



Submission to the European Commission's
Public Consultation on

Regulated Access to Next Generation Access Networks (NGA)

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1. Executive Summary

Deutsche Telekom appreciates the opportunity to provide comments on the European Commission's (EC) draft recommendation on Regulated Access to Next Generation Access Networks (NGA) as published in September 2008.

The right setting for timely NGA investment in Europe is urgently needed. The recommendation is issued at a crucial point in time. It is of utmost importance to find solutions for the roll-out of ubiquitous high-speed NGA networks in Europe. NGA comes along with manifold uncertainties about the future development of supply and demand as well as the technological, political and regulatory environment. The European telecommunication market urgently need less and better targeted regulation to induce long-term growth, investment and employment. It is key for Europe to set the right incentives and send the right signals into the markets.

The current economic environment aggravates the need for investment incentives. In light of the current economic downturn it is highly questionable on whether it is the right way to continue over-regulation of telecommunications markets and to take billions of EUR out of the markets, further reducing incentives to invest and further exacerbating the effects of a recession. To the contrary the telecommunications industry could be a driver for a way out of the recession, if sufficient investment incentives are set. However, the draft recommendation does not achieve this goal. Moreover, the signals from the European Commission are not very encouraging as fundamental questions are left unsolved. European Parliament's plans to promote an investment-friendly climate have to a great extend been disregarded.

The recommendation hinders investment outside dense areas and increases the digital divide. The systematically different treatment between FTTH and FTTN/C (the latter considered as "risk-free") sets wrong incentives for network deployment in more rural areas. Non-FTTH technologies are as well of risky nature and should benefit from an effective risk sharing mechanism. The one-sided promotion of FTTH will be a burden to rural areas since traditional regulation erodes any incentives to invest in FTTN/C – which is likely a viable solution to increase broadband availability in these areas.

Geographically segmented view on NGA needs to be strengthened. We share the EC view of the need for regional aspects of regulation. Nevertheless, the concept foreseen in the draft recommendation needs to be sharpened and the EC needs to acknowledge that a one-size-fits-all approach is not appropriate. Regulation must be proportionate and limited to regions without foreseeable effective competition. As regards to areas that are subject to regulation, a concept is needed that adequately addresses the immanent investment risks investors face.

The proposed regulatory regime maintains disparity between investor and non-investors. The current and proposed regulatory concept is incapable to pave the ground towards ubiquitous high-speed broadband networks in Europe. Non-investors are currently in a systematically better strategic position than the investor because they have the option to wait & see how markets will develop and, moreover, market entry/exit is less costly. Depending on the success of NGA access seekers are thus enabled to benefit from upsides while avoiding the downsides.

An effective risk sharing model is needed for NGA investments. The only solution are fundamental adjustments of the regulatory framework: the implementation of a long term risk sharing model that

distributes the risks surrounding NGA investments in fair and non-discriminatory manner between investor and access seeker.

The proposed risk sharing model does have several notable benefits compared to the traditional regulatory approach, under which only risk free short term contracts are allowed for. The approach effectively addresses the particularities of NGA networks in a proper way, by

- taking into account the option value of the non-investor,
- making possible penetration pricing strategies without running into margin squeeze problems,
- achieving a symmetric distribution of loss during the penetration phase, and
- allowing (wholesale and retail) pricing flexibility for a faster recovering of the investment costs.

The risk sharing approach attempts to balance the amount of risk associated with the NGA investment equally between the investor and the access seeker, so that both are able to compete on equal terms. By “simulating” sunk costs also for the access seeker, part of that risk, which without risk-sharing would have been borne by the investor alone, is shifted to the access seeker as well.

The risk sharing concept is to the benefit of all, investors, access seekers and consumers:

- Risk sharing model helps carriers being investors to maximize their use of assets, manage risk and build business cases with improved returns on investment.
- As to carriers being access seekers risk sharing contracts give the longer term assurance of leased components being available and allow carriers to avoid huge expense of building a complete network from the ground up.
- Consumers benefit from optimal market outcome, because the risk sharing model
 - facilitates the shared use of network elements (thus avoiding a waste of resources),
 - satisfies mandated asset sharing required by regulatory provisions in order to promote competition,
 - allows the market to price the risk in NGA deployment, and
 - encourages higher penetration rates, and thus lower prices.

The EU-Com risk premium proposal is not sufficient. The risk premium concept as proposed by the EC is not sufficient to reflect the high risk linked to the NGA investments. It would not solve the problem of the asymmetric distribution of loss during the penetration phase of new markets. Without long-term contracts the value of wait & see options will not be sufficiently reflected. Further, the risk premium must be known before the investment is carried out and should be applied to both FTTC- and FTTH networks.

Flexibility in wholesale pricing is key for NGA rollout. The possibility to differentiate prices in the sense that operators are allowed to follow value based price schemes is essential. The idea behind such price differentiation is that the willingness to pay for a new service with additional customer value equals the value of the product for the customer. Enabling price differentiation at the retail level requires differentiation at the wholesale level as well.

No need for additional transparency obligations. The recommendation should refrain from claiming far-reaching informational obligations for SMP operators concerning future network modification plans. There is no need for such additional obligation as the proposed risk-sharing model would inherently solve this issue.

The EC proposals lead to inefficient network dimensioning. The EC should abstain from an approach that obliges operators to build surplus capacities when they roll-out passive network elements. Not only from a legal perspective the justification seems highly questionable. Even more, such surplus capacities would cause much higher investment costs and would lead to a technically inefficient network infrastructure.

Graduation of remedies and symmetric sharing. Whenever duct access is mandated it must be symmetrical and across-the-sector. Access obligations related to wholesale broadband access must only be imposed where duct access does not constitute an effective remedy.

The negative effects of the proposed cost accounting standard contradict the initial objectives. The implementation of the proposed net historic cost accounting standard will cause market distortions and hinder a timely and area-wide NGA rollout. It consequently inhibits sustainable infrastructure competition. Further, it not only contradicts current European legislation but also induces costly adjustments for operators, NRAs and in current regulatory practices.

Disregarding country-specific characteristics would be detrimental for the single market. The EC should refrain from implementing a detailed catalogue of regulatory prescriptions (cost accounting standard, access options etc.) that shall be unique for all member states but that de-facto is not capable to regard the country-specific particularities. National regulatory authorities should keep sufficient freedom and flexibility to deal with these issues.

Recommendation must be based on impact assessment. A cost-benefit analysis of the draft recommendation is urgently needed. The objective of such an analysis would be to identify the different options for achieving the defined goal, and to analyze their different economic and social impacts. It is a prerequisite for the implementation of the recommendation that the impact assessment proves that the net impact will be overall positive.

2. Draft recommendation hinders investment in NGA

The draft recommendation for regulated access to Next Generations Networks is issued at a crucial time. Europe urgently needs the ICT sector as a driver for investment, innovation and productivity driver in the future. The ICT sector is the leading industrial sector in terms of investments in research and development, the number of full time employees and as regards patent registrations. The overall importance of the ICT sector is considerable: 40 per cent of productivity growth and a quarter of overall growth in Europe have recently been attributed to ICT. It is likely that the further introduction of high speed broadband technologies and associated services will contribute even more to ICT productivity in the forthcoming years since the spill-over effects on other sectors, e.g., logistics, medical science and entertainment industries are significant.

In particular during the financial crisis and threatening economic downturn, Europe needs undertakings which are prepared to make investments. Innovative applications such as network-based software services, machine-to-machine communication or telemedicine will require fast networks with significantly higher bandwidths of 30 megabits per second and above, not just as special data lines for companies, but for the basic provision of the population. It is according to long-term prospects that investments amounting to several hundreds of EUR billions will be necessary if Europe is to keep pace, in particular in comparison to competitive regions such as USA and Asia.

Operators can only perform this task if the government and regulatory authorities allow the investor adequate rates of return. The government and regulatory authorities need to take responsibility for Europe as a center of business and must not set the wrong course for setting up a modern fiber-optic access infrastructure. Infrastructure policy must not be hesitant. A clear and sustainable public policy strategy for high speed access is needed, also taking into account the increasing importance of mobile broadband provision in rural areas or possible contributions from suitable network cooperation.

Regulation should be phased-out where justified: Where this is indicated by the competitive (regionally) landscape, the current sector-specific regulation must come to an end and be transferred to the general competition law or at least massively reduced. The framework must primarily be orientated towards promoting infrastructure investments and must not continue to “down-regulate” infrastructure services by backing unchecked price competition.

Furthermore, future infrastructure investments require not only less regulation, but also entirely new and better targeted regulatory conditions. Regulation has come to the crossroads. The regulatory approach applied so far worked fairly well for opening up former monopolistic markets and fostering competition in the rather static environment of already existing (copper) network. Yet, it is no longer sufficient for the dynamics of rolling out completely new access networks. This does not mean that regulation is no longer needed per se but calls for a modification of the existing regulatory approach by focusing on long term dynamic efficiency.

It must now be decided whether the new networks will face an investment-friendly or an investment-unfriendly regulation. It is now to be asked, whether, in light of the current crisis, it is a good idea to continue to take billions of EUR out of the ICT industry through price regulation and thus to further exacerbate the effects of a recession. The signals from the European Commission are, unfortunately, not very encouraging.

This means that if regulatory interventions especially with regard to NGA remain, it must become more focused and fair. Given the urgently needed investment projects for new high-speed networks, an incentive and risk-compatible approach must be developed. It should be designed for the long-term, which enables the amortization of investment costs and ensures the effective and fair distribution of risks amongst investors and other potential infrastructure users.

3. The proposed approach increases the digital divide

The recommendation should refrain from following a certain technological path.

The recommendation correctly identifies the deployment of FTTH as a promising way towards ubiquitous modern high-speed networks in Europe. However, today it is broadly accepted that the picture of a fully 100% rollout of FTTH infrastructure is more a vision than a realistic scenario. The analysis of the economics beyond FTTH strategies indicates that in many member states geographical areas exist where full FTTH coverage will not be viable in the short to medium term. The degree to which economic FTTH coverage is possible also in less dense populated regions obviously depends on country- and market-specific characteristics (population density, topography, network topology, applicability of alternative technologies, demand site factors etc.). Further, the technological portfolio which will ultimately form the basis for area-wide broadband coverage should not be pre-determined by political and regulatory instances. Following today's expectations it is most likely that there will be several technological paths and different technical solutions consisting of FTTH of course and FTTC/FTTB or even wireless broadband solutions.

The recommendation exactly addresses this aspect¹: *"It is likely that the most effective strategy for NGA deployment will utilise a mix of technologies to deliver these services depending on specific local characteristics [...]"*. But contrary to this assessment the recommendation seems to favour a regulatory approach that explicitly favours a certain technology: *"This Recommendation aims to cover the main possible roll-out scenarios and competitive situations that may arise across the EU and therefore focuses on the two scenarios described above (FTTH/FTTN)."*

The proposed approach will increase the digital divide.

The approach outlined by the EC will negatively affect the promotion of ubiquitous broadband: An approach that cannot even assure an investment-friendly climate in metropolitan areas aggravates the difficulty for operators to generate economies of scale that are potentially positive for bringing broadband into less populated regions. Further, a one-size-fits-all regulatory approach that focuses only on the promotion of a 100% FTTH rollout will likely be without any positive effect for the progress of bringing more broadband timely into rural areas.

Deployment of NGA will vary across different regions. On the one hand there will be regions in which infrastructure based competition most probably will drive NGA deployments. In these, mostly densely populated areas, multiple (more than one) NGA infrastructures will be economically viable. On the other hand, there will be less densely populated regions where only one NGA infrastructure will be viable and

¹ See Explanatory Note, Chapter 2.1 „Different NGA architectures“, in particular page 5.

where NGA investment is not driven by infrastructure competition. (Of course, there might also be regions without any compelling business case for investing in NGA.) In order to allow deployment of NGA also in less densely populated regions, a modification of the current regulatory approach is urgently needed. What is needed is a framework which adequately takes into account the risks involved in NGA roll-out. However, as will be shown below, a simple risk premium as advocated by the EC is just not sufficient for fostering NGA investments also in less densely populated regions but must be combined with an effective long term risk sharing approach. Such an approach would effectively foster NGA roll out also in less densely populated areas and thus would help to minimize the digital divide by maximizing the number of consumers being able to connected to advanced super high-speed networks.

Additionally, it needs to be acknowledged that the deployment of far-reaching FTTC technology requires considerable investments as well. Accordingly, FTTC investments are not risk-free. It is highly questionable how such investments can be assumed to be free of any risks, in particular in markets where the penetration of FTTC-based products such as IPTV needs to emerge. **If regulated, it is also FTTC that surely will benefit from an effective risk-sharing mechanism.**

There will be regions where a pure FTTH deployment will not be viable. But despite the current status of broadband availability it is potentially possible that alternative (e.g. related to FTTC or wireless broadband access) solutions will considerably increase broadband availability. This could be realised for instance by installing outdoor DSLAMs near to rural agglomerations and hence to reduce physical constraints of existing copper based local loops in favour of increasing bandwidths. Similarly, more broadband in rural areas can be realised by operating wireless broadband solutions. We refrain from further elaborating this option, as this is a considerable part of current discussion about the EU-Review. However, it is important to summarise that wherever such solutions are viable they would obviously be positive to the benefit and welfare of end users also in rural areas. But by eroding from the beginning any potential comparative advantages of FTTC or wireless broadband solutions the EC contradict its own ambitions to include EU citizens in the information society.

The possibility to implement an adequate risk sharing mechanism should therefore be foreseen whenever justified and independent of the specific technology. Certain technologies could be otherwise unduly discriminated which would be detrimental for installing alternative technologies and closing the digital divide.

The one-sided promotion of a certain technology will cause market distortions.

Additionally, a one-sided focus on a certain technology only will lead to competitive distortion in the market. Competitors would have an incentive to switch their business model on FTTC rather than FTTH because FTTC/N would (wrongly) not be subject to any risk premium. Such discrimination in favour of FTTC/N would lead to sub-optimal market outcomes. A risk premium for FTTH only takes the concept itself ad absurdum, if similar products and services are – currently – provided via more moderately priced FTTC/N infrastructures, though owing to forward-looking investments into optical fibre when connecting street cabinets. Logically, such discrimination between FTTH and FTTC/N networks would lead to a lock-in effect in FTTC/N infrastructures, rather than leading to the intended and necessary investments into FTTH technology to secure economic growth.

It should not be the objective of regulation to pre-determine a certain path of technological progress. The fact that only the risk of FTTH investments is explicitly covered by the recommendation will lead to market

distortion and will reduce incentives to deploy alternative technologies (non-FTTH) where reasonable. It should remain up to the investing market players to choose the relevant technology and to set up their own business case.

FTTC might indirectly constitute an “enabler” for FTTH. Technological innovations are typically introduced on a step-by-step basis. And they consequently follow a certain trajectory at the end of which it might be rationale to further rollout fibre infrastructure towards FTTH solutions where having become viable. In a world absent of fibre-related regulation, any operator is expected to rollout fibre from the MDF towards end customers if the underlying business case is expected to be sufficiently profitable. This in turn is determined amongst others by market structure, level of competition, potentials in the retail market etc. The picture becomes more complex when turning into reality wherein an ongoing threat of fibre-related regulation arises. Needless to say, regulatory pressure to immediately provide access to the new infrastructure has the likely consequence to seriously increase the already existing uncertainty and hence to further threaten incentives for NGA investment. In addition to this, serious concerns have to be seen when conceding a risk-premium to FTTH but not to FTTC. The generally existing burden of regulation is then in parts lower for FTTH compared to FTTC. **The recommendation lacks any answers concerning the question whether the intended regulatory goals are able to justify the fact that the one technology is classified as superior compared to another.**

Hence it becomes highly disputable, whether the net benefit of such a systematic pre-determination with its consequences for market structure, competition and overall welfare will be ultimately positive. This issue should be subject to detailed further analysis.

4. Geographically segmented view on NGA to be strengthened

It is appreciated that the EC is aware of the necessity to consider regional aspects of regulation, both between different regions within a country as well as between different member states. A geographically differentiated and hence graduated approach is key towards better targeted regulation. Many of today's telecommunications markets have reached a status of vital and often platform-based competition. Considerable developments towards competition especially in the broadband market indicate that an undifferentiated, often nation-wide regulatory approach is no longer capable for adequately taking the underlying different competitive conditions into account.

Competition is the key driver for geographical segmentation and segmentation should lead to deregulation in case regions are characterised by effective competition. Although a targeted approach for regulation of the legacy network is of course of utmost importance, the importance and implications of geographic segmentation are even larger when it comes to NGA as this positively effects infrastructure-based competition. The deployment of NGAs requires enormous investments which will most likely lead to different players rolling out NGA networks in different regions and thus significantly altering current market structures towards more intense competition.

The meaning of geographical segmentation for legacy network.

Geographic segmentation is essential for taking into account the changing competitive landscape and for allowing deregulation in areas that are effectively competitive or tend towards effective competition in the foreseeable future. At the same time geographical segmentation is important for maintaining access

regulation in those areas where a single telecommunications infrastructure (still) persists and may continue to do so for the time being.

So far, the most prominent examples of geographical segmentation were found in the legacy copper networks, especially those that relate to the need for deregulation of wholesale broadband access in market 5. As the explanatory note of the draft recommendation states: „Experience shows that in Member States where remedies on the market for wholesale physical access (Market 4) have worked well in as much as many operators rented local loops, remedies on the upstream market for wholesale broadband access (Market 5) were not required.”

Competitors whose business is based on unbundled local loop or on broadband TV cable networks are able to produce bitstream access products for own use and to supply them on a wholesale basis to third parties. At the end, this results in a situation of sustainable wholesale competition for broadband services such as IP bitstream access. Taking different competitive dynamics into account, Austria and UK have already conducted geographically differentiated market analysis which resulted in the removal of remedies in competitive regions

Consequently, making regulation more sensitive for geographical segmentation will effectively contribute to better results by **avoiding multiple regulation**. Again, where competition exists on the basis of remedies on a deeper level in the value chain (such as market 4) justifications of remedies on upper levels (market 5) are hardly to justify any more. This holds also true for the case that open access to the passive infrastructure is being granted, through public or private initiatives. In such cases no additional remedies should be considered on the downstream markets (wholesale and in particular retail). This reasonable graduation is not sufficiently covered by the draft recommendation and needs to be strengthened. The EC should amend its concept by clearly stating that regulation of market 5 should not be continued where indicated by effective competition.

The meaning of geographical segmentation for NGA.

The degree to which NGA is being rolled-out strongly depends on the underlying economical, technical, regulatory and political preconditions. It is reasonable to expect that there will be various regions, which will all differ in terms of numbers and scope of NGA-platforms. One reason behind this is the investment volume required to cover households with FTTH. Costs might be lower in dense urban areas and may appear higher where lower economies of scale and density are present. Regulation in general must reflect these realities.

Region 1: Effective competition renders sector specific regulation unnecessary.

The concept of geographical segmentation at least analyses three different regions. A so-called “region 1” covers areas that are best described by effective competition. It is likely that in region 1 at least 2 different infrastructures are competing with each other because it will likely consist of very densely populated areas. These areas are hence very profitable for the roll-out of not only FTTH infrastructures but also for other infrastructures such as broadband TV cable networks. Areas within this region should not be subject to regulation such as to reflect the level of vital and platform-based competition. Existing regulation should be removed herein.

Currently the most prominent examples are the market analyses of the wholesale broadband access market (market 5) in the United Kingdom, Malta and Austria. In the UK, Ofcom decided to deregulate the WBA market in regions that are served by at least 4 operators based on two infrastructures. The number of infrastructures was also an important determinant for the deregulation of the Maltese market which is mainly served by two wired infrastructures (together approx. 95%; several ISPs acting on DSL-basis) and one small wireless platform (approx. 5%) with growing importance. Following serious doubts by the EC, the Maltese NRA has recently decided not to notify any SMP operator and hence to fully deregulate the local WBA market. Similar to UK, the Austrian NRA RTR defined two regions with different competitive characteristics and decided to identify a nationwide-market but to differentiate the remedies (reduction to ex-post, accounting separation only in competitive areas).

As stated above, the draft recommendation does not sufficiently address this issue and should refrain from prescribing regulation in market 5 independent from the underlying competitive landscape and existing regulations (such as duct access) in market 4.

Region 2: Regulation must be proportionate and investment-friendly.

Different from the demarcation of region 1 it is to be expected that there exist a couple of areas the economic conditions of which do not constitute a viable basis for several infrastructures. This “region 2” will likely leave room for just one single infrastructure. The question on whether and how to apply regulation within these areas has to acknowledge that these regions will not be per se without any competition. The competitive landscape will most likely be more of service-oriented character based on access to the network. Subsidiary access and price regulation must be covered by a risk-sharing model that assures a fair and non-discriminatory distribution of the immanent investment risks between investor and access seekers.

In other words, in areas where there is no effective competition and its development is not likely in the foreseeable future, regulation still has the task to ensure open access but has to do so in a proportionate manner, should focus on undertakings that are ready to invest in NGA networks, should allow for long-term risk sharing and should not impose a full set of remedies but targeted obligations: symmetric duct access or WBA.

Region 3: Requires room for other solutions than regulation.

With respect to FTTH, there will be regions in which a FTTH deployment is not viable in the foreseeable future. It can be expected that these regions cover the more sparsely populated areas. Probably other external factors are needed which positively influence the business case (“state aid region”) and hence to assure more parity in terms of high-speed broadband availability between dense urban and rural areas. Where current public sector initiatives to enhance financial support to FTTH deployments exist but do not sufficiently target the sparse populated areas, existing state aid rules should be improved.

However, when referring to such a “state aid region”, this does not necessarily imply the granting of direct public subsidies. What is important in this respect is that the state should take on the role of a facilitator and enabler of NGA investments. There are various means that may positively impact upon a business case, such as temporary tax exemptions or tax holidays, accelerated procedures and planning permissions for infrastructure roll-out and facilitated access to buildings, civil engineering works, setting-up of street cabinets on public property, clear and fair rules for rights of way over public and/or private

property, non-discriminatory infrastructure access to various public utilities as far as technically feasible or even an NGA fund for such sparsely populated areas.

5. Effective risk sharing model needed for NGA investments

As described above the European telecommunications sector stands at a cross road. Either Europe embarks on large scale NGA roll-out or it will lose further ground compared to other leading economic regions of the world, especially with regard to the US and Asia. But these regions are not just examples for impressive fibre take-up. What's more, they reveal fundamental differences in the regulatory and legal environment compared to Europe. Be it by promoting unregulated commercial solutions or be it in some form of industry policy:

Where do we stand in Europe? Most important, the risks involved which are essential for ubiquitous NGA deployment are currently not sufficiently considered within the regulatory framework. The EC's proposal to take into account some kind of project specific risk premium still gives access seekers the wait-and-see option as well as the possibility to enter the market on a cost based basis and on different levels in the network. It needs to be acknowledged that this structure is very similar to current regulatory approaches and ignores the fact that whereas in legacy infrastructure networks services were closely connected, this is no longer the case in next generation infrastructure. Additionally, all the uncertainties relevant to the NGA environment are either new by nature or are much higher compared to legacy networks. The question of how to deal with the risks involved in NGA deployment is key for delivering an investment-friendly climate. Especially when designing whether and how to regulate access to next generation networks, the particularities of NGA investments should properly be taken into account.

5.1. Uncertainties of NGA call for fundamental adjustments of regulation

The risk involved in NGA roll-out is very different from the risk of legacy networks: Next generation access investments will display higher degrees of systematic risk than other investments. These risks cannot be diversified away and are significantly higher than in other technologies.

- **Consumer-related uncertainty**

Being a totally new technology, future demand for NGA products is not known. Investors face not only uncertainty about the future number of NGA subscribers but also about consumers' willingness to pay for new services requiring such high bandwidth and better performing services. Whether consumers adopt to a new technology or not depends on the preferences of potential customers with regard to product characteristics, quality, prices and distribution channels. In the case of NGA, investors do not know whether they will be able to charge a premium for very-high broadband access services. Both the penetration rate and ARPU for NGA-based subscriber lines depend on several factors, all of which are rather unknown for the time being: expected retail pricing levels, take-up speed, price elasticity, and the development of new retail services which offer an additional value for the consumer.

- **Competitive uncertainty**

Additional uncertainty arises from the behavior of (potential or actual) competitors. Alternative operators having built their business case on local loop unbundling in legacy networks might react by further discounting their service offering in an attempt to counter the diffusion of new NGA -

based services. Such behavior is likely to put downward pricing pressure for very high speed Internet access. Additionally, operators may choose to follow a business model based on the renting of sub-loop unbundling and building own fibre infrastructure between his own main distribution frame and the street cabinet. This may force the incumbent into stranded investment (between the MDF and the street cabinet).

- **Technological uncertainty**

In recent years there has been an ongoing process of technological change in the telecommunications sector and the diffusion of new technologies has significantly increased. In return, this has raised the uncertainty of investors due to the possibility for operators to wait for the arrival of a new generation of technologies which might not only be “better” or cheaper but can cause existing technologies to become obsolete.

- **Regulatory uncertainty**

Regulation directly affects investment decisions. Regulation might lead to failures related to the design and pricing of both wholesale and retail regulation. Regulatory intervention might give rise to costly failures, either in terms of negative failures (i.e. by setting disincentives for dynamically efficient investments or by disregarding pricing flexibility), or “positive” failures (i.e. by setting incentives for inefficient, too large and early investments). Further, regulatory uncertainty is aggravated by the current practice of reviewing market analysis and access charges every two years. This does not provide a stable regulatory environment and does not achieve the needed investment security. Thus, long term regulatory decisions must be allowed, in order to provide a regulatory framework inline with the rather long pay back periods of NGA investments.

All of these uncertainties are either new by nature or they are much higher in a NGA environment compared with the legacy networks.

The uncertainties must be managed in financial, technological and organizational terms. As described below, the risk premium proposed by the EC does not fully address all of these issues. A proper risk-sharing model would be much more capable of dealing with the challenge to distribute the NGA specific risk between investor and access seeker in a fair and non-discriminatory manner.

5.2. The proposed risk premium is not sufficient

“Wait and see” option not sufficiently taken into account.

A premium surcharge does not mitigate a decisive disadvantage of NGA investors: It would not solve the problem of the asymmetric distribution of loss during the penetration phase of new markets. In other words, when evaluating the risk-premium for NGA infrastructure the option value of the non-investing access seeker is not considered by the EC recommendation.

Due to the sunk cost characteristics of NGA investments there are limited alternative business options for the investor once the investment has been made. This makes market exit very costly since the assets cannot be easily relocated or invested otherwise. By contrast, a non-investor is always in a strategically better position than the investor: Assuming that the wholesale market is regulated a non-investor can enter the NGA-based service market on a wholesale basis at “any time” with “any volume”. He can immediately enter the market on the basis of mandated access. He can also wait and see how the market

develops and enter the market later. Of course, a third option for alternative access seeker is to invest in an own NGA network.

If he deems an investment to be too risky he may choose a flexible, short-run risk-free contract where the risk of the investment remains solely with the investor. In case of the NGA investment not being successful, the investor would be the only party left with the losses incurred, whereas the non-investor fully participates in case of a successful market outcome. Given the uneven distribution of potential losses, such a regulatory regime will not deliver investment incentives for NGA deployment.

Current short-term regulatory practice does not allow investors to set off losses of an early market stage.

Given the large fixed costs of NGA investment, average costs per subscriber are especially high at the start of a NGA launch when uptake is low. To quickly achieve penetration rates and lower unit costs, relatively low prices for NGA related services are required. In such a situation the investor is in a loss making situation, no matter whether a risk premium is applied or not. The investor will only be able to make up with these losses at a later market stage. Yet, he may not be able to do so, should he become subject to regulatory provisions where wholesale access prices are set according to the costs of efficient service provision. If wholesale prices are fixed by the regulator on the basis of higher usage figures, the tariff would be rather low, no longer allowing the notified operator to set off the losses of the early market stage.

Further, even if the investor would be allowed to recoup the losses in later market phases, access prices based on long term cost calculations per se put the investor in an inferior position compared to non-investors. Whereas the investor would be in a loss making situation until he reaches break even, the access seeker would be potentially profitable also in the early market phase while the investor has to wait and run down the cost per unit curve. This would lead to the absurd situation where the investor de facto subsidizes the access seeker. Therefore, it is most important to design sufficient safeguards to allow for a regulatory level playing field for both parties – the investor as well as the access seeker. We believe that risk sharing will achieve just that.

A risk-premium must be determined for both shareholder's equity and liability.

The above described additional risks of an NGA investment are not dependent on how the investment is financed. Equity and liability are affected by NGA investments in equal measure. For high risk investments both financiers and outside creditors expect a compensation which reflects the risk of the investment.

The methodology of determining the risk-premium described in the EC recommendation covers only the risk evaluation of the equity side. The risk evaluation of the liability side i.e. of outside creditors is disregarded within the EC recommendation although the corresponding risk assessment of the liability side is not more complex as the risk assessment of the equity side. The complexity of the risk evaluation of the liability side results from the multi-product character of the telecommunication industry. Undertakings that are investing in NGA infrastructure usually operate not only NGA access but also other services. The outside creditors risk arises from the higher probability of insolvency due to high risk investments like NGA. Therefore the interest rate that reflects the undertaking's risk rating by the outside creditor is usually a company specific rather than a project specific risk rating. The project specific risk rating however is the relevant quantity and must be determined. Thus, either

- the project contribution to the overall insolvency risk and the resulting increase of spread must be calculated, or
- a general risk-premium mark-up needs to be applied to the WACC.

Due to the complexity of determining both (a project specific risk-premium of the equity; project contribution to the overall insolvency risk of the liability side) the determination of a general risk-premium mark-up applied to the WACC is more favorable.

The risk premium must be known before the investment is carried out.

The WACC of an undertaking and a given project specific WACC, respectively, is essential to calculate the business case of a NGA investment project. Whether a project is economically viable or not and whether to invest in NGA infrastructure in a given region is dependent amongst others on the WACC. Thus the corresponding WACC must be known before the undertaking comes to a decision to invest. In case that the rates of an investing undertaking are not regulated on a cost base the undertaking is free in setting the appropriate WACC. In case that the rates of an investing undertaking are regulated on a cost basis the situation is different. The regulator sets the appropriate WACC which is needed for the decision-making process whether a NGA rollout is economical viable or not.

A risk-premium must be applied to both FTTC- and FTTH networks.

When an operator makes investments in FTTC he is also likely to face significant commercial risks. Any regulation of such an asset should reflect the risks the investor faces at the time of investment in order to provide appropriate incentives for investment in the first place. Such risk, that demand from businesses and consumers may not develop as expected, occurs always in NGA networks, no matter whether it is a FTTH network or a FTTC network. Furthermore, FTTC investment is not only large but also sunk, which is why the consequences for the investor in case of a negative development are huge losses. Therefore, it is essential to apply a risk premium not only to investments in the very last mile (today's distribution cable network between end customer and street cabinet) but also to imply a risk premium to fibre investments between the street cabinet and the main distribution frame.

The current approach does not meet policy objectives and regulatory principles.

Article 8 (2) lit. c Framework Directive and Article 12 (2) lit. c Access Directive provide a legal basis for NRAs to consider initial investment and the immanent risks involved. As laid down in Article 8 (2), lit. c Framework Directive, one of the policy objectives and regulatory principles is to "*encourage efficient investment in infrastructure and promoting innovation*". When NRAs consider to impose, maintain, amend or withdraw obligations they have to take account in particular "*the initial investment by the facility owner, bearing in mind the risks involved in making the investment*" (Art. 12 (2) lit. c Access Directive).

The EC's approach to encourage efficient investments in infrastructure with a risk premium only does not fulfil the criteria laid down in the regulatory framework. Notwithstanding the commission acknowledges the risks of investments², the proposed concept does not adequately cover the needed long term

² "The return that is allowed ex ante on equity capital to finance NGA networks should strike a balance between providing adequate incentives for companies to invest (implying a sufficiently high rate of return), while at the same time promoting efficiency and sustainable competition and maximising consumer benefits (implying a rate of return that is not excessive). In

perspective, which is essential for setting the right framework for investment in NGA. A long term risk sharing model as it will be elaborated in more detail below is most capable to address the policy objectives and regulatory principles.

5.3. Effective risk-sharing model needed to incentivize NGA deployment

Market uncertainty in terms of demand for higher bandwidth, willingness to pay and alternative infrastructure development combined with regulatory uncertainty as to future wholesale and retail regulation negatively affect private investment decisions. As has been described above, investment into next generation access networks is characterized by specific risks which are not adequately addressed by the current regulatory regime:

- Deployment of NGA requires massive investments.
- Fixed costs being mainly sunk are by far the largest part of total NGA costs.
- Being a totally new technology, at the start of NGA roll out subscriber figures are very low.
- Uncertainty on the amount of the willingness to pay for higher access products
- Efficient NGA roll out in a given region usually covers all households within that region (differently from other technologies, which can be successively upgraded).

Access regulation should not only give investors in NGA networks the possibility to earn a reasonable return but should allow new forms of partnerships for the deployment of NGA. This could take the form of **long term risk sharing**. Given the shortcomings of traditional regulatory provisions applied to the NGA environment, a modified regulatory approach for NGA should – amongst others – allow for:

- a new form of **long term risk sharing** contracts for the deployment of NGA,
- **long term** regulatory decisions,
- **pricing flexibility** for faster recovering of the investment costs,
- **pricing models reflecting the long term character** of NGA investments, and
- **stable price levels** for legacy networks to finance NGA CAPEX.

Long term risk sharing contracts as a key element of a new regulatory regime.

Long term risk sharing contracts provide a means for fairly sharing risks across the investor and a number of access seekers. In the telecommunications industry such infrastructure sharing agreements are very common. They have, for instance, arisen in relation to undersea fibre optic cable (and satellite capacity) where the effective long-term lease of a portion of the capacity of an international cable for example is

order to achieve this balance, regulated returns should compensate companies for the relevant (i.e. project-based and non-diversifiable) risks they face when making the investment.” (Explanatory Note, p. 17-18)

called Indefeasible Right of Use (IRU)³. Another example for such arrangements are collocation agreements which define an arrangement for operators to share physical (or virtual) space with competing operators and/or service providers.

Long term risk sharing contracts are best suited to overcome the shortcomings of traditional risk free short term contracts when applied to NGA networks. They will allow competition at the wholesale level to develop on fair, objective, non-discriminatory and transparent terms and conditions. In view of the objective of encouraging investment openness to all potential investors ensures the highest possible investment incentive in line with a socially desirable outcome. Contract revenues would account for (the specific systematic) risk in NGA at the time of deployment and this risk would be shared (pooled) across a variety of stakeholder. Another prerequisite is to allow for value-based pricing of wholesale access products since only differentiated wholesale prices will enable differentiated retail prices which are important for the overall profitability of the investment case. Last but not least, in terms of feasibility long term risk sharing contracts can be relatively easy implemented, are able to react flexible to changing market and/or regulatory conditions and comply with EU and national regulations once the necessary revision of the regulatory regime is concluded.

Pricing flexibility and value oriented allocation of costs– an ultimate condition for the new regulatory regime.

In a NGA environment with its huge costs involved it is important to enable operators to differentiate services to end customers. The idea behind such price differentiation is that the willingness to pay for a new service with additional customer value equals the value of the product for the customer. Yet, contrary to this requirement in recent years flat-rates have become the most common price concepts at the retail level, a trend mainly driven by customer preference favoring simple pricing structures. The absence of bandwidth-based product and price differentiation results in a lower share of producer surplus by all players. This lower producer surplus of NGA products will most likely reduce investors' incentive to invest in the technology.

Enabling price differentiation at the retail level requires differentiation at the wholesale level as well. Such flexibility in wholesale prices is key to increase incentives for fiber rollout. Only a value based price differentiation on the wholesale level enables in the long run a price differentiation on the retail market for different access products (access bandwidths). One method of value based pricing is to allow operators to price next NGA-related services per bandwidth. The importance to have such pricing flexibility in place stems from the fact that there would be no investment incentive if prices were not allowed to differentiate

³ IRUs grant an access seeker the right to use the facilities of another carrier's infrastructure, in the form of either fiber strands or a certain number of channels of a given bandwidth. The IRU is granted either by a single company or a consortium of companies that built the (usually optical fiber) cable. The ownership period is rather long and can be up to 25 years or more. The grantor pays the fees associated with installing the pipe, the rights of way and other fees and incentives to jurisdictions through which the pipe will run. He also pays for up-front labor costs of installing and testing and other costs for getting it into the ground. In exchange for temporary ownership of a portion of the network, the access seeker pays the grantor, usually an up-front fee, followed by annual charges. In providing a degree of certainty to both the asset owner and the access seeker, IRUs are to the benefit of both parties. They facilitate the shared use of networks elements and as such are a potentially effective tool for cost management. In doing so grantors are able to maximize their use of assets, manage risk and build business cases with improved returns on investment. Moreover, they satisfy mandated asset sharing required by regulatory provisions in order to promote competition. But also access seekers profit from risk sharing contracts. IRUs give them the longer term assurance that the leased components will be available for periods of time that meet their needs.

among different products. By contrast, value based pricing typically enables companies to become more competitive and more profitable than using simpler pricing methods.

Such flexibility is important in the sense that the total value derived from next generation access networks is the sum of different valuations by different end users. Some will attribute a high value next generation access services highly while others may value it only marginally more than services delivered over existing access networks. In providing this degree of flexibility investors would also have the flexibility to price differentiate across consumers or service levels to capture sufficient surplus to ensure that the efficient investment option is viable. Moreover, such a pricing mechanism gives investors the opportunity to experiment with different pricing propositions and to change strategy as the demand for next generation access services becomes clearer. It would also minimize the risk that the regulator gets the pricing wrong. This is because the market is better informed than the regulator.

Requirements to be met by risk sharing contracts

In defining a pricing approach based on long term risk sharing contracts, there are a range of specific requirements that need to be considered. Specifically, the model should seek to:

1. **Allow flexibility** for investors and access seekers **to price retail services** according to demand and willingness to pay. A large part of NGA network costs are fixed and common costs. Economists and regulators agree that in a world with full information, welfare optimal allocation of fixed and joint common costs should take into account the relative elasticities of demand for the different services. To do so requires pricing flexibility, thus enabling a faster recovering of the investment costs.
2. **Enable flexibility in wholesale prices.** In order to achieve the needed pricing flexibility on the retail level, prices must also be allowed to be differentiated on the wholesale level as well, since otherwise retail prices would quickly be driven down to a uniform pricing level reflecting the single price for wholesale access.
3. **Availability of short term contracts minimizes the risk of anticompetitive behavior and gives maximum flexibility to access seekers.** From a competition perspective the co-existence with other pricing approaches is important. Some operators may not want to access via long term risk sharing contracts or alternative operators may decide to enter the market after long term contracts have been issued in a given region. The existence of the short term contract offers the wholesale customer a choice at the outset and gives any operator the opportunity to enter the market at a later stage. Difference in prices between long term and short term contracts reflect this “wait and see” option. Operators that decide for long term contracts participate in the risk of the investor whereas holders of short term contracts don’t participate in the risk of the investor (as it would - without risk premium - reflect current regulatory practice).
4. **Be credible and practically implementable by the regulator given information constraints and uncertainties.** For any regulatory approach to be credible, prospective NGA investors need to be confident that access terms will be set that reflect the risk incurred at the point of investment. Investors need to know how they might be regulated, in order to assess their prospects for making a return on risky new investment such as NGA.

5. **Allow for migration away from long term risk sharing contracts.** Conditions and triggers for migration away from long term risk sharing contracts must be specified in advance. After achieving break-even, it is appropriate to transition to a more traditional approach to regulation.
6. **Be non-discriminatory.** One condition to be met by the owner of NGA infrastructure is to set non-discriminatory access terms. Contracts must be provided on an equivalent basis to all third parties, including the incumbent's own downstream divisions.
7. Be **clear and transparent.** And
8. Be **operationally efficient.**

Long-term risk sharing models are no more complex than the EC's risk premium approach

The above described design of long-term risk sharing models reveals several informational and procedural requirements. These requirements refer e.g. to specific details of the investment project under consideration such as time and location of future NGA deployment, expected development of demand and prices etc. It needs to be acknowledged that the EC's risk premium approach must answer exactly the same questions. Whereby both approaches are comparable in terms of practicability – only long-term risk sharing models effectively address the investment challenge facing the industry.

5.4. Long term risk sharing model – to the benefit of all

The proposed long term risk sharing model does have several notable benefits compared to the traditional regulatory approach, under which only risk free short term contracts are allowed for. The approach, which is laid out above, effectively addresses the particularities of NGA networks in a proper way. It addresses the NGA investment challenges by

- taking into account the option value of the non-investor,
- making possible penetration pricing strategies without running into margin squeeze problems,
- achieving a symmetric distribution of loss during the penetration phase, and
- allowing (wholesale and retail) pricing flexibility for a faster recovering of the investment costs.

The risk sharing approach attempts to balance the amount of risk associated with the NGA investment equally between the investor and the access seeker, so that both are able to compete on equal terms. By “simulating” sunk costs also for the access seeker, part of that risk, which without risk-sharing would have been borne by the investor alone, is shifted to the access seeker as well. By doing so the risk sharing concept is to the benefit of all, grantors, grantees and consumers:

- Risk sharing model helps carriers being investors to maximize their use of assets, manage risk and build business cases with improved returns on investment.
- As to carriers being access seekers risk sharing contracts give the longer term assurance of leased components being available and allow carriers to avoid huge expense of building a complete network from the ground up.

- Consumers benefit from optimal market outcome, because the risk sharing model
 - facilitates the shared use of network elements (thus avoiding a waste of resources),
 - satisfies mandated asset sharing required by regulatory provisions in order to promote competition,
 - allows the market to price the risk in NGA deployment, and
 - encourages higher penetration rates, and thus lower prices.

Incentive for investment

Risk-sharing effectively addresses the particularities of NGA networks in a proper way and gives incentives for NGA investments by the transmission of the willingness to pay on the retail level to the wholesale level, by achieving a symmetric distribution of losses during the penetration phase, and allowing pricing flexibility for a faster recovering of the investment costs.

More competition

For various reasons the long term risk sharing model does not only set better incentives for more investment into NGA networks but also encourage competition at both the wholesale and retail level. This is because there will be more competitors at the wholesale level:

- not will there be only cable TV operators offering high speed broadband access to customers but also telecommunication operators competing with their NGA infrastructure, and
- the higher the geographical coverage of NGA the higher is its potential for competition.

In addition, there will also be sharp retail price competition due to more intermodal competition. Thus, by implementing the model of long term risk sharing contracts, also retail markets will become more competitive.

Reduction of uncertainties

Alternative investors and competitors are more involved in regulatory decision with respect to a long term risk sharing model than with respect to risk-premium models. This has the benefit that using long term risk sharing models the degree of risk incurred in investment in NGA caused by uncertainties is assessed by all:

- competitors (via their demand for long term contracts),
- by the NGA investor (via its own demand forecast) as well as
- by the regulator (via the price being determined).

Being much closer to the market, investors have much better information than the regulator. They may also be able to learn about customer preferences and therefore determine the optimal investment.

5.5. Most access alternatives recommended by the EC are not viable

Most access alternatives recommended by the EC are either technically impossible or economically not viable in a GPON network.

The EC recommends that NRA's may impose for SMP operator further access obligations beyond access to ducts, other civil engineering works and other elements which are not active. Examples are access to dark fibre, fibre unbundled local loop and fibre sub loop unbundling. At present, there are two main technical network architectures to realize FTTH:

- point to point (P2P) and
- gigabit passive optical network (GPON).

Most major operators in Europe do not favour P2P networks due to significantly higher investments and higher complexity because of a good deal more incoming fibre lines at the ODF (optical distribution frame). Instead, most operators opt for a GPON architecture. For the P2P access technology, it is far from clear whether a viable business case for residential customers will evolve for this access technology in the near future. Further, physical fibre unbundling at the street cabinet is only possible with P2P networks. GPONs consist of a single fibre connection from the exchange out to a splitter which divides the signal on the fibre between several end customers. A separate fibre connects the splitter either with an end customer or with another splitter which is connected to an end customer. Only these final end customer fibres can theoretically be unbundled. In practice an unbundling at the first splitter location is also no viable option due to the fact that fibres are welded with the splitter. Unhinging a fibre from the splitter is no solution and would destroy both the fibre and the splitter.

Street cabinet are no longer needed to realize a GPON network and should not be seen as a viable solution for fibre unbundling.

Street cabinets are no longer required when fibres are concentrated in optical splitters onto one single fibre. This is because splitters are very small and can be placed in ducts or manholes. The size of a splitter makes street cabinets obsolete.

A splitter is usually placed as close as possible to the group of end customers it serves. This minimises the length of the individual customer fibres. Access to sub loop unbundling at the street cabinet would only be possible if all splitters were placed within a street cabinet. This however would increase the necessary NGA investments even further. Unbundling at the splitter is economically not viable due to the small number of end customers available at each splitter. If they are spread between multiple competing operators, the resulting fragmentation will leave each deployment economically unviable.

Fibre local loop unbundling would only be possible in P2P networks. Only in P2P networks there are individual fibre connections running from the customer to the local exchange. It would not be possible for GPON based deployments due to the above described facts. The same holds true for dark fibre.

Access to fibre sub loop reduces the coverage of a GPON network.

There are two possibilities to connect fibres; welding and plug-and-socket connections. Whereas the attenuation of a welded connection is almost zero (0,1 dB) the attenuation of a plug-and-socket connection is comparatively high (0,5 dB). On the other hand, welded fibre connections cannot be disconnected without destroying the fibre.

In case the more expensive GPON architecture with street cabinets should be build access to a fibre sub loop makes only sense if inside the street cabinet an optical patch panel with plug-and-socket connections is installed. This patch panel would be needed to connect a fibre sub loop with a fibre of a competitor or with the fibre of the notified operator from the street cabinet to its ODF. To realize such a connection two plug-and-socket connections are needed; one plug-and-socket connection at the fibre sub loop and one plug-and-socket connection at the fibre of the competitor or at the fibre of the notified operator. This increases the attenuation twice and would reduce the coverage.

The result of the recommendation will be that access to fibre sub loop unbundling and fibre local loop unbundling increases necessary investments and operating expenditures, thus putting the viability of NGA business cases for many regions at risk.

It is of utmost importance that operators can minimize expenditures to increase the viability of the NGA business models. Access to fibre sub loop unbundling causes the opposite because increasing investments and operating expenditures are closely connected with an obligation to offer access to fibre sub loop unbundling.

- Given that optical splitters are tiny and can installed in a man- or handhole or may be even buried (in a sleeve), street cabinets are no longer needed within a rigid GPON architecture. On the other hand, access to a fibre sub loop unbundling would only be rational if a street cabinet would be available. Therefore, an obligation to offer access to fibre sub loop unbundling is closely connected with an increasing investment for street cabinets. Given the reduced need for street cabinets, a requirement to have such access points would force the operator to build an inefficient network structure. Moreover, optical street cabinets are more expensive than copper street cabinets because optical patch panels require a higher technical standard than copper patch panels.
- A splitter is usually placed as close as possible to the group of end customers it serves. This minimises the length of the expensive individual customer fibres. Access to sub loop unbundling at the cabinet would only be possible if all splitters were placed at the street cabinet. In other words, access to fibre sub loop results in an increasing number and length of expensive individual customer fibres which increases the necessary NGA investment.
- As described above, access to sub loop unbundling causes a reduction of coverage. The reduction of coverage again effects that a higher number of ODF are needed. On the one hand, a higher number of ODF is linked with a lower usage of each of the ODFs which results in a higher necessary investment per access line. On the other hand, each ODF is located in a separate building. Thus, a lower coverage results in a higher number of buildings where the ODFs are located. Higher rental charges are the consequence.
- Street cabinets cause extra operating costs. Not only do they need to be maintained. They are also sometimes target of malpractice, i.e. they are destroyed. Furthermore, the offer of access to sub loop unbundling is combined with extra operating expenditures. A product management for sub loop unbundling is necessary as well as further technicians being responsible for the circuits. The technicians also need cars to drive to the street cabinets.

NGA bitstream access will be sufficient.

As shown above, most access alternatives recommended by the EC are either technically impossible or economically not viable, thus reducing the coverage of NGA deployment. The viability of NGA rollout business cases for many regions would be at risk if notified operator were obliged to offer access to fibre local loop unbundling and fibre sub loop unbundling. This clearly appears to contradict the initial objectives to promote investment and competition in NGA and to foster sustainable infrastructure-based competition. It is for this reason that if NGA access is subject to regulation it should be limited to bitstream access or duct access.

Access to NGA on the basis of bitstream access will be sufficient. NGA bitstream access offers access seeker the full range of necessary access functionalities needed for their retail offers. It will provide support for quality of service, multicast services and flexibility concerning customer premises equipment. Additionally, different points in the aggregation network might give maximum flexibility for aggregation and interconnection. The currently ongoing standardization proceedings for all these functionalities are in progress. With these functionalities access via NGA bitstream equals a virtual access line. A physical access line to either fibre local loop unbundling or fibre sub loop unbundling is not necessary.

The recommendation should leave room for consistency in selecting the appropriate remedy.

The EC should assure that the proposed approach suffice the proportionality requirements of the EU regulatory framework. According to the framework, remedies and access obligations may be only mandated in case that a market analysis has been conducted, SMP has been designated and an appropriate remedy has been selected to solve the identified competition problem. The EC's recommendation for mandating access to NGA appears to deviate from this by prescribing a detailed and exhaustive set of measures. As shown above, it is likely that the appropriateness will be different across markets and member states. The EC should leave sufficient flexibility to NRAs to calibrate remedies in order to capture the national market conditions.

5.6. Mandated duct access must be symmetric

If duct access is mandated it must be symmetrical and across-the-sector

The recommendation should take into account that if duct access is subject to regulation it does not suffice to oblige only the incumbent to offer ducts access. An analysis of the market situation of ducts will reveal that there are many alternative ducts and duct like infrastructures available. On the one hand, there are multiple parallel duct infrastructures of alternative telecommunication operators; on the other hand there are ducts of electricity companies, municipalities and other public utilities. Moreover, alternative infrastructures like water pipes, sewers, or underground railway systems are exploitable. This is demonstrated by several operators laying FTTH in Paris, Vienna and Milan. All these capacities need to be taken into account. The EC should refrain from assuming that a SMP operator will always be a fibre based operator, and mostly the former incumbent.

An obligation for the incumbent to offer duct access without analysing the entire duct and duct like infrastructure market is not appropriate.

An appropriate market analysis is required in which the complete duct and duct like infrastructure market is analysed. In case that the market analysis demonstrates that in a certain region ducts of one company

constitute a bottleneck, it could seem appropriate to limit access obligations to this bottleneck in this area. Not only should the incumbents' ducts be part of such a regulation. If a bottleneck is found ducts owned by alternative telecommunication operators, electricity companies, municipalities and other public utilities as well as duct like infrastructures like water pipes, sewers or underground railway systems should also be subject to access obligations.

5.7. No additional transparency obligations

The recommendation (Art. 10) intends to oblige SMP operators to provide *interested parties* appropriate information about future network modification plans. But the recommendation lacks clarity about what is meant by "*appropriate*" and by "*to the extent necessary for planning and coordination of the access seeker's investments*", and hence, what is the intended objective. Such information is a strategic and confidential asset of network operators and should be strictly treated with care.

In case that the EC intends to prevent access seekers from seeing their business case eroded following some modifications within SMP operators' networks, it needs to be acknowledged that this topic is already comprehensibly covered by legal principles of contract law. To inform about modification plans which have an effect on the access seeker's business model is already part of the existing contracts. Furthermore, it is to be assumed that potentially relevant network modifications plans were taken into account by the NRA when having conducted the underlying market analysis. The logical consequence all this is that there already is sufficient certainty for access seekers.

A risk sharing model is more capable of dealing with this issue.

Under the risk sharing model, information which is relevant as regards to future network modifications would be subject to an open and transparent process where both investor and interested access seeker can credibly commit their interest to contribute to the roll-out of NGA. An additional obligation to inform about modifications plans is therefore not necessary and would be part of the risk sharing model.

5.8. The proposals lead to inefficient network dimensioning

Art. 4 of the draft recommendation states that whenever SMP operators are planning modifications related to the network structure potential use of other operators has to be taken into account. In other words, the EC wants SMP operators to be forced to build surplus capacities when they roll out new ducts, other civil engineering works and other elements which are not active. Further, Art. 18 of the draft recommendation wants NRAs to take measures pertaining to the adequate size of street cabinets in advance of the NGA deployment.

This is comparable with a situation in which other operators get entitlements related to infrastructure roll-out through the SMP operator. The justification behind this recommendation seems highly disputable not only from a legally perspective. Even more, such surplus capacities cause higher investments the operator could avoid if he would build an efficient network infrastructure.

The EC lacks further clarification about key questions such as:

- Who will finally approve the right and "appropriate" amount of capacity?

- How will capacities' costs be dealt with if actual usage deviates from expectations? In case that the surplus capacities are not used by alternative operators, who will pay for it? Are these avoidable costs of inefficient surplus capacities part of the costs of the efficient service provision of other regulated wholesale services? Will potentially resulting spare capacities be subject to later "efficiency corrections" through the regulator (to the expense of the SMP operator)?
- How to deal with strategic behaviour from "interested parties" (hiding true preferences, simple gathering of strategic information, optimisation through under- or overstating of potential usage)?

The EC should refrain from following these "principles". Again, a long term risk-sharing model is most suited to deal with issues related to the development of future demand.

6. Negative impacts of proposed cost accounting standard

The draft recommendation foresees a differentiation between new and old infrastructure assets in terms of costing standards. Costs relevant for old assets are to be calculated on the basis of the net historic cost accounting methodology which is determined by the underlying historic costs of the operator minus the volume of depreciation. The prices of new assets shall be based on costs plus a project-specific risk premium to be included in the costs of capital for the investment risk incurred by the operator.

The approach for evaluating costs on the basis of a historic cost accounting standard has several fundamental drawbacks which will be counterproductive to the EC's own goals:

- It causes market distortion and hinders a timely and area-wide NGA rollout
- It is not suitable to foster sustainable infrastructure competition
- It contravenes a recent judgement of the Court of Justice of the European Community
- It will lead to costly adjustment of cost account systems currently in use by both operators and regulatory authorities.

6.1 Introduction of HCA causes market distortion and hinders NGA rollout

The recommendation should refrain from introducing net historic cost accounting as this can cause market distortions and hinder a timely and area-wide NGA rollout.

At present, gross current cost accounting is the prevalent cost accounting standard in Europe. This standard is economically feasible because it reflects the costs a potential competitor would have to bear if he decides to enter the market. If applied correctly it should therefore do not distort a potential competitor's decision to enter the market, because he is assumed to be indifferent between making and buying a particular service.

The proposed standard of net historical costs however does not fulfil the indifference condition mentioned above. The standard is typically reflecting the specific cost position of the incumbent including the infrastructure actually employed and the actual degree of depreciation. As a first consequence this rules out major efficiency adjustments by definition as historical costs always refer to the purchase price of a network element at a specific point in time. Thus any technological progress after this point in time cannot be recognized simply due to the lack of an appropriate purchase price.

Secondly the standard of net historical costs implies an excessive variance of the relevant cost base. By the extent of depreciation already realized the remaining asset base is reduced such that the costs of capital decrease even if the WACC stays the same. This effect is aggravated by fully depreciated assets which are still in use because these assets are not recognized at all in the cost base (no cost of capital as well as no depreciation). Both effects imply that the net historical costs decrease in time starting with a maximum at the time of investment and steadily approaching the operating expenditures assuming no reinvestment. As a rule of thumb one might state the older the assets the lower the costs.

A switch to measuring costs using historic cost accounting and applying the result to future regulatory tariff decisions can lead to under-recovery of costs and hence to inefficient low wholesale prices. Even more, the proposed approach bears the risk that customers' willingness to pay the higher prices for innovative products decreases if classical services are priced disproportionately low because of HCA-based wholesale prices. That will distort competition and hinder a broad NGA rollout that is needed for the competitiveness of Europe's industries. The recommendation in its current form sanctions FTTC/N investments and discriminates against FTTH, which we believe can hardly have been the initial intention of the Commission.

Deutsche Telekom Group is committed to current cost accounting for its FTTx investments. However, it is essential to apply a uniform cost accounting methodology consistently, irrespective of the technology used. The current draft recommendation undermines the logic of enabling "the provision of innovative and better broadband services" as it locks telecommunication providers into operating FTTC/N networks by means of the cost accounting systems proposed.

6.2 The proposed standard inhibits sustainable infrastructure competition

Cost-oriented regulation should be based on gross current cost accounting as this is more appropriate to foster sustainable infrastructure competition compared to net historic cost accounting.

Fostering fair and sustainable infrastructure competition is one of the rationales behind the forward looking approach based on gross current costs i.e. the costs of building an efficient modern equivalent infrastructure and providing such a service. Gross current cost accounting does so by basing asset valuations on the cost which would be needed to be incurred in order to replace the assets in question now and so better approximate the investment a new entrant to the market would need to make. As such, it is preferable to use the current or replacement cost approach which mirrors the investment choice of operators today using the most efficient network design, technology choices and capacity planning.

Pricing on the basis of net historic cost accounting would only foster ULL based business models. As already mentioned, net historic cost accounting causes a reduction of the ULL price in countries where at present gross current cost accounting is in use. Against the background that there are only few services at present which require very high bandwidth and the demand for these services is comparatively low cable network providers and operators which start offering services on the basis of NGA technology are at a disadvantage when competing with operators with business models based on ULL. Therefore, net historic cost accounting prevents sustainable infrastructure competition.

6.3 More certainty for cost calculation methodology needed

With respect to new ducts, other civil engineering works and other elements which are not active or new ancillary services the EC recommends to set prices “based on costs plus a project-specific risk-premium to be included in the cost of capital for the investment risk incurred by the operator”. Here, the EU recommendation is not clear concerning the methodology how the costs are evaluated. As already mentioned, costs are not costs. In the year of the investment current costs of the investment equal historic costs. But in the subsequent years this is different. Therefore, a clarification of the cost accounting methodology is needed. It should be clearly stated that for new investments the current cost accounting standard is appropriate.

Furthermore, the recommendation is not clear concerning the inclusion of common costs within the costs of the new investments. For the costs of existing ducts, other civil engineering works and other elements which are not active, common costs are explicitly mentioned in the draft recommendation, for new investments common costs are not mentioned. Costs of new investments have to include common costs too.

Finally, the recommendation does not give a clear definition of “new investments”. Is for example the restoration of an existing duct a “new investment”? Is the replacement of an existing duct a “new investment”? Or is only the construction of a duct where no duct was before a “new investment”? From an economic point of view all the described types are new investments.

6.4 The recommendation leads to costly adjustments for operators and NRAs

The introduction of net historic cost account requires costly adjustment of cost account systems currently in use by both operators and regulatory authorities

Regulatory authorities as well as incumbents all over Europe invested in developing and implementing current cost accounting standards. A shift from current cost accounting principles to historic cost accounting principle is directly connected with further efforts and investments for implementing new costing standards for both operators and regulatory authorities. Those adjustments will be time-consuming and costly.

6.5 The proposed approach contradicts a judgement of the Court of Justice

The EC recommendation with respect to net historic cost accounting for access related products contravenes a recent judgement of the Court of Justice of the European Community

The EC recommendation with respect to establishing net historic cost accounting as exclusive accounting standard for existing infrastructure contravenes a recent judgement of the European Court of Justice (“ECJ”), which states that prices should not be based exclusively on historical costs.

On 24th April 2008 the ECJ has issued a judgment⁴ on the calculation of the charges that can be applied by a dominant incumbent for access to its local network and the interpretation of Regulation 2887/2000⁵,

⁴ ECJ, Case C-55/06 – *Arcor/ Germany*, judgment of 24 April 2008.

which sets harmonized conditions for unbundled access to the local loop. The case was referred to the ECJ on 2nd February 2006 by the administrative court of Cologne (Verwaltungsgericht Köln), which referred questions to the ECJ for a preliminary ruling various issues, one of them concerning the appropriate cost accounting methodology for the determination of ULL prices. In this context the administrative court asked whether the basis of calculation for interest rate and depreciation [is] “the replacement value of the assets after the depreciation made prior to the time of valuation, or exclusively the current replacement value, expressed in terms of current daily prices at the time of valuation? “

The Court decided that “the national regulatory authorities have to take account of actual costs, namely costs already paid by the [access network] operator and forward looking costs, the latter being based, where relevant, on an estimation of the costs of replacing the network or certain parts thereof.”⁶ That means, prices for LLU should not be based exclusively on historical costs. Otherwise, the notified access network operator “would suffer, compared with the beneficiary, unjustified disadvantages.”⁷ On the one hand, the notified operator has to accept the potential loss of part of its retail customer due to the requirement to open its network to competitors. On the other hand, rates on the basis of net historic costs for access related services would not enable the notified operator to make reasonable profits from its operation given that the notified operator is also required to ensure the long term development and upgrade of the local infrastructure.⁸ The aim of regulation is to enable both beneficiaries and has to avoid –as mentioned rightly by the ECJ - unjustified disadvantages of the SMP operator.

The judgement of the ECJ, regarding to Regulation 2887/2000, is furthermore also valid against the background of the new legal framework. Regulation 2887/2000 is still in force and the general principles established in relation to cost principles are still applicable. Particularly with regard to general principles of cost accounting, the guidelines of the former regulatory framework are still applicable, because they were not in general replaced by the current framework, but rather concretized . First, neither the new regulatory framework⁹ nor the old regulatory framework sets very detailed specifications on the appropriate cost accounting standard aside from the principle of cost orientation. Second, recital 20 of the Access Directive states that the gross current cost accounting standard is an appropriate cost accounting standard. “When a national regulatory authority calculates costs incurred in establishing a service mandated under this Directive, it is appropriate to allow a reasonable return on the capital employed including appropriate labour and building costs, with the value of capital adjusted where necessary to reflect the current valuation of assets and efficiency of operations.”¹⁰ Finally, the gross current cost accounting standard is also in line with the EC recommendation 2005/698/EC¹¹ on accounting separation and cost accounting systems under the regulatory framework for electronic

⁵ Regulation 2887/2000 of 18 December 2000 on unbundled access to the local loop, [2000] OJ L336/04.

⁶ ECJ, Case C-55/06, *Arcor/Germany*, judgment of 24 April 2008, ruling 2.

⁷ ECJ, (supra note 4), para. 108.

⁸ ECJ, (supra note 4), para. 105-107.

⁹ Cf. Article 13 (Price control and accounting obligations), Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communication networks and associated facilities (“Access Directive”), [2002] OJ L108/7.

¹⁰ Cf. recital 20 Access Directive (supra note 9).

¹¹ Commission recommendation of 19 September 2005 on accounting separation and cost accounting systems under the regulatory framework for electronic communications [2005], OJ L 266/64.

communications. This recommendation concretizes cost accounting methodologies and sets a clear focus on the concept of current cost accounting. While historical cost accounting is not even mentioned in this recommendation, several guidelines concerning current cost accounting are laid down. This confirmed the priority standing of a current cost accounting methodology within the existing regulatory framework.

The EC recommendation to set prices of existing ducts, other civil engineering works and other elements which are not active or for existing ancillary services on the basis of net historic costs contravenes the above mentioned judgement of the ECJ and the current regulatory framework. The determination of prices exclusively on the basis of net historic cost is rather prohibited.

7. Disregarding country-specific particularities will be detrimental for the single market

The recommendation should not prescribe overly detailed regulations that do not fit in all Member States.

The European Union embeds twenty-seven countries, each with different geographical and technical pre-conditions for optical infrastructures. The EC's intention to harmonize regulation such as to fostering the deployment of NGA across Europe cannot result in an alleged necessity for a one-size-fits-all approach. As laid down in recital 4 of the draft recommendation, "*The overall objective of this Recommendation is to foster the application of consistent regulatory remedies to SMP operators throughout the EU in Market 4 and 5 [...]*". The recommendation appears to equalize "harmonization" and the "unique imposition of remedies" as the examples related to the proposed cost accounting standard and access options show.

But, in some countries, for example, ducts and passive infrastructures were built 20 to 30 years ago whereby in many countries newer infrastructures exist, not older than 10 years, or, the departure from legacy networks towards NGA might be different from country to country due to differences in access network structure and topology (e.g. use of street cabinets). Further, network structures may differ and consequently the appropriateness of the proposed access obligations will do so.

The EC should refrain from implementing such a detailed catalogue of regulatory prescriptions that is unique for all member states and that, de-facto, is not capable to regard the country-specific particularities. The recommendation's aim should be to promote incentives for investments in NGA roll-out, not to unify possible remedies on market 4 and 5. National regulatory authorities must keep sufficient freedom and flexibility to deal with all these issues. When the proposed rules will come into force without the fundamental amendments needed, Europe will more and more turn away from an advanced and productive European ICT sector.

8. Impact assessment

It needs to be assured that a thorough impact assessment proves that the net impact of the proposed approach will be positive.

Serious concerns must be raised when the imminent negative impacts of the current recommendation on markets and finally consumers are summarized. The decision on whether and on how to regulate NGA access in the future should not be done without a robust evaluation of the resulting risks and drawbacks as they are shown above. In particular issues about the necessity to

- make regulation proportionate,
- effectively sensitive to fair distribution of the immanent risks surrounding the deployment of NGA networks,
- take a long-term perspective for NGA related regulation,
- allow for sufficient flexibility such that prices of products and services reflect the underlying values given to customers,

reveal the need that the recommendation and its likely consequences has to be based on further in-depth analyses. Such an evaluation is to be achieved through a cost-benefit-analysis or impact assessment, the objective of which is to identify the different options being a candidate for achieving the defined goal, and to analyze their different impacts on the economical and social environment. It is a prerequisite for the implementation of the recommendation that the impact assessment proves that the net impact will be overall positive.