

MATERIALE I

Il cuore della proposta di raccomandazione è nell'Allegato III, che qui di seguito si riporta. Esso prevede che le Authority non potranno imporre l'orientamento al costo o gli obblighi di non discriminazione nel caso in cui l'incumbent sviluppi la rete con almeno un altro operatore, che posino linee multi-fibra, che sia aperta la possibilità ad altri soggetti di partecipare all'investimento in futuro alle stesse condizioni e che tutti gli investitori abbiano parità di accesso alla rete.

In secondo luogo verrà meno il ruolo di operatore dominante se almeno altri tre operatori contribuiscano alla realizzazione della rete (o due altri operatori realizzino la rete in aree in cui un operatore alternativo compete con una propria rete – si pensi alla rete via cavo); si tratti di rete multi-fibra; ogni investitore acceda all'infrastruttura a parità di condizioni e sulla base del prezzo orientato al costo; sia installato cavo sufficiente per operatori terzi; quando agli operatori alternativi che giovino dell'unbundling sia consentito di migrare a analoghi prodotti wholesale delle NGA nel caso di dismissione dell'attuale interconnessione.

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive)¹, and in particular Article 19(1) thereof,

Having regard to the opinion of the Communications Committee,

Whereas:

- (1) The EU single market for electronic communications services, and in particular the development of high-speed broadband services, is key to creating economic growth and achieving the goals of the Lisbon agenda. The deployment of Next Generation Access (NGA) networks based on optical fibre requires substantial investments in the coming years. To this end, efficient investment and innovation in new and enhanced infrastructure should be promoted, taking due account of the risks incurred by all investing undertakings.
- (2) National Regulatory Authorities (NRAs) are developing regulatory responses to the challenges raised by the transition from copper to fibre-based networks. Consistency of regulatory approaches taken by NRAs is of fundamental importance to avoiding distortions of the single market and to creating legal certainty for all investing undertakings. It is therefore important to provide guidance to NRAs, and to prevent any divergence of regulatory approaches.
- (3) In the conclusions of its March 2009 meeting, the European Council recalled the fundamental role of telecommunications and broadband development in terms of EU investment, job creation and overall economic recovery, and invited the Commission to develop a European broadband strategy, by the end of 2009, in close cooperation with stakeholders. The present Recommendation forms part of that strategy.
- (4) The overall objective of this Recommendation is to foster the application of consistent regulatory responses throughout the EU in the markets for wholesale (physical) network

¹ OJ L 108, 24.4.2002. Directive as amended by Regulation (EC) No 717/2007 (OJ L 171, 29.6.2007, p. 32).

infrastructure access (Market 4) and wholesale broadband access (Market 5) as far as access to NGA networks is concerned.² Such a consistent approach is required in order to provide regulatory certainty to investors and to foster competitive investment and innovation for the benefit of all parties involved and ultimately of consumers. The large scale infrastructure investments present a unique opportunity to create better and innovative services, but they require substantial capital outlays and due to their novelty involve an increased degree of risk.

- (5) The scope of this Recommendation covers remedies imposed upon operators designated with SMP on the basis of a market analysis procedure. According to Article 12 of the Framework Directive, Member States may also under certain circumstances impose the obligation of reciprocal sharing of facilities or property on undertakings operating an electronic communications network.
- (6) The deployment of NGA networks will lead to important changes in the economics of service provision. Demand- and supply-conditions are expected to change significantly at both wholesale and retail level. Therefore new remedies will need to be imposed, and a new combination of active and passive access remedies on markets 4 and 5 will be necessary. Existing remedies will need to be maintained or amended by NRAs. The new setup of remedies applied in market 4 will have a significant effect on market 5 and vice versa. In line with the practice of most NRAs, it is therefore desirable, and in the interest of ensuring in a timely manner legal certainty for all market players, that NRAs review both markets at the same time and notify their proposed regulatory measures including remedies of markets 4 and 5 concurrently.
- (7) Regulatory certainty is key to promoting efficient investments by all operators. Applying a consistent regulatory approach over time is important to give investors confidence for the design of their business plans. In order to mitigate the uncertainty associated with periodical market reviews, NRAs should clarify to the greatest extent possible how foreseeable changes in market circumstances would affect remedies.
- (8) Where new remedies for access to NGA networks imposed on markets 4 and 5 do not include an obligation of cost-orientation as set out in this Recommendation, NRAs should control the SMP operator's pricing behaviour by performing a properly specified margin-squeeze test. The margin-squeeze test should be applied in advance by NRAs either on their own initiative or at the request of an undertaking enjoying rights of access in order to ensure a sufficient margin remains between wholesale and retail prices to allow for entry by an equally efficient operator. NRAs should thus set out in their regulatory measures all parameters to be used in performing their margin-squeeze test.
- (9) Where new fibre networks are installed on greenfield sites, NRAs should revise and if necessary adjust existing regulatory obligations to make sure they apply independent of the network technology deployed, be it copper or fibre.
- (10) Within market 4 various remedies should be applied, of which access to civil engineering infrastructure is crucial for the deployment of parallel fibre networks. It is therefore important that NRAs obtain the necessary information to assess whether and where ducts

² In accordance with Commission Recommendation 2003/311/EC of 17 December 2007 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services (OJ L 344, 28 December 2007).

and other local loop facilities are available for the purpose of deploying NGA networks.

- (11) Given the very high costs of deploying parallel fibre access networks, it is appropriate to listen to all market players and assess the market demand, before mandating access to civil engineering infrastructure. NRAs should bring the SMP operator and potential access seekers together to discuss the demand for and the practical implementation of such access. NRAs should use their powers under the Framework Directive to obtain all relevant information on the location and the availability of civil engineering facilities
- (12) Mandating access to civil engineering will only be effective as a remedy if the SMP operator provides access under the same conditions to its own downstream arm and to third-party access seekers. NRAs should build on their experience in developing procedures and tools for local loop unbundling (LLU) to put in place the necessary business processes concerning ordering and operational access to civil engineering facilities. Mandating the publication by the SMP operator of an adequate reference offer specifying the conditions and procedures of access to the civil engineering infrastructure, including the access prices, within a short time-frame is proportionate to the objective of encouraging efficient investment and infrastructure competition.
- (13) Cost-oriented prices are a useful indicator for efficient investment decisions by potential access seekers. Where regulated prices do not accurately reflect the underlying cost of the civil engineering infrastructure of the SMP operator, they will distort investment signals. If regulated prices for access to ducts are not cost-oriented, but are set at a higher level, efficient fibre investments will be replaced by other wholesale access possibilities. Any cost methodology should take into account the possible cost advantages of the SMP operator including the level of depreciation of existing assets and possible deployment economies. Cost calculations imply a reasonable return on the capital employed. Since investments in non-replicable physical assets such as civil engineering infrastructure are not specific to the deployment of NGA networks (and do not entail a similar level of systematic risk), such return would in principle not include a risk premium.
- (14) Where possible NRAs should work towards ensuring that newly-built facilities of the SMP operator are designed so as to allow for several operators to deploy their fibre lines, including sufficient space in ducts.
- (15) In a Fibre to the Home (FTTH) context duplication of the terminating segment of the fibre loop will normally be costly and inefficient. To allow for sustainable infrastructure competition, it is therefore necessary that access be provided to the terminating segment of the fibre infrastructure deployed by the SMP operator. To ensure efficient entry, it is important that access is granted at a level in the network of the SMP operator which enables entrants to achieve economies of scale. Where necessary specific interfaces could be required to ensure efficient access.
- (16) Transparency and non-discrimination obligations are required to ensure the effectiveness of access to the terminating segment. The publication by the SMP operator of an adequate reference offer within a short timeframe is indispensable to allow access seekers to make investment choices.
- (17) NRAs need to ensure that access prices reflect the costs effectively borne by the SMP operator, including, where appropriate, a risk premium to reflect any additional and quantifiable risk incurred by the SMP operator.

- (18) Networks based on multiple fibre lines can be deployed at a marginally higher cost than single fibre networks, while allowing alternative operators each to control their own connection up to the end-user. They further give NRAs the possibility promptly and effectively to grant access where appropriate. They would therefore be conducive to long-term sustainable competition in line with the objectives of the current EU regulatory framework.
- (19) It is desirable that NRAs use their powers to facilitate the deployment of multiple fibre lines in the terminating segment, taking into account in particular demand and costs involved.
- (20) Alternative operators, some of whom have already deployed their own networks to connect to the unbundled copper loop of the SMP operator, need to be provided with appropriate access products in order to continue to compete in an NGA context. For FTTH these may consist of access to civil engineering infrastructure, to the terminating segment, to the unbundled fibre loop or of wholesale broadband access as the case may be. On market 4, it is thus important that in principle the whole range of different physical access products, including backhaul, is available as remedies. Where remedies in this market lead to effective competition in the corresponding downstream market, other remedies could eventually be phased out.
- (21) Obligations imposed under Article 16 of Directive 2002/21/EC are based on the nature of the problem identified, without regard to the technology or the architecture implemented by an SMP operator. Therefore the fact of whether an SMP operator deploys a point-to-multipoint or point-to-point network topology should not affect the choice of remedies.
- (22) Where unbundled access to the fibre loop is mandated, the existing LLU reference offer should be amended to include all relevant access conditions including financial conditions relative to the unbundling of the fibre loop, according to Annex II of the Access Directive. Such amendment should be published without unnecessary delay to create the necessary degree of transparency and planning security for access seekers.
- (23) The deployment of FTTH will normally entail considerable risks, given its high costs and the currently still limited number of retail services requiring enhanced characteristics (such as higher throughput) which can only be delivered via fibre. Contrary to civil engineering infrastructure, investments into fibre fully depend for their amortisation on the take-up of new services provided over NGA networks in the short and medium terms without any possibility of risk diversification. It is therefore justified that in the case of access to the unbundled fibre loop a risk premium is included in the costs of capital of the SMP operator for purpose of setting access prices.
- (24) Diversifying the risk of deployment may lead to more timely and more efficient deployment of NGA networks. Considering the capital-intensive nature of NGA deployment and the risk involved, NRAs should take account of co-operative arrangements, but should subject them to certain safeguards in order to ensure effective competition. NRAs should also assess pricing schemes proposed by the SMP operator to diversify the risk of the investment such as option value pricing and volume discounts.
- (25) Where SMP operators offer lower access prices to the unbundled fibre loop in return for upfront commitments on longterm or large volume contracts, these should not be regarded as discriminatory where NRAs are satisfied that the lower prices appropriately reflect an actual reduction of the investment risk. However, NRAs should ensure that such pricing

arrangements do not prevent further market entry by performing an appropriate margin-squeeze test.

- (26) Given the expected positive effects on competition of multiple fibre line deployment, where the SMP operator has deployed an FTTH network based on multiple fibre lines, and provides effective and fully equivalent physical access to one or several alternative operators competing on the downstream market, imposing cost-oriented access would be disproportionate. It would also serve to delay rather than foster deployment.
- (27) Arrangements for co-investment based on multiple fibre lines reduce both costs and the risk of investment in NGA networks, and can lead to more timely and more extensive deployment of FTTH. Such co-investment may also reduce the dominant position of the SMP operator in the areas concerned, by taking away its first-mover advantage and by allowing for infrastructure-based competition. If all co-investors have full control over their own fibre lines, they are likely to compete on the downstream market. Imposing obligations of cost-orientation and non-discrimination on the SMP operator under such circumstances would therefore be disproportionate. However, co-investment arrangements should in principle be open to all interested parties and should involve a sufficiently high number of co-investors to lower the risk of collusive behaviour.

In the absence of an obligation of cost-orientation, increased pricing flexibility and product innovation at retail level could help an investing undertaking better to capture retail demand and recoup its investment. However, NRAs should ensure by performing a margin-squeeze test that the freely negotiated setting of wholesale prices in FTTH co-investment scenarios does not prevent profitable entry by a competitor.

(28) Arrangements for co-investment in FTTH based on multiple fibre lines may in certain conditions lead to a situation of effective competition, where the SMP operator is effectively constrained. These conditions relate in particular to the number of operators involved, the structure of the jointly controlled network and other arrangements between the co-investors which aim at ensuring effective competition on the downstream market. Where these conditions are met NRAs should presume absence of SMP. Furthermore, where competitive conditions in the areas covered by the co-investment are sufficiently different the definition of a separate market may be justified.

(29) Where NRAs find in the context of their monitoring activities that co-operative arrangements lead to anti-competitive coordinated effects, absence of SMP should no longer be presumed and cost-oriented access should be imposed.

- (30) NRAs should assess the costs of sub-loop unbundling and likely access requests, also in view of the economic viability, before imposing access to the sub-loop. Where there is likely market demand, they should mandate unbundled access to the sub-loop. NRAs should, where appropriate, organise a prior consultation of alternative operators potentially interested in sharing street cabinets, and on this basis determine where street cabinets should be adapted and how costs should be allocated.
- (31) NRAs should adopt appropriate backhaul measures to make any sub-loop unbundling remedy effective. Access seekers should be able to select the solution best fitting their requirements, whether dark fibre (and where relevant copper), Ethernet backhaul or duct access. NRAs could, where necessary, take measures pertaining to the adequate size of the street cabinets owned by the SMP operator.

- (32) The transparency of access conditions to sub-loops can best be ensured by their inclusion in the existing LLU Reference Offer. It is important that this transparency requirement applies to all items necessary for the provision of sub-loop unbundling, including backhaul and ancillary services (e.g. power supply, co-location) to allow continuity of existing competitive offerings. The reference offer should incorporate all pricing conditions to allow entrants to calculate the business case for sub-loop unbundling.
- (33) Consistent with the pricing of local loop unbundling, the pricing of all items necessary for the provision of sub-loop unbundling is to be cost-oriented and in line with current methodologies used for pricing access to the unbundled copper loop. The replacement of copper by fibre up to an intermediary distribution point represents an important investment entailing some risk, even though the risk is deemed to be lower than for FTTH networks, in view of the relative costs involved and the uncertainty of demand for improved or up-graded services.
- (34) According to the decisional practice of the Commission and the view prevailing amongst NRAs wholesale broadband access provided over VDSL is normally included in the scope of market 5. Unless there is effective competition on the downstream market, notably as a result of remedies imposed on market 4, NRAs should therefore mandate the provision of wholesale broadband access.
- (35) NRAs should apply non-discrimination principles in order to avoid any timing advantage for the retail arm of the SMP operator. The latter should be obliged to update its wholesale offer before it launches new retail services based on fibre to allow competing operators enjoying access a reasonable period to react to the launch of such products. Six months is considered a reasonable period to make the necessary adjustments.
- (36) It is expected that wholesale broadband access products based on fibre may be technically configured in ways that allow for more flexibility and enhanced service characteristics compared to copper-based bitstream products. To foster retail product competition it is important that such different service characteristics are reflected in various regulated NGA-based products, including business grade services.
- (37) Different bitstream products, capable of being distinguished in terms of for instance bandwidth, reliability, quality of services or other parameters, might be delivered via a given NGA network.
- (38) New access remedies will need to be carefully specified, for instance with respect to technical protocols and interfaces serving the interconnection of optical networks or the scope and characteristics of new bitstream remedies. NRAs should co-operate with each other to develop common technical standards in this regard.
- (39) Wholesale Bitstream access prices should be cost-oriented. NRAs should set different prices for different bitstream products to the extent that such price differences can be justified by the underlying costs of service provision, so as to enable all operators to benefit from sustained price differentiation at both wholesale and retail levels.
- (40) Where FTTH based on multiple fibre lines is deployed by the SMP operator, or by the SMP operator jointly with others, and where certain conditions are fulfilled, imposing an obligation of cost-orientation would not be proportionate. Furthermore imposing such obligations on market 5 would not be consistent with the regulatory objective that is

intended to be achieved by the non-imposition of such remedies in market 4.

- (41) Where there is a proven track record that functional separation or similar arrangements have resulted in fully equivalent access to NGA networks by alternative operators and the downstream arm of the SMP operator, and where there are sufficient competitive constraints on the SMP operator's downstream arm, NRAs have more flexibility when designing remedies for wholesale broadband access. , In particular, the price of the bitstream product could be left to the market. However, careful monitoring as well as performance of an appropriate margin-squeeze test as set out above would be essential to avoid anti-competitive outcomes.
- (42) Effective physical access remedies might render the imposition of an obligation of wholesale broadband access unnecessary for effective competition on the downstream market. In particular, where the SMP operator has deployed an FTTH network and effective access to the unbundled fibre loop is available to alternative operators (in particular in point-to-point deployments), an NRA may consider that such access is sufficient to ensure effective competition on the downstream market, especially in densely populated areas. Refraining from imposing an obligation of wholesale broadband access under such circumstances may result in better investment incentives for all operators and foster timely deployment.
- (43) Arrangements for co-investment in FTTH based on multiple fibre lines may under certain conditions lead to a situation of effective competition, where the SMP operator is effectively constrained. Where these conditions are met, NRAs should presume absence of SMP and therefore should not impose wholesale bitstream access. Furthermore, where competitive conditions in the areas covered by the co-investment are sufficiently different the definition of a separate market may be justified.
- (44) Operators currently enjoying access have a legitimate interest to have an appropriate time to prepare for the changes that substantially affect their investments and their business case. In the absence of a commercial agreement NRAs should ensure that there is an appropriate migration path put in place. Such migration path should be transparent and developed at the necessary level of detail so that operators currently enjoying access can prepare for the changes, including rules for any necessary joint work by access seekers and the SMP operator as well as for the precise modalities of de-commissioning points of interconnection. Existing SMP obligations should be maintained for a transitional period. This transitional period should, in general, be aligned with the standard investment period for the unbundling of a local loop or local sub-loop which is 5 years. In case the SMP operator provides a virtual access at the MDF, the NRA may decide to set a shorter period.
- (45) Where the SMP operator envisages to replace part of its existing copper access network with fibre and plans to de-commission currently used points of interconnection, NRAs should obtain the relevant information from the SMP operator, and should under Article 9(1) of Directive 2002/21/EC ensure that undertakings enjoying access to the SMP operator's network receive all necessary information in timely fashion to adjust their own networks and network extension plans accordingly. NRAs should define the format and level of detail of such information, while ensuring that such information is used only for the purpose it is intended to serve and that the confidentiality of information is ensured throughout the process.

- (46) The transition from copper-based to fibre-based networks may change the conditions of competition in different geographic areas and may necessitate a review of the geographical scope of market 5 or market 5 remedies in cases where such markets or remedies have been segmented on the basis of competition from LLU.
- (47) This Recommendation is addressed to Member States.

HEREBY RECOMMENDS:

Aim and Scope

1. The aim of this Recommendation is to foster the development of the single market by enhancing legal certainty and promoting investment, competition and innovation with regard to next generation access networks ("NGAs").
2. This Recommendation lays down a common approach for promoting the consistent implementation of remedies with regard to NGAs pursuant to Directive 2002/19/EC. NRAs should design remedies in accordance with the common approach set out in this Recommendation. NRAs should take into account arrangements entered into by operators aimed at diversifying the risk of deploying optical fibre networks to connect homes or buildings, and at promoting competition.
3. This Recommendation is without prejudice to any measure adopted by Member States under Article 12 of Directive 2002/21/EC.

Consistent approach

4. The review of markets 4 and 5 of Recommendation 2007/879/EC should take due account of NGA networks and should be performed in a coordinated and timely manner. NRAs should ensure that remedies mandated in markets 4 and 5 are consistent with each other.
5. NRAs should apply a consistent regulatory approach over appropriate review periods. Where possible, NRAs should explain in their decisions how they intend to adapt remedies in markets 4 and 5 in future market reviews in reaction to likely changes in market circumstances.
6. Where fibre is deployed in the access network on greenfield sites, NRAs should not require the SMP operator additionally to deploy a parallel copper network in order to meet its existing obligations, including universal service obligations, but allow for the provision of any existing regulated products or services by functionally equivalent products or services over fibre.

Access to wholesale physical network infrastructure (market 4)

Access to civil engineering infrastructure of the SMP operator

7. Where NRAs find that one or more operators have SMP in market 4, they should assess the availability of civil engineering infrastructure including ducts owned by the SMP operator for the purpose of allowing alternative providers to deploy NGA networks.
8. When NRAs establish that such infrastructure can be used to deploy NGA networks, they should consult interested parties, in particular the SMP operator and potential access seekers, to assess

the demand for access and the cost of access provision, as well as to establish operating procedures and parameters.

9. NRAs should, in accordance with market demand, mandate access to civil engineering infrastructure. NRAs should use their powers under Article 5 of Directive 2002/21/EC to ensure that the SMP operator provides all appropriate information for the purposes of access, in particular on duct location and duct capacity. Access should be provided in accordance with the principle of equivalence as set out in Annex II.
10. NRAs should mandate a reference offer for access to wholesale physical network infrastructure. The reference offer should be in place as soon as possible and in any case not later than six months after an NRA has entered into consultation with interested parties.
11. NRAs should ensure that access to existing civil engineering infrastructure is provided at cost-oriented prices in accordance with Annex I.
12. NRAs should, in accordance with market demand, encourage, or, where legally possible under national law, oblige the SMP operator, when building civil engineering infrastructure, to install sufficient capacity for other operators to make use of these facilities.

Access to the terminating segment in the case of FTTH

13. Where an SMP operator deploys fibre-to-the-home or fibre-to-the-building (hereafter both FTTH), NRAs should, in addition to mandating access to civil engineering infrastructure, mandate access to the terminating segment of the access network of the SMP operator, including wiring inside buildings. For this purpose, NRAs should oblige the SMP operator to provide detailed information on its access network architecture and, following consultation with potential access seekers on viable access points, determine where the distribution point of the terminating segment of the access network should be for the purpose of mandating access. In making such determination, NRAs should take into account the fact that any distribution point will need to host a sufficient number of end-user connections to be commercially viable for the access seeker.
14. NRAs should oblige the SMP operator to complement the reference offer for access to its civil engineering infrastructure with a reference offer for access to the terminating segment of the NGA network and to provide access to the distribution points in accordance with the principle of equivalence as set out in Annex II.
15. NRAs should ensure that access to the terminating segment is provided at cost-oriented prices in accordance with Annex I.
16. NRAs should, in accordance with market demand, encourage, or, where legally possible under national law, oblige the SMP operator to deploy multiple fibre lines in the terminating segment.

Unbundled access to the fibre loop in the case of FTTH

17. Where the SMP operator deploys FTTH, NRAs should, in addition to the above, mandate unbundled access to the fibre loop. Such remedy should be accompanied by appropriate measures assuring co-location and backhaul. Access should be given at the most appropriate point in the network, which is normally the Metropolitan Point of Presence (MPoP).

18. NRAs should mandate unbundled access to the fibre loop irrespective of the network architecture and technology implemented by the SMP operator.
19. The existing LLU reference offer should be complemented to include unbundled access to the fibre loop. Directive 2002/19/EC, Annex II sets a minimum list of conditions that must be part of the reference offer for LLU. The reference offer should be in place as soon as possible.
20. Except in cases as set out below, the price of access to the unbundled fibre loop should be cost-oriented. NRAs should take into account any additional and quantifiable investment risk incurred by the SMP operator when setting the price of access to the unbundled fibre loop. In principle, this risk should be reflected in a premium included in the cost of capital for the relevant investment. For this purpose, NRAs should also assess pricing schemes proposed by the SMP operator to diversify the risk of investment. NRAs should agree to such schemes provided they do not have discriminatory or exclusionary effect. Criteria for assessing such pricing schemes and for setting a risk premium are set out in Annex I.
21. NRAs should not impose an obligation of cost-orientation where
 - a. the SMP operator has deployed an FTTH network based on multiple fibre lines and has granted effective and fully equivalent access to at least one alternative provider of electronic communications services competing on the downstream market; or
 - b. the SMP operator has jointly with at least one other provider of electronic communications services competing on the downstream market deployed an FTTH network based on multiple fibre lines in accordance with the conditions set out in Section 1 of Annex III.

In the absence of an obligation of cost-orientation, NRAs, at the request of an operator enjoying rights of access or on their own initiative, should control the SMP operator's pricing behaviour by applying a properly specified margin-squeeze test. NRAs should specify in advance the parameters for such margin-squeeze test and the remedial mechanisms in case of established margin-squeeze. NRAs should ensure that a sufficient margin remains between wholesale and retail prices to allow for market entry by an equally efficient operator.

22. NRAs should normally presume the absence of SMP in areas where and as long as joint deployment of FTTH networks based on multiple fibre lines takes place in accordance with the conditions set out in Section 2 of Annex III. NRAs should monitor whether these conditions will continue to be met throughout the period covered by the market review, and whether they result in effective competition on the downstream market.
23. In case of anti-competitive co-ordinated behaviour by providers of electronic communications services having access to or joint control of an FTTH network based on multiple fibre lines, NRAs should impose cost-oriented access.

Access obligations in the case of FTTN

24. Where the SMP operator deploys fibre-to-the-node (FTTN), NRAs should assess the demand from potential access seekers for unbundled access to the sub-loop as well as the SMP operator's cost in providing such access, including street cabinet co-location.
25. On the basis of such assessment, NRAs should impose unbundled access to the sub-loop.

26. A sub-loop unbundling remedy should be supplemented by backhaul measures, including fibre and Ethernet backhaul where appropriate, and by ancillary remedies ensuring its effectiveness and viability, such as non-discriminatory access to facilities for co-location, or in their absence, virtual co-location.
27. When NRAs impose sub-loop unbundling, the SMP operator should be required to complement the existing LLU reference offer with all necessary items. The price of access to all items should be cost-oriented in accordance with Annex I.

Wholesale broadband access (market 5)

28. Where SMP is found on market 5, wholesale broadband access remedies should be maintained or amended for existing services and their chain substitutes. NRAs should consider wholesale broadband access over VDSL as a chain substitute to existing wholesale broadband access over copper-only loops.
29. NRAs should oblige the SMP operator to make new wholesale broadband access products available at least six months before the SMP operator or its retail subsidiary markets its own corresponding NGA retail services.
30. NRAs should mandate the provision of different wholesale products that best reflect in terms of bandwidth and quality the technological capabilities inherent in the NGA infrastructure so as to enable alternative operators to compete effectively, including for business grade services.
31. NRAs should cooperate with each other in order to define appropriate technical specifications for wholesale broadband access products provided over NGAs.
32. NRAs should in principle impose cost orientation on mandated wholesale broadband access products in accordance with Annex I, taking into account differences in bandwidth and quality of the various wholesale offers.
33. NRAs should not impose an obligation of cost orientation where
 - a. the SMP operator has deployed an FTTH network based on multiple fibre lines and has granted effective and fully equivalent access to at least one alternative provider of electronic communications services competing on the downstream market; or
 - b. the SMP operator has jointly with at least one other provider of electronic communications services competing on the downstream market deployed an FTTH network based on multiple fibre lines in accordance with the conditions set out in Section 1 of Annex III.

In the absence of an obligation of cost-orientation, NRAs, at the request of an operator enjoying rights of access or on their own initiative, should control the SMP operator's pricing behaviour by applying a properly specified margin-squeeze test. NRAs should specify in advance the parameters for such margin-squeeze test and the remedial mechanisms in case of established margin-squeeze. NRAs should ensure that a sufficient margin remains between wholesale and retail prices to allow for market entry by an equally efficient operator. NRAs should monitor the competitive evolution of the downstream market and, if necessary, review their decision not to impose an obligation of cost-orientation.

34. NRAs should analyse whether an obligation of cost orientation on mandated wholesale broadband access is necessary to achieve effective competition in case functional separation or other forms of separation have proved effectively to guarantee equivalence of inputs. In the absence of cost orientation NRAs should control the SMP operator's pricing behaviour by applying a properly specified margin-squeeze test as set out in Articles 21 and 33.
35. Where NRAs consider that there is effective access to the unbundled fibre loop of the SMP operator's network and that such access is likely to result in effective competition on the downstream market, NRAs normally should not impose an obligation of wholesale bitstream access.
36. NRAs should normally presume the absence of SMP in areas where and as long as joint deployment of FTTH networks based on multiple fibre lines takes place in accordance with the conditions set out in Section 2 of Annex III. NRAs should monitor whether these conditions will continue to be met throughout the period covered by the market review, and whether they result in effective competition on the downstream market.

Migration

37. Existing SMP obligations in relation to markets 4 and 5 should continue and should not be undone by changes to the existing network architecture and technology, unless agreement is reached on an appropriate migration path between the SMP operator and operators currently enjoying access to the SMP operator's network. In the absence of such agreement, NRAs should ensure that alternative operators are informed no less than five years before any de-commissioning of points of interconnection such as the local loop exchange. This period may be less than five years if fully equivalent virtual access is provided at the point of interconnection.
38. NRAs should put in place a transparent framework for the migration from copper to fibre-based networks. NRAs should ensure that the systems and procedures put in place by the SMP operator, including operating support systems, are designed so as to facilitate the switching of alternative providers to NGA-based access products.
39. NRAs should use their powers under Article 5 of Directive 2002/21/EC to obtain information from the SMP operator concerning any network modification plans that are likely to affect the competitive conditions in a given market. Where the SMP operator envisages to replace part of its existing copper access network with fibre and plans to de-commission currently used points of interconnection, NRAs should under Article 9(1) of Directive 2002/21/EC ensure that undertakings enjoying access to the SMP operator's network receive all necessary information in timely fashion to adjust their own networks and network extension plans accordingly. NRAs should define the format and level of detail of such information, and ensure that strict confidentiality of the information disclosed is respected.
40. Where sub-national geographic markets or remedies have been identified in market 5 that depend on access products in market 4, which may become redundant owing to NGA deployment, such segmentations or remedies should be reviewed.
41. This Recommendation is addressed to the Member States.

Glossary

For the purpose of this Recommendation, the following definitions apply:

"Next Generation Access networks" (NGA) are wired access networks which consist wholly or in part of optical elements and which are capable of delivering broadband access services with enhanced characteristics (such as higher throughput) as compared to those provided over already existing copper networks. In most cases NGAs are the result of an upgrade of an already existing copper or co-axial access network.

"Civil engineering infrastructure" designates physical local loop facilities deployed by an electronic communications operator to host local loop cables such as copper wires, optical fibre and co-axial cables. It typically refers, but is not limited to, subterranean or above-ground assets such as sub-ducts, ducts, manholes and poles.

"Duct" means an underground pipe or conduit used to house (fibre, copper or coax) cables of either core or access networks.

"Manholes" means holes, usually with a cover, through which a person may enter an underground utility vault used to house an access point for making cross-connections or performing maintenance on underground electronic communications cables.

The "Metropolitan Point of Presence" (MPoP) means the point of inter-connection between the access and core networks of an NGA operator. It is equivalent to the Main Distribution Frame (MDF) in the case of the copper access network. All NGA subscribers' connections in a given area (usually a town or part of a town) are centralised to the MPoP on an Optical Distribution Frame (ODF). From the ODF, NGA loops are connected to the core network equipment of the NGA operator or of other operators, possibly via intermediate backhaul links where equipment is not co-located in the MPoP.

The "distribution point" is an intermediary node in an NGA network from where one or several fibre cables coming from the MPoP (the feeder segment) are split and distributed to connect to end-users' premises (the terminating or drop segment). A distribution point generally serves several buildings or houses. It can be located either at the base of a building (in case of multi-dwelling units), or in the street. A distribution point hosts a distribution frame mutualising the drop cables, and possibly un-powered equipment such as optical splitters.

The "terminating segment" is the segment of an NGA access network which connects an end-user's premises to the first distribution point.

"Multiple fibre FTTH" is a form of fibre deployment in which the investor deploys more fibre lines than needed for its own purposes in both the feeder and the drop segments of the access network in order to sell access to additional fibre lines to other operators, notably in the form of indefeasible rights of use (IRU).

"Co-investment in FTTH" means an arrangement between providers of electronic communications services with a view to deploying FTTH networks in a joint manner, in particular in less densely populated areas. Co-investment covers different legal arrangements, but typically co-investors will jointly build a common network infrastructure and share physical access to that infrastructure.

Annex I

Pricing principles and risk

1. Common principles for the pricing of NGA access

Under Article 8 (2) of Directive 2002/21/EC, NRAs shall promote competition in the provision of electronic communications networks, electronic communications services and associated facilities and services inter alia by encouraging efficient investment in infrastructure. In determining the cost base used for cost-orientation obligations, pursuant to Article 13 (1) of Directive 2002/19/EC, NRAs should consider whether duplication of the relevant NGA access infrastructure is economically feasible and efficient. Where this is not the case, the overriding aim is to create a genuine level playing field between the downstream arm of the SMP operator and alternative network operators. A consistent regulatory approach may therefore imply that NRAs use different cost bases for the calculation of cost-oriented prices for replicable and non-replicable assets, or at least adjust the parameters underpinning their cost methodologies in the latter case.

In cases where investment into NGAs depends for its profitability on uncertain factors such as assumptions of significantly higher ARPUs or increased market shares, NRAs should assess whether a risk premium should be included in the cost of capital. The risk premium should be estimated in line with section 6 below. In case a risk premium is justified, additional mechanisms serving to allocate the investment risk between investors and access seekers could also be used, such as option value pricing or volume adjustments. Such pricing mechanisms should be reviewed by the NRA in accordance with the criteria set out in sections 7 and 8 below.

The price of access to physical network infrastructure should not be a geographical average in the presence of substantial cost differences between various areas.

In order to enforce cost-orientation obligations, NRAs should impose accounting separation pursuant to Article 11 of Directive 2002/19/EC. Separated accounts for the NGA infrastructure and/or service elements to which access is mandated should be set up in such a manner that the NRA can (i) identify the cost of all relevant assets for the determination of access prices (including depreciation and valuation changes) and (ii) monitor effectively whether the SMP operator grants access under the same conditions and prices to other market participants as to its own downstream arm. Such monitoring should include the performance of margin-squeeze tests. Costs should be allocated on the basis of objective criteria amongst the various wholesale and retail products which rely on such inputs, to avoid double counting.

NRAs should estimate the incremental costs required to provide access to the facilities concerned. Such costs relate to the ordering and provisioning of access to civil engineering infrastructure or fibre; operating and maintenance costs for IT systems; and operating costs associated with wholesale product management. These costs should be allocated on a proportionate basis between all undertakings enjoying access, including the downstream arm of the SMP operator.

2. Pricing of access to civil engineering infrastructure

Access to existing civil engineering infrastructure of the SMP operator on market 4 should be mandated at cost-oriented prices. NRAs should regulate access prices to civil engineering infrastructure consistently with the methodology used for pricing access to the unbundled local

copper loop. NRAs should however ensure that access prices reflect the costs effectively borne by the SMP operator. NRAs should in particular take into account actual lifetimes of the relevant infrastructure and possible deployment economies of the SMP operator. Access prices should capture the proper value of the infrastructure concerned, including its depreciation.

When setting the price for access to civil engineering infrastructure, NRAs should not include a risk premium.

3. Pricing of access to the terminating segment in the case of FTTH

NRAs should set prices for access to the distribution point consistently with the methodology used for pricing access to the unbundled local copper loop. NRAs should ensure that access prices reflect the costs effectively borne by the SMP operator, including, where appropriate, a risk premium to reflect any additional and quantifiable risk incurred by the SMP operator.

4. Pricing of access to fibre at the MPoP in the case of FTTH (unbundled fibre loop)

When setting access prices to the unbundled fibre loop, NRAs should include a risk premium to reflect any additional and quantifiable investment risk incurred by the SMP operator. The risk premium should be estimated in accordance with the methodology set out in section 6 below.

Under the principle of non-discrimination, the price charged to the SMP operator's downstream arm should be the same as the price charged to third parties.

5. Pricing of access to the sub-loop in the case of FTTN

NRAs should impose cost-based access to all items necessary to allow sub-loop unbundling, including backhaul measures and ancillary remedies, such as non-discriminatory access to facilities for co-location, or in their absence, virtual co-location.

Regulated access prices should not be higher than the cost incurred by an efficient operator. For this purpose, NRAs may consider to evaluate these costs using bottom-up modelling or benchmarks, where available.

6. Criteria for setting the risk premium

The return on capital allowed ex ante for investment into NGA networks should strike a balance between on the one hand providing adequate incentives for undertakings to invest (implying a sufficiently high rate of return) and promoting allocative efficiency, sustainable competition and maximum consumer benefits on the other (implying a rate of return that is not excessive). To do so, NRAs should, where justified, add over the pay-back period of the investment a supplement reflecting the systematic risk of the investment, i.e. the additional risk that cannot be diversified away, to the internal rate of return (and WACC) currently applied for calculating the price of access to the unbundled copper loop. The calibration of revenue streams for calculating the WACC should take into account all dimensions of capital employed, including appropriate labour costs, building costs, anticipated efficiency gains and the terminal asset value, in accordance with Recital 20 of Directive 2002/19/EC.

Systematic risk should be estimated on the basis of future NGA penetration scenarios. Factors such as existing broadband penetration, demand for additional bandwidth, consumers' willingness to pay, the degree of infrastructure-based competition and the likelihood of alternative operators migrating

their clients to fibre loops should be taken into account and properly weighed against other factors such as new wholesale revenues – including captive sales - from physical infrastructure access, revenues from migration charges, and revenues from connection charges to access points, backhaul and co-location.

In particular, criteria such as the existence of economies of scale (especially if the investment is undertaken in urban areas only), high retail market shares, control of essential infrastructures, OPEX savings, proceeds from the sale of real estate as well as privileged access to equity and debt markets are likely to mitigate the risk of NGA investment for the SMP operator.

The above considerations apply in particular to investment into FTTH. Investment into FTTN, on the other hand, which is a partial upgrade of an existing access network, normally has a significantly lower risk profile than investment into FTTH. In particular, there is less uncertainty involved about the demand for bandwidth to be delivered via VDSL, and overall capital requirements are lower. Therefore, while regulated prices for WBA based on VDSL should take account of any investment risk involved, such risk should not be presumed to be of a similar magnitude as the risk attaching to FTTH based wholesale access products. NRAs should give due consideration to these factors when calculating any risk premium for WBA based on VDSL and, in this case, should not in principle approve of the pricing schemes set out in sections 7 and 8 below.

NRAs should publicly consult on their methodology to determine the risk premium.

7. Criteria to assess option value pricing in case of FTTH

Access prices adjusted for risk based on option value vary as a function of time over which access commitments are made. Long-term access contracts with defined minimum volume requirements would be priced at a lower level than short-term access contracts. Long-term access prices should only reflect the reduction of risk for the investor and therefore can not be lower than the cost-oriented price to which no supplement reflecting the systematic risk of the investment is added. Under long-term contracts, entrants would acquire full control of physical assets, also offering them the possibility to engage in secondary trading. Short-term contracts would be available without long commitments and thus normally be priced higher, with access prices reflecting the option value attaching to the flexibility of such form of access which benefits the access seeker.

Option value pricing may however be abused by the SMP operator over time to sell its retail services at prices lower than those for its regulated wholesale services (since it would charge its own downstream retail arm low long-term commitment prices), thereby in effect foreclosing the market. Furthermore, alternative providers with smaller customer bases and unclear business perspectives face higher levels of risk. They are unable to commit to purchasing a large number of fibre lines over a long period. They will thus have to stagger their investment and purchase regulated access at a later stage.

For these reasons, option value pricing would be acceptable only if NRAs ensure, in the framework of ex ante price controls, that the following conditions are met:

- Long-term commitment prices only reflect the reduction of risk for the investor; and
- There is a sufficient margin between wholesale and retail prices to allow for market entry by a reasonably efficient service provider in the downstream market, i.e. by an operator who for instance does not have the same economies of scale and scope as the SMP operator.

8. Criteria to assess volume discounts in case of FTTH

Access prices adjusted for risk based on volume discounts reflect the fact that investment risk decreases with the total number of fibre loops already sold in a given area. Investment risk is closely tied to the number of fibre loops which remain unused. The higher the share of used fibre loops, the lower the risk. Access prices could therefore vary in accordance with volume purchased. Such volume discounts should only reflect the reduction of risk for the investor and therefore cannot result in access prices which are lower than the cost-oriented price to which no supplement reflecting the systematic risk of the investment is added.

While the SMP operator is liable to have a significant share of the overall downstream market, in some areas the distribution of market shares between the SMP operator and alternative operators might be more balanced. A more balanced distribution would increase the likelihood of a risk premium which is adjusted for volume discounts resulting in higher investment and efficient competitive outcomes.

Volume discounts should only be accepted by NRAs provided the following conditions are met:

- 1 Volume discounts are calculated per MPoP and available to all access seekers in that area; and
- 2 volume discounts only reflect the reduction of risk for the investor; and
- 3 There is a sufficient margin between wholesale and retail prices to allow for market entry by a reasonably efficient service provider in the downstream market.

Annex II

Application of the principle of equivalence for access to the civil engineering infrastructure of the SMP operator for the purpose of rolling out NGA networks

Principle of equivalence

Access to civil engineering infrastructure of the SMP operator can represent an important input for the deployment of NGA networks. In order to create a level playing field among entrants and the SMP operator, it is important that such access is provided on a strictly equivalent basis. NRAs should require the SMP operator to provide access to its civil engineering infrastructure under the same conditions to internal and to third-party access seekers. In particular the SMP operator should share all necessary information pertaining to infrastructure characteristics, and apply the same procedures for access ordering and provisioning. Reference offers and service level agreements are instrumental to ensuring a proper application of the principle of equivalence. Conversely, it is important that any asymmetric knowledge the SMP operator possesses of the rollout plans of third-party access seekers is not used by the SMP operator to gain undue commercial advantage.

Information on the civil engineering infrastructure and the distribution points

The SMP operator should provide third-party access seekers with the same level of information on its civil engineering infrastructure and distribution points as is available internally. This information should cover the organisation of the civil engineering infrastructure as well as the technical characteristics of the different elements of which the infrastructure consists. Where available, the geographical location of these elements, including ducts, poles and other physical assets (e.g. maintenance chambers) should be provided, as well as the available space in ducts. The geographical location of distribution points and a list of connected buildings should also be provided.

The SMP operator should specify all intervention rules and technical conditions relating to access and use of its civil engineering infrastructure and distribution points, and of the different elements the infrastructure consists of. The same rules and conditions should apply to third-party access seekers as to internal access seekers.

The SMP operator should provide the tools for ensuring proper information access, such as easily accessible directories, data bases or web portals. Information should be regularly updated, so as to take account of the infrastructure's evolution and development and of further information collected, in particular on the occasion of fibre deployment projects by the SMP operator or other access seekers.

Ordering and provisioning of access

The SMP operator should implement the procedures and tools necessary for ensuring efficient access and use of its civil engineering infrastructure and distribution points, and the different elements the infrastructure consists of. In particular, the SMP operator should provide third-party access seekers with end-to-end ordering, provisioning and fault management systems equivalent to those provided to internal access seekers.

Requests for information, access and use of the civil engineering infrastructure, the distribution points and the different elements the infrastructure consists of by third-party access seekers should be processed within the same delays as equivalent requests by internal access seekers. The same level of visibility on the progress of the requests should also be provided, and negative answers should be objectively justified.

The information systems of the SMP operator should keep track records of the handling of requests which should be available to the NRA.

Service level indicators

In order to ensure that access and use of the civil engineering infrastructure of the SMP operator is provided on an equivalent basis, service level indicators should be defined and calculated for both internal and third-party access seekers. Service level indicators should measure the responsiveness of the SMP operator to perform those actions necessary to provide access to its civil engineering infrastructure. Target service levels should be agreed with access seekers.

Service level indicators should include delays for replying to requests for information on availability of elements of infrastructure, including ducts, poles, other physical assets (e.g. manholes), or distribution points; delays for replying to a request for feasibility to use elements of infrastructure; a measure of responsiveness to handle requests for access and use of elements of infrastructure; a measure of responsiveness for fault resolution processes.

The calculation of the service level indicators should be performed at regular, fixed intervals and submitted to third-party access seekers. The NRA should control that service levels delivered to third-party access seekers are equivalent to those delivered internally by the SMP operator. The SMP operator should commit to adequate compensation in case of failure to comply with target service levels agreed with third-party access seekers.

Reference offer

The different items required to provide equivalent access to the civil engineering infrastructure of the SMP operator should be published in a reference offer. At a minimum, the reference offer should contain the relevant procedures and tools for retrieving civil engineering asset information; describe the access and usage conditions to the different elements which make up the civil engineering infrastructure; describe the procedures and tools for access ordering, provisioning and fault management; and fix target service levels and the penalties for breach of those service levels. Internal access provision should be based on the same terms and conditions as contained in the reference offer provided to third-party access seekers.

Monitoring by the NRA

NRAs should ensure that the principle of equivalence is effectively applied. For this purpose they should make sure that a reference offer for access to civil engineering infrastructure is provided to third party access seekers in due time. Also in addition to service level reports, NRAs should ensure that SMP operators keep track of all elements necessary to monitor compliance with the equivalence of access requirement. This information should allow NRAs to run regular controls, verifying that the required level of information is provided to third-party access seekers by the SMP operator and that the procedures for access ordering and provisioning are correctly applied.

In addition, NRAs should ensure that a fast-track ex-post procedure is available to settle disputes.

Asymmetry of information

The incumbent has prior knowledge of third-party access seekers' deployment plans. To prevent such information from being used to gain undue competitive advantage, the SMP operator in charge of operating the civil engineering infrastructure should not share such information with its downstream retail arm.

NRAs at a minimum should ensure that those persons involved in the retail arm activities of the SMP operator may not participate in company structures of the SMP operator responsible, directly or indirectly, for managing access to civil engineering infrastructure.

Annex III

Regulated access to the unbundled fibre loop in case of co-investment into FTTH

1. Conditions under which cost-orientation is not justified

NRAs should impose access to the unbundled fibre loop, but should not impose cost-orientation or non-discrimination obligations, provided the following conditions are met:

- The SMP operator has jointly with at least one other provider of electronic communications services competing on the downstream market deployed an FTTH network; and
- the co-investors deploy multiple fibre lines; and
- the co-investment project is not exclusive - timely notice should be given to the NRA and potentially interested parties, and these parties should be allowed to participate on the same terms and conditions; and
- all co-investors enjoy equal access to the joint infrastructure (the non-SMP operator(s) on the same terms and conditions as the SMP operator).

2. Conditions under which the absence of SMP should normally be presumed

Absence of SMP should normally be presumed if joint deployment of FTTH networks by several co-investors meets the following conditions:

- At least three operators in addition to the operator having been designated SMP at the time of the market review or, in areas where an alternative operator competes in the retail market on the basis of its own network (such as a cable operator), at least two operators in addition to the operator having been designated SMP at the time of the market review, jointly deploy FTTH networks; and
- the FTTH networks are based on multiple fibre lines; and
- each co-investor enjoys equal and cost-oriented access to the joint infrastructure (the non-SMP operator(s) on the same terms and conditions as the SMP operator); and
- the co-investors are effectively competing on the downstream market; and
- the co-investors install sufficient duct capacity for third parties to use and grant cost-oriented access to such capacity; and
- the co-investors enable third parties currently enjoying unbundled access to the local loop to migrate to comparable NGA wholesale products in case of de-commissioning of currently used points of interconnection.