goal 4, which speaks of ultra-high speed access for schools, hospitals and community buildings is treated in the U.S. context as a universal service goal.

Goal 2 expresses a vague industrial policy objective; as we shall see, the NBP envisions making a great deal of spectrum available, but provides relatively little else to make the U.S. a leader in mobile innovation (which is clearly not the case today).

Goals 5 and 6 seem somehow to be at a very different level from the others. Goal 5 is a praiseworthy goal to create a nationwide, wireless, interoperable broadband public safety network. The FCC has been seeking to do this for many years – it was a key recommendation following the attacks of September 11. It is separable from the other broadband objectives, but it is a key bit of unfinished FCC business, and it was explicit in the charge that the Congress gave to the FCC in the ARRA. Moreover, the relevant

spectrum planning is perhaps best addressed together with the other spectrum topics that the FCC has put forward with the NBP.

Goal 6 is an aspirational objective for the U.S. to lead the world in clean energy economy. Again, this seems somehow to be at a different level from the first four long term goals, but many countries have seen a linkage between smart metering and universal broadband service. Many have argued that universal broadband access will have important spill-over effects into related sectors, and that the societal benefits therefore need to be assessed in a cross-sectoral manner. At the same time, it is not yet clear how much bandwidth will actually be needed for smart metering. Real time monitoring might not require much bandwidth at all, depending on what is monitored, and at what level of detail. Real time control is more complex, and might possibly benefit from high bandwidth.

3.1.2 Recommendations

The NBP groups its specific recommendations into four broad areas:

- Design policies to ensure robust competition and, as a result maximize consumer welfare, innovation and investment.
- Ensure efficient allocation and management of assets government controls or influences, such as spectrum, poles, and rights-of-way, to encourage network upgrades and competitive entry.
- Reform current universal service mechanisms to support deployment of broadband and voice in high-cost areas; and ensure that low-income Americans can afford broadband; and in addition, support efforts to boost adoption and utilization.
- Reform laws, policies, standards and incentives to maximize the benefits of broadband in sectors government influences significantly, such as public education, health care and government operations.

In the following sections, we note some of the potentially most significant recommendations in this same order. Numerous specific recommendations are associated with each of these areas, far more than it is practical to summarise here.

3.1.2.1 Ensure robust competition, maximize consumer welfare

The most potentially important recommendation in terms of competition is:

- Undertake a comprehensive review of wholesale competition rules to help ensure competition in fixed and mobile broadband services.

As noted, limited consumer choice as regards last mile broadband plays a fundamental role in the United States.

This NBP goal could be read quite broadly; however, a detailed review of Chapter 4 of the NBP suggests that the FCC may have had mixed views internally as to how comprehensive the "comprehensive review" should be. The details in Chapter 4 could be read to be quite narrow. This concern is reinforced by statements by FCC Chairman Genachowski and senior FCC staff that seem to place no importance whatsoever on any comprehensive review of procompetitive remedies (see Section 4).

Europeans will immediately recognise parallels between the next two goals and portions of the Universal Service Directive.

- Collect, analyse, benchmark and publish detailed, market-by-market information on broadband pricing and competition, which will likely have direct impact on competitive behaviour.
- Develop disclosure requirements for broadband service providers to ensure consumers have the pricing and performance information they need to choose the best broadband offers in the market.

The competition area also includes recommendations to modernise interconnection in recognition of the move to IP-based core networks:

- Clarify interconnection rights and encourage the shift to IP-to-IP interconnection where efficient.
- Reduce and ultimately phase out per-minute rates for the origination and termination of telecommunications traffic.

Local incumbent phone companies have lobbied, often successfully, to prevent municipalities from offering broadband access that would compete with incumbent services. This is a complex public policy area (cf. European state aid rules). With that in mind, the NBP recommends:

- Clarify the Congressional mandate allowing state and local entities to provide broadband in their communities and do so in ways that use public resources more effectively.

3.1.2.2 Ensure efficient allocation of spectrum, poles, and rights-of-way

The most significant recommendations in this grouping relate to spectrum allocation and assignment:

- Make 500 megahertz of spectrum newly available for broadband within 10 years, of which 300 megahertz should be made available for mobile use within five years.
- Enable incentives and mechanisms to repurpose spectrum to more flexible uses. Mechanisms include incentive auctions, which allow auction proceeds to be shared in an equitable manner with current licensees as market demands change. … For example, this would allow the FCC to share auction proceeds with broadcasters who voluntarily agree to use technology to continue traditional broadcast services with less spectrum.
- Ensure greater transparency of spectrum allocation, assignment and use through an FCC-created spectrum dashboard to foster an efficient secondary market.

The degree to which wireless alternatives serve today as a true economic substitute to fixed broadband access today is, as previously noted, a complex issue; however, a particular priority for the NBP is broadband deployment to remote and/or rural portions of the United States. Thus, ensuring availability of sufficient spectrum is appropriately a vital part of the solution. Note that U.S. mobile allocations (as recommended here) tend to be service neutral and technology neutral, and thus analogous to European WAPECS.

This reliance is on incentive auctions is a key element. It is intended to provide 120 MHz of spectrum, and to fund much of the deployment. The notion of incentive auctions is not new. As the NBP itself notes, incentive auctions and a "Big Bang" auction were proposed in an FCC white paper in 2002.[16]

16 Evan Kwerel and John Williams, "A Proposal for a Rapid Transition to Market

There was, and continues to be, considerable opposition to incentive auctions from over-the-air broadcasters. There, as here, broadcasters tend to have substantial political clout, even though a relatively small fraction of the American public watches over-the-air television.

The use of incentive auctions serves an important political role for the NBP. It enables the FCC to characterise the NBP as a whole as being essentially cost and revenue neutral, "… [i]f the spectrum auction recommendations are implemented". In the context of U.S. political realities, the plan would have little prospect of overall adoption if it were perceived as being associated with significant cost.

The FCC spectrum dashboard is also old wine in a new bottle. It had been considered and rejected a few years ago, when spectrum trading rules were put in place.

The NBP also contains provisions to improve the effectiveness of access to utility poles, ducts, and rights-of-way. These rights already exist under U.S. law, but previous WIK studies have suggested that they are not as effective as one might expect. The price for pole access varies in complex ways. The NBP recommends:

- Establish low and more uniform rental rates for access to poles, and simplify and expedite the process for service providers to attach facilities to poles.

- Improve rights-of-way management for cost and time savings, promote use of federal facilities for broadband, expedite resolution of disputes and identify and establish "best practices" guidelines for rights-of-way policies and fee practices that are consistent with broadband deployment.

3.1.2.3 Reform universal service mechanisms

The NBP proposed a re-targeting of existing universal service mechanisms to enable support of fixed and wireless broadband. Again, the FCC has attempted to re-purpose existing funding mechanisms, rather than calling for new funds.

- Create the Connect America Fund (CAF) to support the provision of affordable broadband and voice with at least 4 Mbps actual download speeds and shift up to $15.5 billion over the next decade from the existing Universal Service Fund (USF) program to support broadband.

- Create a Mobility Fund to provide targeted funding to ensure no states are lagging significantly behind the national average for 3G wireless coverage. Such 3G coverage is widely expected to be the basis for the future footprint of 4G mobile broadband networks.

- Transition the "legacy" High-Cost component of the USF over the next 10 years and shift all resources to the new funds. The $4.6 billion per year High Cost component of the USF was designed to support primarily voice services. It will be replaced over time by the CAF.

Historically, universal service was funded to a significant degree by inflated charges for interconnection. These charges have been gradually phased out, but they remain surprisingly high for segments such as, for example, operators of fixed rural telephony.[17] The NBP proposes interconnection reform, including a focus on IP interconnection for the telephone network, and a move away from per-minute charges.

The FCC has launched proceedings to update universal service mechanisms. We discuss these initiatives in Section 3.2.1.

3.1.2.4 Maximize benefits in sectors that government controls or influences

The NBP includes numerous recommendations regarding health care, education, energy, e-government, and public safety. Implementation of most of these would fall to other agencies, or to the Congress.

Noteworthy is a renewed attempt to deploy a nationwide, interoperable public safety mobile broadband network. We return to this point in Section 3.2.2.

3.2 Steps to implement the NBP

The NBP contains two core implementation recommendations, one relating to the many initiatives that other government agencies would have to provide, the other addressed to itself. As the NBP notes, "The FCC is responsible for implementing approximately half of the plan's recommendations." Responsibility for the rest lies elsewhere.

It recommends: "The Executive Branch should create a Broadband Strategy Council to coordinate the implementation of National Broadband Plan recommendations." They quite appropriately note that: "This plan contains recommendations directed at more than 20 agencies. To ensure timely and effective implementation, the BSC should be given direct responsibility for managing the execution of the plan's recommendations to the Executive Branch."

This is a sensible recommendation. Actions are called for from a great many agencies. Without a coordinating body, without an explicit owner of the needed actions, it would be exceedingly unlikely that the actions called for would take place in any reasonable time frame, and equally unlikely that they would take place in a coherent and coordinated manner.

The Obama Administration responded to the publication of the NBP by establishing "… a Broadband Subcommittee of the National Science and Technology Council's Committee on Technology, co-chaired by Larry Strickling, Assistant Secretary for Communications and Information at the Department of Commerce, and Scott Blake Harris, General Counsel at the Department of Energy. This interagency group will focus closely on the plan by the FCC—an independent agency—and advise the Administration on actions it can take to promote broadband as a platform to improve the lives of everyday Americans and drive innovation in the economy."[18]

The Subcommittee provides a sensible venue for coordination of actions across multiple agencies, but it appears to fall well short of the NBP's recommendation that the oversight body be given "direct responsibility for managing the execution of the plan's recommendations". It apparently has neither authority nor responsibility for implementation.

Allocation of Spectrum", November 2002.

17 The U.S. is often portrayed as a "Bill and Keep" country, but this does not apply to all calls. Local calls to the fixed network tend to be associated with termination rates that are, for incumbents, cost-based.

18 See http://www.whitehouse.gov/blog/2010/03/16/connecting-america. The charter for the subcommittee is at http://www.whitehouse.gov/sites/default/files/microsites/ostp/nstc-bbsubcommittee.pdf.

The second recommendation was that the FCC "…should quickly publish a timetable of proceedings to implement plan recommendations within its authority, publish an evaluation of plan progress and effectiveness as part of the annual Section 706 Advanced Services Inquiry, create a Broadband Data Depository, and continue to utilize Broadband.gov as a public resource for broadband information." The www.broadband.gov web site is in place, it contains a list and proposed calendar of FCC actions, and it serves as the primary source for much of what follows.

Per the web site, the FCC's actions are 59% complete as of 17 October 2010. The problem with this measurement is that this percentage relates to the number of tasks, not to their difficulty or complexity. A completed item might relate to a deterministic action, such as conducting a workshop on so-called Special Access. Bringing a contentious proceeding to a close can be quite a different matter – the FCC has open, unresolved consultation dockets going back many years, interconnection being a good example.

Among the relatively difficult items, the FCC has made substantial progress in releasing consultation documents regarding universal service funding. On the public safety front, nearly all of the actions that were committed for 2Q2010 and 3Q2010 are incomplete.

3.2.1 Changes in funding for universal service

On 21 April 2010, the FCC launched an NOI and NPRM "… to begin the hard work of implementing the Plan's recommendations, which include cutting inefficiencies in existing support of voice services and creating a Connect America Fund (CAF) that directly supports broadband without increasing the size of the Universal Service Fund over the current baseline projection."

The NOI seeks comment on the FCC's model of the cost of extending service to new areas. It presents "… a number of proposals to cut legacy universal service spending in high-cost areas and to shift support to broadband communications."

Concrete proposals include "… capping the overall size of the high-cost program at 2010 levels; re-examining the current regulatory framework for smaller carriers in light of competition and growth in unregulated revenues; and phasing out support for multiple competitors in areas where the market cannot support even one provider."

The National Broadband Plan has proposed to redirect some $15 billion U.S. over the next decade so as to explicitly subsidise broadband with at least 4 Mbps download speed as a universal service.

It is worth noting that the United States provides explicit funding for universal service. The Universal Service Fund (USF) represents $7.3 billion U.S. per year[19] in subsidies for rural network operators to subsidise high cost services, subsidies for those with low income, a small fund for rural health care, and a large fund for Internet access in the classroom. By contrast, the European regulatory framework permits explicit funding of universal service (paid for either through a levy on network operators and service providers, or from general revenues); however, only a handful of European Member States actually fund universal service explicitly.

The fund has represented an increasing levy on telecommunications revenues, and now represents some 14% of long distance and end-user fees for telecommunications firms. In order to maintain the illusion that the new proposals do not represent new net cost, the FCC proposes to reduce existing subsidies for the traditional fixed network (and to some extent the mobile network) in order to redirect funding to broadband.

3.2.2 A wireless broadband public safety network

A key recommendation is that the U.S. government "… [s]upport deployment of a nationwide, interoperable public safety mobile broadband network, with funding of up to $6.5 billion in capital expenditures over 10 years, which could be reduced through cost efficiency measures and other programs. Additional funding will be required for operating expenses."

The NBP is supported by a detailed report on the anticipated cost of the wireless broadband public safety network.[20]

The initiative is motivated by the need for public safety agencies to work together across state or municipal boundaries, both for day to day business and in the case of a disaster. It is also driven by increasing demands from the public safety community for high speed data and video.

A harmonised nationwide spectrum band for public protection and disaster relief had been a key recommendation following the September 11 attacks, but was never effectively put in place. The FCC had sought to auction the so-called "D Block" in the 700 MHz band so as to provide primary use for public safety broadband, but to permit a secondary preemptible use by some commercial party. The bids failed to reach the reservation price for the auction, possibly because the encumbrances on the D Block were so burdensome as to greatly reduce its value.

According to www.broadband.gov, the various planned actions to implement this recommendation include:

- **D Block Order / NPRM:** … in late Q2 or early Q3 2010 adopt an order and NPRM to pave the way for an auction of the 10 MHz of spectrum in the Upper 700 MHz D Block in the first half of 2011.
- **700 MHz Public Safety Order:** To accelerate deployment of a nationwide, interoperable broadband network using spectrum already licensed for public safety, in Q3 2010, adopt an order and Further Notice of Proposed Rulemaking resolving outstanding issues and establishing final rules governing build out and operating obligations for public safety spectrum.
- **700 MHz Waiver Petitions:** To enable early deployment of local and regional public safety wireless broadband networks, in late Q2 or early Q3 2010 recommend adopting orders resolving pending waiver petitions from various public safety entities seeking early deployment of networks in the 700 MHz public safety broadband spectrum.

The FCC claims that the waiver petitions are complete. So far as we can determine, the other items have not yet been put out for consultation.

19 USAC web site at http://www.usac.org/about/universal-service/fund-facts/fund-facts.aspx.

20 U.S. FCC, "A Broadband Network Cost Model: A Basis for Public Funding Essential to Bringing Nationwide Interoperable Communications to America's First Responders", FCC OBI Technical Paper No. 2.

4 The Comcast vs FCC decision and the "Third Way"

On 6 April 2010, a U.S. Court of Appeals released an important decision, Comcast vs FCC. The immediate effect of the ruling was to cast serious doubt on the FCC's legal authority to craft rules to address Network Neutrality challenges; of greater concern for the analysis in this paper, however, is that it also raises questions about the FCC's legal authority to implement the National Broadband Plan.

We will begin by providing background on the case (Section 4.1), and by clarifying what exactly the ruling means. We will then review the effect on the National Broadband Plan (Section 4.2). Finally, we will consider FCC Chairman Genachowski's proposed regulatory solution, the so-called "Third Way" (Section 4.3).

4.1 Comcast vs FCC

The FCC had previously found that Comcast (a large cable television company, and the largest provider of home broadband Internet access in the US) had interfered with the ability of their broadband customers to access peer-to-peer applications such as BitTorrent. Comcast agreed to end the practice; however, they challenged the legal basis on which the FCC had ordered them to do so.

The FCC had previously issued an Internet Policy Statement that argued that "… consumers are entitled to access the lawful Internet content of their choice . . . [and] to run applications and use services of their choice …"; however, the FCC had never formalized this statement of principles into explicit rules. For telecommunications services (including conventional telephone calls), certain forms of anticompetitive price or quality discrimination are prohibited under US law; however, the FCC had previously ruled that broadband Internet access, whether over telecommunications lines or over cable television, is not a telecommunications service but rather a largely unregulated information service. The relevant portions of Communications Act as amended were thus inapplicable to broadband Internet access services. Moreover, since the FCC had never issued an explicit rule preventing blockage of Internet access to applications, devices or content, it was not clear what law or rule, if any, Comcast had violated.

Comcast went to court to argue that the FCC had acted improperly, first by enforcing a "rule" that was not in fact a rule, and where the FCC had circumvented the normal bureaucratic safeguards; and second, that the FCC lacked authority to issue such a rule in the first place for an information service.

The court agreed that the FCC had failed to demonstrate its authority, and therefore vacated (lifted) the FCC's order. As a regulatory authority, the FCC is supposed to implement provisions of US law. It also has ancillary authority that enables it to craft new rules in support of explicit legal mandates, or to ensure that its actions in support of a legal mandate are not circumvented or made meaningless. In this case, the court found that the FCC had failed to tie its assertion of ancillary authority to any "statutorily mandated responsibility." The court thus found that the FCC's purported grounds were nowhere near sufficient.

Contrary to what many have argued, Comcast vs FCC was not a major departure – it is a confirmation of long-standing U.S. case law. What the court found was predictable, and arguably even inevitable. Moreover, if the FCC had somehow managed to be sustained on its exercise of ancillary authority, it would have probably been overturned in any case on the other prong of Comcast's argument, namely that it could not issue case-by-case rulings about purported violations without first establishing a set of rules.

4.2 The Comcast ruling and the NBP

As for the implications of Comcast vs FCC for the Broadband Plan, two observations are in order.

The first is that a large proportion of what the Broadband Plan put forward was never within the FCC's jurisdiction in the first place. As one example, the FCC arguably lacks authority to auction spectrum on behalf of existing licensees, and then to share the proceeds with them – that would almost certainly require new legislation. Other portions seem to call for action by the Department of Health, the Department of Transportation, and so on. For all of those portions of the National Broadband Plan, this ruling makes no difference.

The second observation is perhaps the only surprise in the Comcast vs FCC ruling: The quite substantial statutory mandates (to enhance the deployment of advanced communication services, i.e. broadband Internet access) that appear in so-called Section 706 of the Telecommunications Act of 1996 were undermined by the FCC itself in a 1998 order, the Wireline Deployment Order. The FCC said in 1998 that the 706 language "does not constitute an independent grant of authority". The language that was thus crippled seems to quite clearly constitute an independent grant of authority, and to potentially represent some of the most useful language in the Act as amended for justifying portions of the National Broadband Plan. The FCC could reverse its previous position, but it cannot do what it attempted to do, which was to rely on Section 706 as an independent grant of authority without first reversing its previous position explicitly. Per the Comcase ruling, "Agencies may not ... depart from a previous policy sub silentio." So the FCC could fix its problem to some degree without a major change in it approach.

There are other recommendations where Comcast vs FCC might indeed impact the FCC's ability to implement the NBP. Consider, for example, the extension of Universal Service to address broadband needs. The ability to collect universal service funds from broadband providers (and also from VoIP service providers) is already in place, is unaffected by Comcast vs FCC, and is one of the few instances where the Communications Act of 1934 as amended gave the FCC explicit authority to impose obligations on network operators (literally, providers of telecommunications) that are not providers of telecommunications services. The language of the Act casts great doubt, however, on the FCC's ability to disburse universal service funds to entities that are not providers of telecommunications services.

This is a quite fundamental gap, and it is unclear whether whatever authority Section 706 might confer would be adequate to circumvent it.

4.3 The "Third Way"

The "Third Way" alternative put forward by FCC Chairman Julius Genachowski and by FCC General Counsel Austin Schlick[21] would go about things quite differently from current U.S. telecoms regulation.

21 See Julius Genachowski, "The Third Way: A Narrowly Tailored Broadband Framework", at http://www.broadband.gov/the-third-way-narrowly-tailored-broadband-framework-chairman-julius-genachowski.html; and Austin Schlick, "A Third-Way Legal Framework For Addressing The Comcast Dilemma", at http://www.broadband.gov/third-way-legal-framework-for-addressing-the-comcast-dilemma.html.

The portion of broadband Internet access that falls within the scope of telecommunications (i.e. the part associated with data transmission and not with, say, e-mail running on top of that transmission) would be re-classified as a telecommunications service, and would thus by default be subject to a wide range of obligations. The FCC would then forbear from regulation, except in the case of a small number of obligations that it deems necessary to apply to providers of broadband Internet access.

The "Third Way" would provide the FCC with authority to implement obligations relative to the National Broadband Plan would be somewhat greater than under the current arrangements; however, each individual potential action would have to be considered on a case by case basis. For example, implementation of the "Third Way" would not in and of itself appear to make much difference in the FCC's ability to implement the spectrum aspects of the National Broadband Plan.

Under the Third Way, the legal authority to relieve broadband Internet service providers of obligations would rely on Section 10 (Forbearance) of the Act as amended. This section explicitly requires the FCC to "…consider whether forbearance from enforcing the provision or regulation will promote competitive market conditions, including the extent to which such forbearance will enhance competition among providers of telecommunications services." Thus, proper application of this section should in principle oblige the FCC to apply the kind of economic analysis that has conspicuous by its absence in so many of its broadband proceedings over the past eight years. This is some of the most promising language in the entire Communications Act, but to date it has been scarcely used.

The white paper by FCC General Counsel Schlick proposes to forbear from all but six sets of obligations. Sections 201, 202, and 208[22] would collectively enable Network Neutrality rules, among others. Section 254 deals with universal service; however, as noted, the FCC's desire to include broadband Internet access within the scope of Internet service does not necessarily depend on the Third Way, and would not automatically be achieved by its implementation. He has also proposed that Section 222, which deals with the privacy of customer data, and Section 255, which requires that equipment be usable by consumers with disabilities, should apply. We regard this assessment as superficial – many other sections of the Act would have to remain in place for these six sections to be implemented effectively.[23]

The Schlick paper claims that the Third Way would have no impact on obligations to provide, as a notable example, unbundled access to the local loop. This may literally be true; however, the number of entities able to request access under Section 251(c)(3) would certainly change, and there might be other implications as well.

Schlick argues, however, that forbearance decisions would be extremely difficult to overturn. This seems to us to be potentially worrisome. The National Broadband Plan makes the following recommendation:

> RECOMMENDATION 4.7: The FCC should comprehensively review its wholesale competition regulations to develop a coherent and effective framework and take expedited action based on that framework to ensure widespread availability of inputs for broadband services provided to small businesses, mobile providers and enterprise customers.

If Mr. Schlick is correct, then it is possible that no forbearance is required in regard to relevant wholesale obligations. If forbearance is required, then it would be perverse to lock in current arrangements at the very point in time where the FCC is calling for a comprehensive review of those arrangements.

5 Prospects for supporting legislation

The challenges posed by Comcast vs FCC could obviously be addressed by means of new legislation. One could envision a new Communications Act; however, it is much more likely that any necessary changes would be implemented as amendments to the existing Communications Act.

In principle, new legislation is clearly the best and most appropriate solution. In a new Act, Congressional intent could be made clear, in which case the likelihood of FCC actions being overturned by the Courts would be minimal. A new Act could provide precisely the palette of regulatory obligations that would be needed.

The American baseball catcher and coach Yogi Berra is supposed to have said: "In theory, there is no difference between theory and practice. In practice, there is."

In practice, we have any number of concerns about a possible rewrite of the Communications Act. In essence, the time may not be right. Our thoughts are conditioned by the following observations:

- First, we note that it took the U.S. Congress about ten years to pass the Telecommunications Act of 1996. It was one of the most heavily lobbied bills in U.S. history. That kind of climate is not conducive to sober, rational policymaking.

- Second, we observe that the political climate in the U.S. is particularly toxic just now, probably much more so than it was over most of the Twentieth Century.

- Third, we note that the Act as it stands is huge, unwieldy, and practically incomprehensible. Moreover, large parts of "the Act" writ large are not even visible in the Act itself, but rather are embedded in court decisions and elsewhere.[24] The core of the Act dates to 1934, and that was based on still older chestnuts. Rationalisation, reorganisation and simplification are long overdue.

- Fourth, the decision to impose, or not to impose, precompetitive access remedies is the most important open issue facing U.S. policymakers. The current operative decisions were never properly analysed. The balance of evidence suggests that the current laissez faire regime should be viewed as a failure; however, there is a at least a colourable argument that the current experiment (if one can call it that) may not have been running long enough to generate an unequivocal outcome. It would be foolish in the extreme to lock the current system into place for the long term until and unless it shows itself to be capable of generating results (in terms of competition, consumer choice,

22 Section 208 deals with complaints and investigations.

23 As a conspicuous example, Section 254 (universal service) cannot possibly be effective without the portions of Section 214 that designate which network operators are eligible to receive funds. For a full analysis, see J. Scott Marcus, "New Directions for U.S. Telecommunications Regulation? The Comcast decision and the 'Third Way'", presented at ITS Europe, Copenhagen, September 2010, available at: http://ssrn.com/abstract=1656570.

24 Consider, for example, the notion of private carriage, which is an artefact of the NARUC I case. Private carriage is an important regulatory concept in the U.S., but it does not appear in the Act at all.

price in relation to performance and quality, and broadband deployment and penetration) that are much better than those that are presently in evidence.

Each of these four factors poses its own challenges for a comprehensive legislative solution. The long lead time to agree on an overhaul of the Act is simply too long to wait for initiatives to foster greater broadband deployment and adoption. The toxic political climate means that any attempt at comprehensive reform is likely to produce an unacceptably compromised product. The prospects for successful streamlining and simplification of the Act in the present climate are in our judgment nil – there is no consensus, either among politicians or among U.S. experts, as to how to recraft the Act to make it more manageable. There is also little willingness to look outside the borders of the U.S. to take international best practice on board. And finally, as regards access remedies, there is considerable reason to question how the current system is working, but the results have not yet been so unequivocally bad as to create the necessary consensus for immediate, radical reform.

For all of the above reasons, we think that the time for a comprehensive revision may simply not be ripe. Phrased differently, we worry that a cure just now might be worse than the disease.

A proper legislative solution to the issues raised by Comcast should entail a thorough review of every potentially relevant obligation, and thus of all of Title II. This is not a job that lends itself to a partial or fragmentary solution.

On the other hand, we see ample scope for legislative action in the short term to address the various issues raised in the National Broadband Plan. For example, the proposal that the FCC auction broadcast spectrum on behalf of broadcasters who wish to do so, and return a portion of the financial proceeds of the auction to the broadcasters, is a reasonable approach that the FCC probably cannot undertake solely on its own initiative under present law. There is good reason to think that this could work, partly because similar approaches have already been shown to be workable in the U.S. This is a good example of a narrower and more targeted legislative initiative that could be undertaken without a deep re-thinking of the Communications Act.

6 Conclusions: the lessons for Europe

The NBP can teach Europeans a great many lessons. Many of these relate to what ought not to be done; others, however, are positive and instructive. We will deal first with the things to avoid.

A first, over-arching observation is that the regulation of electronic communications, particularly in an era of technological, economic and market convergence needs to keep pace with underlying realities. It is unwise to allow the legal underpinnings to be cluttered with a cancerous growth of poorly structured clauses and subclauses whose workings and interactions become more and more difficult over time to understand or to manage.

Second, as long as market power (especially last mile market power) remains a problem in the sector, procompetitive access remedies should remain in place. Deregulating in response to the siren call of seeking to promote faster deployment, at the cost of suppressing competition, ultimately benefits neither deployment nor competition. Once market competition has collapsed, half-remedies like network neutrality rules of deployment subsidies are unlikely to prove satisfactory.

Third, plans are all well and good, but plans alone do not achieve results.[25] Successful implementation is unlikely unless authority, responsibility and accountability are in balance, and are sufficient to the task at hand. If responsibility is too diffuse, little is likely to happen. The necessary preconditions are not yet in place in the U.S.

Fourth, there are such a huge number of recommendations as to be scarcely manageable. The report attempts to group the recommendations, but it does not go far enough. A coherent, actionable plan should consolidate the recommendations into a number that is easier to grasp, and should provide some relative prioritisation.

Fifth, a great many initiatives are lumped into the NBP that, while relevant, would take place with or without implementation of any NBP. It is perhaps expedient for the FCC and the Administration to be able to take credit for these items, but it confuses any assessment of the impact of the broadband initiatives alone. One might also suspect that this was the only bus going out, so to speak, and that everyone wanted to ride.

Sixth, and crucially, the FCC could not really address where the money would come from. The FCC attempted to divert funds so as to keep the initiative somewhat revenue neutral, but doing so still depends on the Congress, and some of these funds arguably would have been there with or without the NBP.

At the same time, the positive lessons from the plan are many. In some cases, the strengths and weaknesses might be perceived to be opposite sides of the same coin.

First, there is a great deal to be said for the NBP's holistic approach. Broadband is approached not only in terms of general Internet access, but also in terms of its impact on e-health, energy, and e-government.

Second, the NBP places emphasis – less than it could have perhaps, but more than most plans of this type – on stimulation of demand, and especially on ensuring that consumers know how to use broadband services.

Third, the NBP is very much data driven, and to a degree that has been unusual in the U.S. in recent years. The FCC captured and organised a great deal of complex information for the NBP, and did a reasonably objective job. They were further aided by the complementary study by the NTIA.

Fourth, some of the specific innovations in regard to spectrum management may prove to be important. The use of incentive auctions might have value in Europe, as in the U.S., as a means of motivating broadcasters to voluntarily relinquish spectrum that they hold in a second Digital Dividend. At a minimum, it forces the broadcasters to consider carefully the opportunity costs associated with holding spectrum, particularly in countries where the number of over-the-air viewers is low and/or declining.

Fifth, the focus on a harmonised allocation of spectrum a the level of the North American continent, while arguably a separate matter from consumer broadband deployment, is highly relevant to Europe. The need for spectrum harmonisation at European level to enable interoperable high speed data and video communications for public protection and disaster relief (PPDR) has been recognised for many years, but little has happened to date in terms of concrete implementation.

25 The NBP itself acknowledges this: "To achieve these goals, it is not enough to simply state where we wish to be. America needs a plan that creates a process to meet these targets and look beyond them.", page 11.