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EXPLANATORY NOTE

Accompanying the document

Commission Recommendation

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

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Contents

1. INTRODUCTION

1.1. Background

Since 2000, the European Council has highlighted the potential for growth, competitiveness and job creation of the shift to a digital, knowledge-based economy. It has emphasised the importance of access to world-class communications infrastructure and services, as well as the need to promote innovation and Union's citizens' access to the information society. It has called for better regulation, reduced administrative burden for entrepreneurs and completion of the internal market. In March 2013, it has called upon the Commission to report on the state of play and the remaining obstacles to the completion of a fully functioning Digital Single Market by 2015, and noted the Commission's intention to undertake concrete measures to establish the single market in Information and Communications Technology as early as possible. In October 2013, the European Council reiterated that there is an urgent need for an integrated single digital and telecoms market, benefiting consumers and companies.

In May 2010, the Digital Agenda for Europe (DAE) was launched, which aims to reboot Europe's economy and help Europe's citizens and businesses to get the most out of digital technologies. The DAE is one of the seven flagship initiatives under the Europe 2020 strategy, Union's strategy to deliver smart sustainable and inclusive growth. The DAE review published in December 2012 identifies seven key areas for further efforts to stimulate the conditions to create growth and jobs in Europe, one them being the creation of a new and stable broadband regulatory environment.

The EU Regulatory Framework for electronic communications was introduced in 2002. It aims to establish a harmonised regulatory framework for networks and services across the Union and seeks to respond to convergence trends by covering all electronic communications networks and services within its scope. The Framework was revised in 2009 to ensure more effective competition and better rights for consumers. It also created the advisory Body of European Regulators for Electronic Communications (BEREC) and strengthened the Commission's oversight powers to the benefit of consistent market regulation. The framework comprises five Directives:

> Directive of the European Parliament and of the Council 2002/21/EC on a common regulatory framework for electronic communications networks and services[1], hereinafter the Framework Directive;
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> Directive of the European Parliament and of the Council 2002/20/EC on the authorisation of electronic communications networks and services[2], hereinafter the Authorisation Directive;
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> Directive of the European Parliament and of the Council 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities[3], hereinafter the Access Directive;
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> Directive of the European Parliament and of the Council 2002/22/EC on universal service and users' rights relating to electronic communications networks and services[4], hereinafter the Universal Service Directive;

1 OJ L 108, 24.4.2002, p.33.
2 OJ L 108, 24.4.2002, p.21.
3 OJ L 108, 24.4.2002, p.7.

Directive of the European Parliament and of the Council 2002/58/EC concerning the processing of personal data and the protection of privacy in the electronic communications sector[5].

1.2. The Commission Recommendation on relevant markets

Article 15(1) of the Framework Directive requires the adoption and regular review of a Recommendation on Relevant Product and Service Markets. The Commission adopted the first Recommendation on 11 February 2003, and the second, reviewed Recommendation on 17 December 2007[6]. The Recommendation identifies those product and service markets within the electronic communications sector, whose characteristics may be such as to justify the imposition of regulatory obligations set out in the specific Directives.

First, it seeks to ensure that broadly the same product and services markets will be subject to a market analysis in all Member States and that market players will be aware in advance of the markets to be analysed, in line with the principles of regulatory predictability and legal certainty. In this respect, the Recommendation provides that NRAs should only regulate markets which differ from those identified in this Recommendation where this is justified by national circumstances in the sense that the three cumulative criteria referred to in point 2 of this Recommendation are met. NRAs are required, taking utmost account of this Recommendation and the Guidelines for market analysis and the assessment of significant market power referred to in Article 15(2) of the Framework Directive (hereinafter, "the SMP Guidelines")[7], to define relevant markets appropriate to national circumstances, in particular relevant geographic markets within their territory, in accordance with the principles of competition law and to analyse those product and service markets. On the basis of such market analysis, NRAs will determine whether or not these markets are effectively competitive and as the case may be impose, amend, or withdraw regulatory obligations accordingly.

Secondly, the Recommendation seeks to ensure sustainable competition in network infrastructures and services. When there is effective competition, the EU Regulatory Framework requires *ex ante* regulatory obligations to be lifted. Where competition is not yet effective in markets meeting the three cumulative criteria, granting other operators access to facilities in a way that levels the playing field but does not remove incentives for new infrastructure investment ensures that Europe's citizens enjoy choice and competition during the transition to a fully competitive market. Investment in and deployment of new and competing infrastructure is likely to allow transitional access obligations to be further relaxed. Ultimately, the objective of *ex ante* regulatory intervention is to produce benefits for end-users by making retail markets competitive on a sustainable basis.

1.3. The Explanatory Note to the Recommendation on relevant markets

In the electronic communications sector products and services continually evolve as a result of technological development. The convergence phenomenon where similar services can be delivered over different types of networks is one example. This Explanatory Note therefore sets out in greater detail the reasoning behind the changes in the third Recommendation, which have been informed by the public consultation which took place between October 2012

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4 OJ L 108, 24.4.2002, p.51.
5 OJ L 201, 31.7.2000, p.37.
6 OJ L 344, 28.12.2007, p. 65.
7 OJ C 165, 11.7.2002, p.6.

and January 2013[8], by an expert study delivered to the Commission in September 2013[9] and by the discussions between the Commission and the BEREC Expert Working Group.

Sixty-six stakeholders have responded to the public consultation, including BEREC, 13 incumbent operators, 23 alternative operators, 4 individual NRAs, and 18 European or national associations. The main outcomes of the public consultation evolve around the impact of bundled offers and of convergence coupled with a growing role of alternative platforms. Concerning emerging and un-regulated bottlenecks, the most common issue pointed out by the stakeholders is the issue of access to premium TV content at retail level.

The majority of stakeholders are of the view that the three criteria test embedded in the Recommendation, and serving the purpose of identifying markets susceptible to *ex ante* regulation, should be maintained, although a further clarification as to its application and its co-existence with the assessment of significant market power would be welcomed. When more specifically consulted on which markets should continue to be included in the Recommendation, stakeholders seem overall to consider that the mobile and fixed termination markets (i.e. markets 3 and 7 in the 2007 Recommendation) and most likely the wholesale fixed (physical) network infrastructure access, broadband access and leased lines markets (i.e. markets 4, 5 and 6 in the 2007 Recommendation) are susceptible to *ex ante* regulation. Stakeholders do point however to the need to take account of on-going technological and market developments in the definition of these markets. Similarly, stakeholders generally see no pressing need to include additional markets in the Recommendation although some stakeholders refer to a new specific market for physical infrastructure access (ducts, dark fibre), and the possibility to regulate cable.

The expert study equally concludes that the two termination markets as well as a refined definition of the network access, broadband access and leased lines markets, reflecting market and technological developments, should be included in the third edition of the Recommendation. Instead, the study concludes that the retail access and the wholesale call origination markets (i.e. markets 1 and 2 in the 2007 Recommendation) no longer pass the three criteria test.

It can be envisaged that national regulatory authorities will gradually be able to find retail markets to be competitive even in the absence of wholesale regulation, especially taking into account further expected enhanced innovation and competition *inter alia* derived from the further integration of the internal market, in the run up to 2020 and in light of the ambitious targets set in the Union's Digital Agenda for Europe (DAE). It is therefore also the purpose of this Explanatory Note to set out in greater detail in the individual market sections below, which developments could lead an NRA to find that regulation of the identified relevant wholesale markets is not necessary even before the next review of this Recommendation.

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8 http://ec.europa.eu/digital-agenda/en/news/results-public-consultation-revision-recommendation-relevant-markets

9 Ecorys, Idate, Icri: Future electronic communications markets subject to *ex ante* regulation, Final report, 18.9.2013.

2. MARKET DEFINITION AND IDENTIFICATION OF MARKETS SUSCEPTIBLE TO *EX ANTE* REGULATION

2.1. Market definition

In the Recommendation markets are first defined in accordance with the principles of competition law, as specified in the Commission Notice on Market Definition[10] and the SMP Guidelines. In a next step, the Commission selects those markets which should be analysed further by NRAs for the purpose of *ex ante* regulation, applying the so-called three criteria test (see section 2.2 below).

As stated in the SMP Guidelines and Access Notice[11], there are in the electronic communications sector at least two main types of relevant markets to consider, those for services or facilities provided to end-users (retail markets) and those for upstream access to facilities and networks which are necessary for operators to provide competitive access services to end-users (wholesale markets). Further on, different product markets are defined at both wholesale and retail level depending on demand and supply-side characteristics.

Market definition, for the purposes of the Recommendation, is the prerequisite for assessing whether a particular market is characterised by effective competition or should be subject to *ex ante* regulation. The market definition sets the boundaries within which to analyse competitive dynamics and to identify in a systematic way direct and indirect competition constraints faced by the undertakings that are present in the market in question. The objective is to identify whether competitors are capable of constraining each other's behaviour and preventing the others from behaving independently of consumers within the defined market.

As *ex ante* regulation addresses the lack of effective competition that is expected to persist over a time horizon in accordance with Article 16 of Directive 2002/21/EC, NRA's market analyses have to be forward-looking. Therefore, for the purpose of this Recommendation, markets have been defined prospectively[12].

The starting point is the definition of retail markets over a given time horizon taking into account demand-side and supply-side substitutability from the end-users perspective and on the prospective time horizon considered, especially in sectors like electronic communications where technological change can rapidly alter the boundaries of markets over time[13]. When carrying out a market analysis under Article 16 of Directive 2002/21/EC, both the definition and the assessment of a market should be done from a forward-looking perspective starting from existing market conditions. The analysis should assess whether the market is prospectively competitive and whether any lack of competition is durable, by taking into account expected or foreseeable market developments[14]. In this regard, a retail market may become effectively competitive only after the review period defined by Article 16 of the Framework Directive, but there may be clear evidence of market dynamics which indicate that the market will become effectively competitive in the foreseeable future even without the imposition of *ex ante* regulation in the market concerned. Where market dynamics are changing rapidly, care should be taken in choosing the relevant time horizon so as to reflect

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10 OJ C 372, 9.12.1997, p.5.

11 Notice on the application of the competition rules to access agreements in the telecommunications sector - framework, relevant markets and principles OJ C 265, 22.8.1998, p.2.

12 Recital 27 of the Framework Directive.

13 Section 2 of the SMP Guidelines.

14 Paragraph 20 of the SMP Guidelines.

the pertinent market developments. Having defined retail markets, it is then appropriate to identify the corresponding wholesale markets, taking into account demand-side and supply-side substitutability of products from the perspective of an operator that wishes to compete in supplying end-users.

Markets defined in the Recommendation are without prejudice to the markets defined in specific cases under competition law. Markets identified in the Recommendation, while based on competition law methodologies, will not necessarily be identical to markets defined in individual competition law cases. As explained in paragraph 27 of the SMP Guidelines, the starting point for carrying out a market analysis for the purpose of Article 15 of the Framework Directive is not the existence of an agreement or concerted practice within the scope of Article 101 TFEU, nor a concentration within the scope of the Merger Regulation, nor an alleged abuse of dominance within the scope of Article 102 TFEU, but is based on an overall forward-looking assessment of the structure and the functioning of the market under examination, for the purposes of determining whether or not to impose *ex ante* regulation.

2.2. Identification of markets susceptible to *ex ante* regulation by the Commission

Article 15(1) of the Framework Directive requires that the Recommendation identifies those product and service markets within the electronic communications sector, the characteristics of which may be such as to justify the imposition of regulatory obligations set out in the specific Directives. The Commission therefore first considers the characteristics that may render a particular market susceptible to *ex ante* regulation.

It should be borne in mind that the Framework Directive is based on the premise that there is a need for *ex ante* obligations in certain circumstances in order to ensure the development of a competitive market (see e.g. recital 25). Regulation must be targeted and balanced in a way that addresses the true obstacles to effective competition in the sector: an excessive regulatory burden on operators would stifle investment and innovation, whereas too little regulation and a failure to apply it where it is needed would reverse the achievements of the past decade of liberalisation, consumer choice and competitive dynamics in the sector. Consistently with the objectives set by the regulatory framework, regulation must promote *inter alia* efficient investment and innovation in the interest of end users, as well as a consistent approach to regulation throughout the Union.

For the aforementioned reasons, it is considered that the following specific cumulative criteria are appropriate to apply in order to identify which electronic communications markets are susceptible to *ex ante* regulation.

(i) The presence of high and non-transitory structural, legal or regulatory barriers to entry

Barriers to entry in this sector may be structural, legal or regulatory. The existence of high barriers to entry and to the development of competition in an electronic communications market is considered an indication that regulatory intervention may be required to ensure the development of a competitive market. Where barriers to entry are high in the absence of regulatory intervention, even an undertaking that is more efficient than the incumbent is unlikely to be able to enter a market and compete successfully to the benefit of the consumer.

An important qualification of this first criterion is whether high entry barriers are likely to be non-transitory in the context of a modified Greenfield approach. This requires NRAs to assess whether markets are effectively competitive from a forward-looking perspective in the absence of regulation based on a finding of significant market power.

A structural barrier to entry exists when the state of the technology and the nature of the network, with its associated cost structure, and/or the level of demand, are such that they create asymmetric conditions between operators, preventing market entry or expansion of competitors. For instance, high structural barriers may be found to exist when the market is characterised by absolute cost advantages, substantial economies of scale and/or economies of scope, capacity constraints, and high sunk cost. Such barriers can be found in sectors that rely on the deployment of networks, such as fixed networks for electronic communications.

Legal or regulatory barriers are not based on economic conditions, but result from legislative, administrative or other state measures that have a direct effect on the conditions of entry and/or the positioning of operators on the relevant market. Examples are legal requirements related to the necessary permissions to roll out an own infrastructure, which could range from planning permission for civil works to the need to obtain permission where property and land ownership rights are affected, such as rights of way or other permission to roll out a network over private property. Another example is the limits on rights of use of frequencies.

It is not sufficient to examine whether entry has occurred or is likely to occur in the market at all, but rather it is necessary to examine whether new entries can be sufficiently immediate and stable in the absence of regulation, so that they can limit market power. Small-scale entry (e.g. in a limited geographic area) may not be considered sufficient where the market is wider, since it may be unlikely to exercise an appreciable constraint on the dominant undertaking(s). Further, there may be objective limitations to expansion beyond the initial small-scale entry, such as the lack of economies of scale outside the most densely populated urban areas, which would make such entry unlikely to constraint the SMP undertaking(s) within the relevant time horizon. Indeed, barriers to entry will also depend on the minimum efficient scale of output, and the fraction of costs which are sunk.

(ii) The market structure does not tend towards effective competition within the relevant time horizon, having regard to the state of infrastructure-based and other competition behind the barriers to entry

In view of the character of electronic communications markets, for regulatory intervention to be justified, market characteristics should be analysed not only in a *static* but also in a *dynamic* and forward-looking manner. Does the market, in the absence of regulation, tend towards effective competition? Market dynamics in the absence of sector-specific *ex ante* regulation may make barriers to entry disappear over time, for example as a result of technological developments or previously imposed wholesale regulation. The deployment of alternative infrastructures allowing to offer substitutable services at the retail level can result in changes of competitive dynamics throughout the supply chain. Convergence of previously distinct markets may increase competition. Or simply, there may be sufficient players active in the market for effective competition to emerge behind the barriers to entry, e.g. on the relevant retail market, even without *ex ante* regulation.

To be susceptible to *ex ante* regulation a market should present characteristics demonstrating that it will not tend over time towards effective competition. This criterion therefore takes into account a number of structural and behavioural aspects which on balance indicate whether or not, over the time period considered, the market has characteristics which may justify the imposition of regulatory obligations.

The application of this criterion involves examining the state of competition behind the barriers to entry, in other words, even in the presence of high barriers to entry. Indeed, structural factors or market characteristics and other disruptive developments may mean that

the market tends towards effective competition. This is for instance the case in markets with a limited, but sufficient, number of undertakings behind the entry barrier facing price-elastic market demand. There may therefore be markets where incentives for innovation or expansion may exist and market shares may change over time and/or falling prices may be observed.

Market dynamics may also be changed by technological developments or by the convergence of products and markets. The presence of infrastructures that are based on different technologies but that offer products that are substitutable for end customers can also alter competitive dynamics across the supply chain, including competition on price, choice and quality. Indeed, competitive pressures on operators need not necessarily derive from other comparable operators, but may be exercised by undertakings (such as those that are currently referred to as over-the-top players) that, while adopting different business models, are able to supply products that can be regarded as an alternative by end users. Indeed, in innovation-driven markets competitive constraints often come from innovative threats from potential competitors that are not currently in the market, and dynamic or longer-term competition can take place among firms that are, from a static perspective, not necessarily competitors in an existing market.

There may also be excess capacity in a market that would allow rival firms to expand output very rapidly in response to any price increase, provided that there are no barriers to expansion behind the barriers to entry. Such barriers to expansion could exist, for example, if small-scale entry does not allow firms to move from the fringe to the core of the market occupied by the established firm(s).

A tendency towards effective competition does not necessarily imply that the market will reach the status of effective competition within the period of review. It simply means that there is clear evidence of dynamics in the market within the period of review which indicates that the status of effective competition will be reached in the foreseeable future without *ex ante* regulation in the market concerned. Therefore, anticipated events must be expected within a precise timeframe and on the basis of concrete elements (e.g. business plans, investments made, new technologies being rolled out) rather than something which may be only theoretically possible. Where market dynamics are changing rapidly, care should be taken in choosing the period of review so as to reflect the pertinent market developments.

The simple fact that market shares have begun to decrease in recent years or uncertain technological future developments are in themselves insufficient to find that the market tends towards effective competition.

In general, the later effective competition is expected to materialise in the future, the more likely it is that the second criterion will be fulfilled.

(iii) Competition law alone is insufficient to adequately address the identified market failure(s)

Ex ante regulation should only be imposed where competition law remedies are insufficient to address the competition problem identified.[15] As such, *ex ante* regulation and competition law serve as complementary instruments in achieving their policy objectives in the electronic

[15] Recital 27 of the Framework Directive. This recital also indicates that newly emerging markets, even where de facto the market leader is likely to have a substantial market share, should not be subjected to inappropriate obligations. The Commission considers that 'emerging markets' are markets which are so new and volatile that it is not possible to determine whether or not the '3 criteria' test is met.

communications sector and in dealing with lack of effective competition[16]. This third criterion therefore assesses the sufficiency of competition law by itself to deal with the market failure identified in the market analysis, in the absence of *ex ante* regulation.

Only markets where national and EU competition law is not considered sufficient by itself to redress market failures and to ensure effective and sustainable competition over a foreseeable time horizon, should be identified for potential *ex ante* regulation. *Ex ante* regulation would for example be considered to constitute an appropriate complement to competition law in circumstances where the regulatory obligation necessary to remedy a market failure could not be imposed under competition law (e.g. access obligations under certain circumstances or specific cost accounting requirements), where the compliance requirements of an intervention to redress a market failure are extensive and must be maintained over time (e.g. the need for detailed accounting for regulatory purposes, assessment of costs, monitoring of terms and conditions including technical parameters and so on) or where frequent and/or timely intervention is indispensable, or where creating legal certainty is of paramount concern (e.g. multi-period price control obligations). However, differences between the application of competition law and *ex ante* regulation in terms of resources required to remedy a market failure should not in themselves be relevant.

In summary, whether an electronic communications market is susceptible to *ex ante* regulation would depend on the persistence of high entry barriers, on the lack of a tendency towards effective competition and on the insufficiency of competition law by itself (without *ex ante* regulation) to address persistent market failures. These criteria, which have been used in the 2003 and 2007 Recommendations, have proven to be robust when assessing whether markets are susceptible to *ex ante* regulation.

2.3. Identification of markets susceptible to *ex ante* regulation by NRAs

Given the analysis conducted by the Commission in the Explanatory Note of retail markets and their related wholesale markets, for the markets listed in the Recommendation, a presumption exists that the three criteria are met. Therefore, NRAs do not need to reconsider them when adopting a measure to address a market failure in one of the listed markets. In principle, a market analysis according to Article 16 of the Framework Directive will suffice to impose or withdraw regulatory obligations. However, an NRA may consider it appropriate, on the basis of specific national circumstances, to conduct its own three criteria test on the wholesale markets in this Recommendation and submit its findings according to the consultation procedure set out in Article 7 of the Framework Directive.

At the same time, NRAs should always carry out the three criteria test when they intend to regulate a market which is not listed in the Recommendation but which, in the light of specific national circumstances and having conducted an analysis of competition at retail level, could be susceptible to *ex ante* regulation. This would be the case when an NRA identifies an instance of consumer harm that cannot be addressed by imposing regulation on a market in the Recommendation. In such case, the market to be analysed first is the one that is most upstream from the retail market in question in the vertical supply chain. NRAs should conduct

[16] In this respect, Article 16(1) of the Framework Directive requires NRAs to collaborate, in the context of carrying out a market analysis, with national competition authorities.

a gradual analysis of the markets that are downstream from a regulated upstream input, until it reaches the stage of the retail market(s)[17].

Moreover, demarcation lines of a specific product or service market may differ at national or sub-national level when compared to the markets set out in the Recommendation. For example, when analysing broadband markets the stage of deployment of next generation high speed broadband networks and the deployment of LTE may differ between Member States and lead to different conclusions on the scope of the relevant market.

NRAs should at all times ensure that a market identified on the basis of national circumstances (i) is defined on the basis of competition law principles laid down in the Commission Notice on Market Definition, (ii) is consistent with the SMP Guidelines, and (iii) satisfies the three criteria set out above. Based on Article 7(4)a) of the Framework Directive, the definition and analysis of a relevant market which differs from those defined in the Recommendation is also subject to the consultation procedure set out in Article 7 of the Framework Directive.

2.4. Relation between the three criteria test and the assessment of significant market power

Overall, the three criteria test differs from the assessment of whether one or more operators active on a particular market have significant market power, even though both analyses may make use of similar indicators. The three criteria test focuses on overall *market* characteristics and structure, for the sole purpose of identifying those markets that are susceptible to *ex ante* regulation. The assessment of significant market power instead determines whether an *operator* active in a market that has been identified as susceptible to *ex ante* regulation, should be made subject to *ex ante* regulation. While a market may meet the three criteria for the purposes of the Recommendation, and is therefore listed as susceptible to *ex ante* regulation, regulation on the identified market in an individual Member State may not be warranted. On the other hand, however, if a market does not meet or no longer meets the three-criteria test, *ex ante* regulation is not or would no longer be warranted.

In this context, for the imposition, maintenance, amendment or withdrawal of obligations, Article 16(2) of the Framework Directive requires a determination on the basis of a market analysis of whether a relevant market is effectively competitive. This should always be done having regard to the ultimate objective of the regulatory framework of ensuring effective competition on all related retail markets.

2.5. The definition of relevant geographic markets

This section addresses general issues linked to the definition of relevant geographic markets by NRAs. As this analysis can vary significantly depending on the relevant product market, a more detailed guidance in relation to certain individual markets is provided below. Giving such guidance aims at ensuring that NRAs use a consistent set of parameters when assessing the geographic scope of a relevant market, thus furthering regulatory consistency and predictability across the Union.

The application of competition law principles as established in legislation and case law dictates that a relevant geographic market comprises an area in which the undertakings concerned are involved in the supply and demand of the relevant products or services, in

[17] Please see section 2.6. Terms upstream/downstream are used to indicate the degree of refinement of the wholesale input, and they do not indicate the level of proximity to the user.

which area the conditions of competition are similar or sufficiently homogeneous and which can be distinguished from neighbouring areas in which the prevailing conditions of competition are appreciably different[18].

When assessing whether or not competitive conditions in different areas are similar or sufficiently homogenous, i.e. when delineating the geographic boundaries of a relevant market, recourse should be made to the same principles as for the delineation of the relevant product market, in particular competitive constraints such as demand-side and supply-side substitution[19].

Whilst, in the past, for historic reasons, geographic markets for electronic communications, usually corresponded to the territory of a particular Member State, the geographic scope of a defined market can in principle be local, regional, national or even covering territories across the borders of individual Member States[20]. Account has to be taken of the scope of the potential SMP operator's network and whether that potential SMP operator acts uniformly across its network area or whether it faces appreciably different conditions of competition to a degree that its activities are constrained in some areas but not in others.

Differing competitive pressure, varying from region to region, could manifest itself in two different ways. First, access regulation does not always lead to a homogenous take-up of access offers across a Member State, resulting in varying degrees of intra-platform competition within the territory of one Member State (for example through the varying importance and take-up of LLU). Secondly, competitive pressure may result from the presence of alternative platforms, i.e. technologies other than xDSL, including cable, Wi-Fi, mobile broadband or competing high-speed fibre networks (inter-platform competition). Whilst we witness increasing investment in alternative infrastructures across the Union, such investment is often uneven across the territory of a Member State. In many countries there are now competing infrastructures only in parts of the country, typically in urban areas. In both of the above mentioned scenarios the result may well be that competitive dynamics vary significantly across a country. Where this is the case, an NRA could, in principle, find sub-national geographic markets.

As will be set out in more detail for individual markets below, although the final SMP analysis will be carried out at wholesale level[21], the starting point of any geographic analysis should be the competitive conditions at the retail level. As a result, NRAs are expected, where geographically varying competitive conditions suggest a closer look at the possibility to identify sub-national wholesale markets, to look at a number of criteria in order to identify – following a "modified Greenfield approach" – whether, absent regulatory intervention upstream, there is a risk of consumer harm on the retail market due to a lack of competition.

The exact criteria to be taken into account when assessing the homogeneity of competitive conditions in different geographic areas may vary depending on the market(s) in question but are based on the same competition law principles to be applied for any geographic market delineation. This means that NRAs should look at the number and size of potential competitors, distribution of market shares, price differences or variation in prices across geographies, and other related competitive aspects, which may result from relevant

18 SMP Guidelines, paragraph 56.

19 SMP Guidelines, paragraph 57.

20 According to Article 15(4) of the Framework Directive, after consultation with NRAs and taking utmost account of BEREC's opinion, the Commission may adopt a decision identifying transnational markets.

21 Or, exceptionally, at the retail level only if an NRA finds that a retail market fulfils the three criteria.

competitive variations between geographic areas (nature of demand, differences in commercial offers, marketing strategies etc.)[22]When looking into supply-side substitutability, NRAs should also take into account any existing legal or regulatory requirements, which could prevent a timely entry into the relevant market[23].

As a result, NRAs would need to identify the competitors of the potential SMP operator(s) and assess the area of supply of these competitors. Competitors include both actual competitors providing competing offers in the relevant product market and (potential) entrants who are likely to enter the market in the case of a small but non-transitory price increase of the incumbents' offer on that market. According to competition law principles, only short-term entry is taken into account for the purpose of market definition[24]. Whilst in principle potential competition is not taken into account when defining markets but at the stage of the SMP analysis, clearly distinguishing between supply-side substitution and potential competition in electronic communications markets may be more complicated than in other markets given the dynamic character of the former. What matters, however, is that potential entry is taken into consideration in the market analysis, either at the initial market definition stage or at the subsequent SMP analysis[25]. The fact that competitors have a supply area which is not national does not suffice to conclude that there are distinct geographic markets. Further evidence relating to demand-side and supply-side substitutability on the relevant market will have to be considered. Regional competitors can indeed exercise a competitive pressure reaching beyond the area in which they are present when the potential SMP operator applies uniform tariffs and the regional competitor is too large to ignore. Moreover, there should be evidence that the pressure for regional price differences comes from customers and competitors and is not merely reflecting variations in the underlying costs.

With regard to the choice of the geographic unit from which an NRA should start its assessment, established practice under Article 7 states that NRAs should ensure that these units are (a) of an appropriate size, i.e. small enough to avoid significant variations of competitive conditions within each unit but yet big enough to avoid a resource intensive and burdensome micro-analysis that could lead to a fragmentation of markets, (b) able to reflect the network structure of all relevant operators and (c) have clear and stable boundaries over time.

In a situation where NRAs could not clearly identify substantially and objectively different conditions stable over time in order to define wholesale sub-national markets, the existence of geographically differentiated constraints on a SMP operator who operates nationally, such as different levels of infrastructure competition in different parts of the territory, are more appropriately taken into account at the remedies stage by imposing a geographically differentiated set of obligations.

2.6. The analysis of markets identified as susceptible to *ex ante* regulation

Some of the markets identified in the Recommendation are interrelated and for NRAs there is a logical sequence for analysing these markets.

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22 Joined Cases C 68/94 and C 30/95 France and Others v Commission [1998] ECR I 1375, 'Kali & Salz', paragraph 143; joined cases T-346/02 and T-347/02 Cableuropa v Commission [2003] ECR II-04251, paragraph 115.

23 Paragraph 53 of the SMP Guidelines.

24 According to Commission Notice on the definition of relevant market for the purposes of Community competition law (97/C 372/03), paragraph 24.

25 Paragraph 38 and footnote 24 of the SMP Guidelines.

In general, the starting point of the analysis is whether the downstream retail market(s) are effectively competitive, by assessing any market failures likely to result in SMP that would be observed in the absence of SMP regulation in the relevant retail and related wholesale market(s), but including other regulation. Given that regulatory obligations on SMP operators have been in place in some cases for over a decade, the factual evidence from the retail markets will mostly show a situation that is affected by the presence of economic regulation. An initial view that a retail market is effectively competitive must be tested in order to determine whether SMP would be likely in the event that existing regulation is removed at wholesale and, if applicable, at retail level. In this respect NRAs should analyse all existing and potential relevant competitive constraints and the possibility of consumer harm.

When a retail market has been identified as not being effectively competitive absent regulation, the market to be analysed first is the one that is most upstream of the retail market in question in the vertical supply chain. Taking into account the *ex ante* regulation imposed on that market (if any), an assessment should be made as to whether SMP is likely on a forward-looking basis on the related downstream market(s). Thus, the analysis that the NRA conducts should gradually concern markets that are downstream from a regulated upstream input, until it reaches the stage of the retail market(s)[26]. A retail market should only be subject to direct regulation if it is not effectively competitive despite the presence of appropriate wholesale regulation on each of the related upstream market(s).

In this respect it is worth noting that some downstream markets require more than one wholesale input (e.g. retail call markets require termination, origination and transit as inputs), and some wholesale inputs affect several downstream markets (e.g. broadband access can give operators access to several retail markets other than internet services, such as, for example, voice, broadcasting and SMS). Therefore, the regulation of wholesale inputs may continue to be necessary even when one of the related retail markets appears to be effectively competitive, and, conversely, regulation of a particular wholesale input may not be sufficient to address a market failure at the retail level.

According to Article 16 of the Framework Directive, which relates to the market analysis procedure, once an NRA determines that a market is susceptible to *ex ante* regulation, given that it is not effectively competitive, it shall identify undertakings which individually or jointly have significant market power on that market and the national regulatory authority shall impose appropriate regulatory obligations on such undertakings. Where the national regulatory authority concludes that the market is effectively competitive, it shall not impose or maintain any regulatory obligations. The results of the market analysis procedure shall be made available to the Commission, BEREC and national regulatory authorities in accordance with Article 7 of the Framework Directive, if such measures would fall within the scope of Article 7(3) of the Framework Directive.

3. HORIZONTAL ISSUES

In the application of market reviews a number of general themes remain relevant. These include the relevant technological developments since the last review, observed trends, and the issue of self-supply.

[26] For example, the wholesale local access market is upstream from the wholesale central access market. Both of these are upstream from the retail internet access market. Similarly, termination markets are upstream of the retail mobile and fixed call markets.

3.1. Technological developments

Since the adoption of the Relevant Markets Recommendation in 2007, several technological developments have been observed, which have an impact, currently or in a forward-looking perspective, on the relevant markets defined in the Recommendation. These developments include roll-out of LTE, the upgrade of cable infrastructure and deployment of fibre. Furthermore, the use of broadband is increasingly substantial, to the extent that it is surpassing narrowband use, which has resulted in an increase in the supply and demand of services and applications via the internet, including Over-The-Top (OTT) services[27]. Moreover, IP technology is taking over circuit switched networks, which has implications in particular for fixed telephony services. Adding to this, there has been a substantial increase in inter-platform competition, with the upgrade of cable technologies and local fibre deployment. The objective of this section is therefore to address the main trends that have been detected and which will have an impact on competition and on the boundaries of the relevant markets during the period of this Recommendation.

PSTN and VoIP

In the recent past, a transition from the public switched telephone networks (PSTN), the traditionally used technology employed for access to a voice network, to IP-based systems has resulted in a growing use of Voice-over-IP (VoIP) services, both managed and unmanaged[28]. This transition has been evidenced by an increasing migration to all-IP networks, although it will be finalized at different points in time across Member States. In fact, several incumbents throughout the Union have manifested an intention to switch off their PSTN in the period of application of this Recommendation, although it is not excluded that certain PSTN services might continue to be used in certain Member States in that period. Voice-over-IP services enable the user to make fixed calls over a broadband internet connection instead of through a narrowband (PSTN) line. Nevertheless, the deployment of IP narrowband connections has already been observed. These connections allow the end-user to keep a fixed narrowband (IP) access without having to sign up and pay for additional services such as broadband internet access, very common in bundled offers. Due to the fact that it uses IP, VoIP relies on data transmission. Therefore, it requires an IP connection in order for users to be able to use VoIP services to place calls.

LTE

Long Term Evolution (or "LTE") is a standard for wireless communication of high-speed data, in particular for mobile phones and data terminals. It is considered to be the successor of the current mobile 3G technology. Although currently only a few operators have rolled out LTE, and have done so in very different conditions, from a forward-looking perspective it is expected to have an appreciable impact in the market. In the Union, the combination of LTE with additional spectrum, and possibly denser networks using a mix of macro cells and small cells, will in principle offer higher capacity (i.e. higher speed, less latency) at a lower unit cost. These developments make the monitoring of wireless-fixed competitive interactions especially pertinent for the future, although LTE users may still experience different bottlenecks, such as for video transmission, due to shared use of mobile networks' limited

[27] An OTT service provides a product over the internet bypassing the traditional distribution channels, such as for example messaging services, or unmanaged VoIP.

[28] Managed VoIP services are managed by a carrier or service provider who has control over the broadband connection to the end user and can therefore ensure high reliability and quality of service.

capacity, and the lack of ability to offload mobile traffic to the fixed networks in some circumstances.

Copper and fibre networks

As further explained in section 4.2.2.1, copper has been the traditional infrastructure in the access network, although fibre has been deployed higher in the network structure for many years. Large scale deployments of fibre in the access network are on-going and expected to continue in the near future, but its high deployment costs prevent a quick and universal deployment. The transition to NGA will, as it occurs, result in higher speeds and potentially lower prices. Some technologies, such as "vectoring", are currently under development and have already been used in some Member States to increase the speed provided over copper-pair to a level closer to that of fibre networks and will extend the copper-pair lifetime. Other products have been developed to stimulate the access to optical fibre, such as virtual unbundled local access (VULA). Although physical unbundling has typically been considered to provide operators with full control over the network, allowing the access seekers to differentiate their retail offers and innovate, such virtual products have been mandated by NRAs in situations where fibre physical unbundling is not currently possible, or where the existence of sub-loop unbundling would not allow the realization of benefits achieved by using vectoring technologies.

Cable networks

The current standard in coaxial cable, which enables bandwidths up to 500 Mb/s downstream, is DOCSIS 3.0, but an upgrade for DOCSIS 3.1, which will enable even higher speeds, is foreseen for the coming years. Adding to this, the apparent ability of some cable operators to offer wholesale access products through cable networks, which was not observed in the recent past, might also improve the competitive conditions resulting from access services offered by cable operators and stimulate the development and implementation of NGA networks.

3.2. Trends

Over-the-top (OTT) services

At retail level, there has been an increase in the development and demand for OTT services, which is a result of the increased availability of broadband over both fixed and mobile platforms. Furthermore, certain OTT services may grow to an extent to which they could be considered as an alternative to electronic communications services normally provided by operators, such as voice calls and SMS. Such services might have disruptive effects on the current business models of infrastructure operators, since many of these services are offered for free. Although currently OTT services are not yet at a level in which they can be considered actual substitutes to the services provided by infrastructure operators, certain technological developments, such as the growing importance of smartphones and the forthcoming expansion of LTE will likely result in a continuous expansion of OTTs. In some cases, infrastructure operators have developed their own OTT services to compete with other, often free, OTT services. However, some OTT services still face constraints, such as the requirement to have both users connected at the same time in order for the service to be used. Nevertheless, it is foreseeable that the importance of these services will continue to grow and have a direct impact on the market, particularly at retail level. Notwithstanding, these OTT service providers will still require an underlying infrastructure, either developed by themselves or provided by an operator. This will have to be taken into account when analysing the markets concerned. Some NRAs have included OTT-based services in their product markets and hence, these services are subject to regulation alongside the traditional

electronic communications services when they are deemed to also satisfy the definition of electronic communications services. However, at Union level OTTs have only been found to exercise limited competitive constraints, as further described in the section below concerning specific markets. Currently, NRAs have limited powers under the Regulatory Framework to request data from OTTs. However, NRAs may still use data available from other sources, including from electronic communication service providers, to assess the likely impact of OTTs on markets.

Bundling

At retail level, there has been an increased demand for packages of services offered by the same operator at a flat rate, also known as "bundles". Bundles offered at retail level can be comprised of both regulated and unregulated inputs, such as TV subscription, mobile and also fixed telephony. High levels of bundling have been reported, particularly in relation to broadband access and fixed voice. However, despite the fact that bundling is one of the dominant trends observed at the retail level, this Recommendation does not propose to define a separate retail market for bundles because evidence to date has not indicated that there is a need for *ex ante* regulation of bundles, which may contain a previously regulated input. Furthermore, even if an NRA would define a retail market for triple play, for example, the wholesale inputs needed to compose this bundle would remain separate and non-substitutable, such as for example local access, higher-level access and termination. What is important in this respect is that NRAs are able to ensure that the vertically integrated SMP operator's regulated elements of the bundle can be effectively replicated (in terms of both technical and economic replicability) at the retail level, without an implicit extension of regulation to other components which are available under competitive conditions. Moreover, it has been argued that, in cases of the provision of the fixed voice service with broadband access and/or IPTV, bundling at the retail level is rather a phenomenon of continued provision of a declining fixed voice service alongside broadband access and/or IPTV, rather than an economically significant offer that alters the competitive dynamics over a longer period.

3.3. Self-Supply

The issue of how to take into account the self-provision of wholesale inputs arises frequently in both defining and analysing wholesale markets. In some cases, what is under consideration is the self-supply of the incumbent operators. In others, it is the self-supply of alternative operators.

In many cases the incumbent is the only undertaking that is in a position to provide a potential wholesale service. It is likely that there is no merchant market as this is often not in the interest of the incumbent operator. Where there is no merchant market and where there is consumer harm at retail level, it is justifiable to construct a notional market when potential demand exists. Here the implicit self-supply of this input by the incumbent to itself should be taken into account.

In cases where there is likely demand substitution, i.e. where wholesale customers are interested in procuring from alternative operators, it may be justified to take the self-supply concerned into consideration for the sake of market delineation. Even where there is an alternative potential supplier, it may share the same strategic interests as the incumbent regarding supply to third parties, to discourage market entry. Alternative operators' self-supply should, in particular, be assessed when alternative operators' networks are included in the relevant market due to the strong direct pricing constraints they exert on the incumbent operator. However, this is not justified if alternative operators face capacity constraints, or

their networks lack the ubiquity within the relevant geographic market expected by access seekers, and/or if alternative providers have difficulty in entering the merchant market readily.

4. EXAMINATION OF MARKETS IN ORDER TO IDENTIFY RELEVANT MARKETS FOR THE PURPOSES OF THE RECOMMENDATION

This section examines the broad market areas within the electronic communications sector, analyses briefly the general market structure of the relevant retail and wholesale markets within those areas, and identifies the specific markets that are susceptible to *ex ante* regulation.

A key aim of the regulatory framework is to enhance user and consumer benefits in terms of choice, price and quality by promoting and ensuring effective competition at retail level as well as to promote efficient investment and innovation in new and enhanced infrastructures. Moreover, in accordance with Directive 2009/140/EC (Better Regulation Directive) the aim is progressively to reduce *ex ante* sector specific rules as competition in the markets develops and, ultimately, for electronic communications to be governed by competition law only. It is only where consumer harm could be expected in the absence of regulatory intervention that a market should be susceptible to *ex ante* regulation. The starting point is therefore a characterisation of retail markets, followed by a description and definition of related wholesale markets.

In principle, lack of effective competition may occur at the retail level or the wholesale level or both. The identification of a retail market (as part of the value chain) for the purposes of *ex ante* market analysis does not imply, where there is a finding of a lack of effective competition by a NRA, that regulatory remedies would be applied to a retail market. Regulatory controls on retail services can only be imposed where relevant wholesale measures would fail to achieve the objective of ensuring effective competition at retail level. Given the advances in competition that have been achieved thanks to regulation, this Recommendation identifies only relevant markets at the wholesale level. It is believed that their regulation can address a lack of effective competition at the wholesale level, which in turn is the cause of identified market failures in the related retail markets. By intervening only at the wholesale level, NRAs can ensure that as much of the value chain is subject to competition process as possible, thereby delivering best outcomes for end-users.

Markets should be examined in a way that is independent of the network or infrastructure being used to provide services, as well as in accordance with the principles of competition law. For the purposes of the third Recommendation, the starting point for market definition is those markets that were identified in the second Recommendation. None of the evidence analysed in preparation of this Recommendation and Explanatory Note has indicated that any of the markets that were listed in the annex to Recommendation 2003/311/EC of 11 February 2003 and not in the annex to Recommendation 2007/879/EC of 17 December 2007 should be reintroduced in the annex to this Recommendation.

4.1. Access to voice and voice services

In the 2007 Recommendation, one retail and three wholesale markets related to voice services were identified as susceptible to *ex ante* regulation:

- *Access to the public telephone network at a fixed location for residential and non-residential customers (market 1);*

- *Call origination on the public telephone network provided at a fixed location (market 2);*
- *Call termination on individual public telephone networks provided at a fixed location (market 3);*
- *Voice call termination on individual mobile networks (market 7).*

The fixed wholesale call termination market will be dealt with together with its mobile counterpart (see section 4.1.3) in light of the specific characteristics of these two markets.

4.1.1. Retail market for access to the public telephone network at a fixed location for residential and non-residential customers

The 2007 Recommendation identified two different retail markets: (i) retail access to the public telephone network at a fixed location and (ii) retail calls markets at a fixed location. Only the first was considered susceptible to *ex ante* regulation. The market included managed voice-over-broadband (VoB) services in countries where there was sufficient penetration and where respective substitutability existed. Fixed broadband access, on the other hand, was considered not to be in the same market, given a lack of substitutability with fixed narrowband access. One single narrowband access market for residential and non-residential customers was foreseen. At the time, market conditions indicated that the absence of regulation at retail or wholesale level would lead to little competitive constraints on the incumbent, resulting in a reduced offer for the consumer. The three criteria test demonstrated that imposing wholesale infrastructure access would not remove the high and non-transitory barriers to enter the market for retail access at a fixed location, nor did it allow for it to tend towards effective competition, even in combination with the development of other infrastructures (i.e. cable or FTTx). Therefore, it was considered that, even in the presence of wholesale regulation, the retail market for access to the public telephone network at a fixed location remained susceptible to *ex ante* regulation.

Relevant product market

Market 1 of the 2007 Recommendation is defined as Access to the public network at a fixed location for residential and non-residential customers and is the last remaining retail market considered in the 2007 Recommendation on relevant markets as susceptible to *ex ante* regulation. The term "public telephone network" refers to the circuit-switched network (public switched telephone network or "PSTN"). As described above, and also recognised in the 2007 Recommendation, fixed narrowband access can also be delivered over other networks, such as xDSL, fibre, or cable networks.

As for regulated access to fixed narrowband, it can be provided via Wholesale Line Rental ("WLR"), which is usually imposed as a remedy in market 1, or via regulated access in markets 4 and 5 of the 2007 Recommendation, where the access seeker can provide the end customer with access to voice over IP/broadband over local loop unbundling ("LLU") or bitstream. When provided through other means than over the PSTN, fixed narrowband access is usually bundled with at least internet access or IP-TV. Providing only a fixed narrowband service over regulated access to LLU or bitstream is not likely to be economically viable, and the same reasoning is valid for fixed narrowband over fibre and cable-TV networks. Still, these forms of access to the fixed telephone network are increasing, indicating that end users value the additional features of broadband over narrowband access.

One distinctive feature of fixed narrowband access is that the PSTN technology provides for functionalities and characteristics which cannot, or not easily, be replicated over other

infrastructures[29]. In this context, the term "captive users" refers to users who cannot easily switch to another service/network because of the specific features provided by the PSTN network or simply to users who, for other reasons, wish to stay on the PSTN network[30]. Indeed, with a decreasing overall number of users (as those who can easily switch increasingly do so), there is a potential risk that remaining captive users will face unfavourable conditions, including prices above the competitive level. However, where the competitive constraints are strong enough to result in a deregulation of the market, they should in principle be able to counteract such price increases, also with regard to users that do remain on the PSTN network. Moreover, investment in all-IP networks will allow the network operator to increase its efficiency and also provide more cost-efficient services to its end users. In the medium-term it will not be profitable for an operator to keep the PSTN network running in parallel with its all-IP network, even if the operator could price above the competitive level for a limited period of time to a dwindling group of captive users. Simultaneously, technological solutions, particularly offered by VoIP and mobile operators, will further reduce PSTN user captivity by offering increased reliability and security at similar levels as PSTN networks. If, however, despite the competitive constraints, a material risk remains of some captive users being negatively affected by the removal of *ex ante* regulation, NRAs might consider implementing alternative and more proportionate, transitional policies, not based on the SMP obligations, to protect a small and decreasing group of specific customers still dependant on the PSTN technology or consumer groups who might be particularly vulnerable.[31] Therefore, on a forward-looking basis, NRAs should analyse the provision of services such as fixed narrowband access and the need for wholesale access regulation against the transition to all-IP networks. In such analysis, the NRAs could in particular consider the number of captive users in its defined geographical market and the potential risk of anti-competitive behaviour by the fixed network operator absent *ex ante* regulation but relying on general competition law.

Although mobile networks can, to a large extent, replicate the offers from fixed networks, providing end customers with offers which are similar to fixed networks[32], access via the mobile network is presently not considered in general by NRAs as substitutable with access to the public network at a fixed location. While the percentage of mobile-only households is continually increasing in the Union, a majority of customers still takes both fixed and mobile subscriptions. Further, the coverage and perceived quality of calls on the mobile networks still differ geographically and over time, also affected by the number of simultaneous users in the network. These elements would seem to indicate a greater degree of complementarity than of substitutability between these products in most Member States at the present time. On the other hand, the fact that the fixed subscription is increasingly used to get internet access and additional services such as IP-TV, with fixed domestic voice calls often being provided in the bundle at little or no additional charge, may mean that the above-mentioned number of customers who retain both fixed and mobile subscriptions overstates the degree of

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29 These include mainly a high level of quality, security and reliability, independent power supply and the ability to deliver fax messages. These features make the PSTN networks especially suitable for specific applications such as alarm- and monitoring systems. The fact that PSTN provides electrical power makes it more robust than other solutions that rely on the normal power network and which then may not function in the event of a power cut.

30 For example, users which are very price sensitive and/or do not typically benefit from a broadband connection or from a bundled offer.

31 For example, obligations related to affordability of tariffs as foreseen in the Universal Service Directive.

32 Such as 'home zone' telephony on the mobile phone at rates equivalent to fixed telephony.

complementarity (as opposed to substitutability) of the respective voice services on those platforms.

Moreover, mobile-fixed substitution can already be more clearly established in some markets, notably where fixed penetration has decreased substantially in favour of mobile, and mobile network coverage is close to 100%. Further indicators to conclude on fixed-mobile substitution are price convergence and behavioural patterns, such as the convergence between the average duration of mobile calls and the average duration of fixed calls. Moreover, a shift of traffic from fixed to mobile networks is observed on a general Union level, but would be expected to be even more prevalent in markets where actual substitution is found. Fixed-mobile substitution sufficient to identify a single access market is not foreseen on a Union level for the forthcoming period covered by this Recommendation, but it is likely that more NRAs will indeed be able to conclude that such substitution exists in their national markets. Even where perfect substitution is not found, mobile may exert pressure on fixed to the extent that fixed operators are constrained in their price setting, which then should be duly taken into account in the three criteria assessment or SMP analysis, as well as (alternatively) in the assessment of the appropriate remedies.

In addition to the competitive constraints resulting from the mobile-fixed substitution described above, telephony solutions based on VoIP technology will become increasingly important in the near future. The potential effects from the transition to VoIP telephony will depend on various factors such as broadband penetration, availability of alternative platforms (CaTV, mobile broadband, LTE), and intended use (residential or business customers). It can be expected that for residential customers a migration to VoIP telephony would not result in any significant migration costs. With regard to business customers, a decision to migrate to VoIP solutions would in most cases be taken upon consideration of other factors such as relocation or move of offices, need for additional functionalities, periodic upgrade of IT environment, centralisation/reorganisation of certain business functions/processes. Already now it can be observed that VoIP solutions constitute a default option in new business sites and the likely choice where new telephony solutions are being procured. In view of lower overall costs and additional functionalities of VoIP telephony, the migration towards VoIP is well under way and is expected to accelerate. However, the migration will be finalized at different points in time across Member States.

Dedicated connections such as leased lines can be used to provide fixed access and voice where multiple connections are needed[33], but leased lines are generally not a substitute to fixed narrowband access due to different characteristics, such as pricing and services delivered, except for a very limited group of customers.

For the above reasons it can be concluded that the retail market for access to the public telephone network at a fixed location comprises narrowband access via PSTN, xDSL, fibre and cable networks. The access services provided over leased lines and mobile services are considered to be outside such defined relevant market; nevertheless the impact especially of the mobile services should be considered by the NRAs at the stage of the three criteria or SMP assessment, as well as (alternatively) in the assessment of the appropriate remedies.

Three criteria test

i) Barriers to entry and to the development of competition

[33] Large enterprises with multiple business sites.

The market for access (at a fixed location) to the public telephone network has experienced significant structural and behavioural developments since the last review of the Recommendation. The structural developments concern mainly increased NGA roll-out, increased penetration of mobile telephony and fixed-mobile convergence, provision of access services by CATV, increased availability/popularity of managed VoIP, transition of traditional PSTN networks to all-IP solutions, and the wide availability of LLU and wholesale broadband access ("WBA") products. All of these signify an erosion of the barriers to entry into the fixed access market. Moreover, the rate of those developments is expected to increase in the future.

While fixed-mobile convergence has not yet been widely identified by NRAs, some NRAs have already recognized that mobile access services are substitutes to the access services provided at fixed location and should be considered to be within the same relevant market. In such circumstances, mobile operators can be considered to have already overcome barriers to entry. Where fixed-mobile convergence has not yet been established from a demand-side perspective, mobile operators can in any case relatively easily enter the market for access to the telephone network at a fixed location, on the basis of their existing infrastructure via so-called "home-zone" services.

On a forward-looking basis, further entry into this market can be expected from infrastructure operators rolling out their NGA networks. While entry by means of own infrastructure deployment will be, as in the past, characterised by substantial entry barriers, it can nevertheless be expected that various legislative proposals both at the Union and national levels will significantly reduce such barriers. The legislative measures include, among others, initiatives to reduce the costs of investments by means of mandatory passive infrastructure sharing[34] and incentives to invest by creating more predictability as to the regulatory environment[35].

Furthermore, alternative operators without their own fixed infrastructure can relatively easily enter the market by way of making use of regulated wholesale inputs, namely LLU and bitstream. An alternative operator who seeks access to LLU or bitstream for the purpose of providing retail broadband services can relatively easily expand its offer to telephone services (both access and calls) by utilizing IP technology. In conclusion, the market for fixed narrowband access is no longer characterised by high and non-transitory entry barriers on a Union level.

ii) Dynamic aspects – tendency towards effective competition

With regard to the tendency towards effective competition on this market, it can be expected that it will be mainly driven by the developments on the closely related retail broadband access market, delivered over xDSL, fibre, cable infrastructures, and potentially mobile broadband, as well as fixed-mobile substitution. In addition, in view of the increasing penetration of CATV and alternative NGA infrastructures, as well as of the easy access to wholesale inputs like LLU or WBA, it can be expected that VoIP operators will play an increasingly important role on the market for access to the fixed telephony services.

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34 Proposal for a Regulation of the European Parliament and of the Council on measures to reduce the cost of deploying high-speed electronic communications networks, COM (2013) 147 final, 26.03.2013.

35 These will be provided thanks to Commission Recommendation of 11 September 2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment (OJ L 251, 21.9.2013, p. 13), the implementation of which will increase the consistency of remedies that are applied in particular to NGA networks.

In view of consumers' growing demand for bundled purchases of telecommunication services, it can be foreseen that the competition in this market will be characterised by a strong prevalence of bundles covering access and calls, broadband services ("double play"), in addition to TV offers ("triple play") and mobile services ("quadruple play"). Over time, the stand-alone access to the telephone network will become less and less demanded by end-customers. Furthermore, the changing consumer behaviour towards other electronic communication services, such as mobile and messaging services, will probably lead to a decrease in demand of fixed telephony services.

In view of the price convergence between fixed and mobile telephony (also due to the stricter regulation of mobile termination rates), and the fact that access and calls are often purchased together, it can be expected that any potential SMP operator on the fixed access market will be constrained by mobile operators, either directly (if mobile and fixed services would be included in the same market) or indirectly via the SMP assessment.

In view of the wide availability of bundles and easy switching (number portability) it is unlikely that any operator, even an incumbent operator with relatively high market share, could behave independently of its competitors and consumers. It is therefore concluded that, on a Union level, the market for fixed narrowband access tends towards effective competition.

iii) Relative efficiency of competition law

In view of the market characteristics described above, it is unlikely that any operator would be able to behave independently of its competitors and customers in a forward-looking perspective. Should this happen, *ex post* competition law instruments should be sufficient to redress it.

4.1.2. Call origination on the public telephone network provided at a fixed location

In the first Recommendation of 2003, there were four retail markets related to call origination: publicly available local/and or national telephone services provided at a fixed location and publically available international telephone services provided at a fixed location for residential and non-residential customers, respectively. In the 2007 Recommendation, these were no longer considered as markets subject to *ex ante* regulation in the presence of wholesale regulation in the market for call origination on the public telephone network provided at a fixed location. In light of market developments, and the way the wholesale market has evolved since the previous Recommendation, the Commission sees no need to review the retail markets in more detail.

In the 2007 Recommendation, call origination (together with wholesale access) was considered the second least replicable wholesale input required to provide retail call services. The market definition was understood to comprise call origination for telephone calls and for the purpose of accessing dial-up internet service provision. In the 2007 Recommendation it was considered that this market exhibited high and non-transitory barriers to entry. This was the result of high sunk costs, limited development of alternative access networks and limited degree of local loop unbundling (LLU). The few registered market entries were limited to particular geographical areas or customer groups. No tendency to effective competition was found and the competition problems identified could not be addressed by competition law alone.

Relevant product market

Market 2 of the 2007 Recommendation is defined as Wholesale call origination on the public telephone network at a fixed location. The call origination services correspond, at the retail

level, to the ability to make outgoing phone calls. At wholesale level, call origination is an input which is supplied and purchased in order for alternative operators, who do not acquire a direct access link to the end customer, to be able to provide fixed voice services to end customers.

Starting with the analysis at retail level, it has been observed that fixed calls services (retail services which are a downstream product of wholesale call origination) are more often bundled with the access to the fixed network/narrowband service. At wholesale level, both call origination and narrowband access services can be purchased separately, and have been defined separately for the purposes of *ex ante* regulation by most Member States. However, there has been a decrease of 'stand-alone' Carrier Pre-Selection ("CPS"), as a consequence of the increase of WLR, which allows for alternative providers to provide both access and call origination based on PSTN. Alternative operators are also increasingly self-supplying call origination by means of establishing a direct access link to the end customer on the basis of regulated inputs, such as LLU or bitstream, or by building their own networks. While indeed the economic incentives for only self-supplying call origination and providing only retail voice services on the basis of such wholesale access products are relatively low, it becomes more attractive for alternative operators to provide a broader range of bundled services.

Managed VoIP, usually over fibre, cable TV or DSL networks, has been included in market 2 of the 2007 Recommendation by all Member States. Unmanaged VoIP, usually provided as an OTT service, also provides similar functionalities, where the user may for example make calls to numbers in the numbering plan provided he or she is a paying customer. Still, these services are mainly used to call or receive calls from other users using the same service. Further, in order to make and receive calls, the user needs to be both logged on to the specific service and have the device (a smartphone, a tablet or a laptop/PC) switched on in order to utilize the service. Despite the increasing penetration of smartphones and tablets, which often remain indefinitely online, unmanaged VoIP is still not considered by the great majority of NRAs as a substitute for fixed voice.

Mobile networks can, in many instances, provide the same functionalities as fixed narrowband access, such as making and receiving calls. In addition, they can also provide internet connectivity. New offers also allow for transferring an end-users fixed telephone number to the mobile network. Furthermore, there are also different solutions for using a mobile phone as the "home phone". However, there are still important differences which argue in favour of mobile as predominantly a complement rather than a substitute to fixed telephony, namely the price paid for a mobile call, as well as the perceived quality of the call, especially over a mobile network, which may be inferior relative to that of a fixed. As stated above, in the period covered by this Recommendation, at Union level fixed-mobile substitution is not foreseen to be sufficient to warrant identification of a combined market for access services. However, important differences exist between Member States: fixed penetration, for instance, is one indicator which needs to be assessed when carrying out the market analysis at a national level[36].

For the time being, the relatively low price of VoIP will probably result in end-users keeping a fixed voice subscription in addition to the mobile, since they demand the fixed broadband connection. NRAs should take into account that, should mobile broadband substitute fixed

[36] For more indicators, see the section on fixed-mobile substitution in relation to fixed narrowband access.

broadband, voice would certainly follow and end-users would most likely drop the fixed voice subscription.

In conclusion, the wholesale market for call origination on the public telephone network provided at a fixed location comprises PSTN and managed VoIP over fixed broadband lines.

Three criteria test

i) Barriers to entry and to the development of competition

Wholesale call origination is demanded by alternative operators, together with other services such as call transit and call termination, to provide retail calls services, mainly by means of Carrier Selection/Carrier Pre Selection (CS/CPS). If combined with wholesale access services (such as WLR), it allows the alternative operators to construct retail offers consisting of access and calls.

A direct alternative to the purchase of wholesale call origination services is to acquire a direct connection to the end user premises, either through the roll-out of an access network to the end customers, or by leasing an already established access network (for example through LLU or bitstream combined with VoIP). Indeed, while CS/CPS is still demanded by alternative operators in Europe in order to provide retail services (mainly to non-residential customers), a clear downward trend can be observed. The popularity of CS/CPS services peaked between 2003 and 2005 and has been generally in decline since then. The decline in CS/CPS demand can be correlated to the simultaneous increase in the demand for wholesale access products, and to migration towards the next rung of the investment ladder, with operators thus producing their own VoIP services instead of buying CS/CPS. Furthermore, in view of progressing fixed-mobile substitution where the mobile services could be considered to fall within the same relevant retail market for access to telephone network at a fixed location, the (self-supplied) wholesale call origination services in the mobile networks should also be considered to fall within the boundaries of the market for wholesale call origination in the fixed networks. Therefore, it can be concluded that the Mobile Network Operators (MNOs) have already overcome the barriers to entry.

For the above reasons the barriers to entry into the wholesale call origination market are, to a great extent, dependent on the operators' ability to develop or acquire a direct access link to the end customer. As already explained above, in view of the progressing fixed-to-mobile substitution, availability of wholesale access products (LLU and bitstream), transition towards all-IP networks and increasing penetration of VoIP/VoB technology, as well as progressing NGA roll-out, the establishment of a direct connection to end users' premises and, consequently, also the market for wholesale call origination, are no longer considered as being characterised by significant barriers to entry on a Union level from a forward-looking perspective. However, since most NRAs found, in their last round of market analyses, high entry barriers and absence of effective competition in their national markets, it is possible that some markets in some Member States could still be characterised by high and non-transitory entry barriers for the time being, although likely decreasing over time.

ii) Dynamic aspects – tendency towards effective competition

As in the case of access services, the competition on the market for wholesale call origination is strongly influenced by the increased usage of mobile services. Where mobile telephony services can substitute fixed networks on the market for outgoing retail calls, the wholesale call origination services in the fixed networks are subject to direct competitive pressure from (self-supplied) mobile call origination. In general, it can be observed that the substitution from

mobile telephony is much more intensive on the calls market than on the access market itself. Moreover, even if fixed and mobile calls would not be considered to be perfect substitutes, mobile services would still exercise a significant constraint on wholesale call origination services as services over mobile and fixed networks do compete with each other to a certain extent. In addition, and to some extent only, a competitive constraint on wholesale call origination services can be observed from the OTT services which, at the moment, are considered to go beyond the market for retail calls services.

Moreover, besides the competitive constraints coming from mobile services, wholesale call origination can be relatively easily self-supplied by operators who establish a direct connection to end-customers (either on the basis of their own infrastructure or through - regulated - wholesale products such as LLU and/or bitstream). The demand for CS/CPS services, for the purpose of offering retail services to customers who rely on PSTN for quality and resilience reasons, will become less relevant over the review period of this Recommendation, especially in view of the migration to all-IP networks (which do not have the same characteristics concerning quality/resilience as PSTN).

As explained above, the entry in the market for access to the fixed telephone network is no longer characterised by high and non-transitory barriers to entry. The market for wholesale call origination therefore tends towards effective competition from a forward-looking perspective. However, given the high number of national markets where the market for wholesale call origination has currently not been found effectively competitive, it is possible that some NRAs will not yet identify a sufficiently clear tendency towards effective competition in their national markets combined with a sufficiently pronounced lowering of entry barriers. Where this is the case, the market can be seen as (remaining) susceptible to *ex ante* regulation provided that the three-criteria test is satisfied for the subsequent review period.[37]

iii) Relative efficiency of competition law

In view of the above, in particular the lower barriers to entry and tendency towards effective competition, the competition law instruments seem to be sufficient to ensure competitive market conditions of the wholesale call origination services from a forward-looking perspective. The *ex post* competition law safeguards are more suitable to address potential (individual) market problems than *ex ante* regulatory intervention.

On the basis of the above, it is considered that both the retail market for access to the telephone network and the wholesale market for call origination on the public telephone network no longer fulfil the three criteria which identify the electronic communication markets susceptible to *ex ante* regulation. Therefore, these two markets have been removed from the Recommendation. Nevertheless, it is always open to an NRA to assess the three criteria in order to verify whether they are satisfied for a specific market, if such an assessment step appears to be appropriate.

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[37] The same logic could apply to wholesale remedies which are currently imposed in Market 1. As there may be a degree of variation across Member States in the pace of the expected or foreseeable market developments which underlie this finding at Union level, specific national circumstances may justify that an NRA could find that market 1 of the 2007 Recommendation or other retail markets related to market 2 of the 2007 Recommendation are not yet effectively competitive from a forward-looking perspective absent appropriate and proportionate wholesale remedies. NRAs could thus justify continuing *ex ante* regulatory intervention at wholesale level provided that the three-criteria test is satisfied in the national circumstances for the subsequent review period.

4.1.3. Wholesale fixed and mobile call termination markets

Relevant product market

In the 2007 review the termination services were considered to be the least replicable input for retail voice services. As such, wholesale fixed and mobile termination markets are currently regulated in all Member States.

First of all, it should be recalled that based on the Calling Party Pays (CPP) principle applicable in the Union, a termination rate is set by the called network and paid by the calling network. The called party is not billed for this price and has no incentive to respond to the termination price set by the network provider.

An analysis of demand and supply substitutability shows that currently or in the foreseeable future there are no substitutes at wholesale level which might constrain the setting of charges for termination in a given network. Although call termination charges may be theoretically constrained by demand-substitutes at retail level, which are a reasonable alternative for making a call to the subscriber concerned, even in presence of substitutes at retail level, a widened retail market including for instance fixed and mobile calls does not lead to substitutability at wholesale level. Thus, the definition of the retail market does not impact on the wholesale market definition, but may have consequences for the assessment of SMP as outlined below.

The relevant market is limited to each terminating operator's network. As regards the market for mobile termination, this is composed of the markets for termination offered by each MNO and full MNVO[38] that can negotiate call termination charges with other mobile operators independent of their host mobile network operator.

In line with a technology-neutral approach, the wholesale fixed termination market comprises termination on PSTN and IP networks, and the wholesale mobile termination market comprises all mobile network topologies, 2G, 3G - UMTS, 4G - LTE and, if appropriate, any other networks operated in the Member States, such as CDMA networks. It includes call termination irrespective of where the call originates (national, international, fixed and mobile).

Geographic and non-geographic numbers

As already mentioned, under the CPP regime, the called party is not charged for termination of a call to a geographic number and end-users are generally not sensitive to the termination fee charged by the operator to whom they are subscribed. Every terminating operator is hence a monopolist, capable of behaving independently of its competitors, consumers and customers, and has an ability to charge excessive prices. As explained in the Explanatory Note to Commission Recommendation 2009/396/EC of 7 May 2009 on the Regulatory

[38] NRAs refer to a variety of MVNOs: light MVNOs, full MVNOs, fully-fledged MVNOs, etc. Full MVNOs usually possess and have control over all elements of a mobile network except for radio access. MVNOs control at least partially access to their subscribers and have interconnection agreements with one or several MNOs. In this respect, due account should be given to the fact that MVNOs may have the opportunity to achieve low unit costs irrespective of their actual market shares by renting relevant network inputs from more established MNOs thereby benefiting from their economies of scale and/or scope. This resulted in a number of NRAs setting MVNOs' mobile termination rates upon their entry precisely at the level of the rates applied by the operator of the respective host network.

Treatment of Fixed and Mobile Termination Rates in the Union[39], a different rationale applies to numbers used by service providers who are sensitive to the level of termination charges – which directly affect their revenues – and may therefore switch between providers in the event of an increase in the operator's charges for termination services. Hence, termination of calls to non-geographic numbers used by service providers is usually characterised by market and competitive conditions that are different from those prevailing in the context of voice call termination to other end-users.

Various types of non-geographic numbers can be distinguished, e.g. those providing value added services, those providing public services and mobile numbers. While calls to mobile numbers and to non-geographic numbers providing public services can be considered as part of the relevant mobile or fixed termination market on the grounds of similar competitive conditions to those when a call is terminated on a geographic number, the mechanics of termination of calls to non-geographic numbers for the provision of value added services would rather argue in favour of excluding this type of termination from the relevant market. Most NRAs exclude it, on the basis of differences in terms of functionalities, network coverage requirements, costs for the provision of the service and competitive conditions which are not prone to change in a forward looking perspective.

In order to determine whether a termination service to a given non-geographic number falls within the relevant market, it is therefore necessary to assess whether the market and competitive conditions characterising the provision of the termination service are similar to those of providing voice call termination to a geographic number. For example, in the case of call termination services to non-geographic numbers used by service providers (e.g., for the purposes of providing premium rate services), operators do not seem to be indifferent to the termination charge paid by the calling party as this affects their competitive advantage, as long as they themselves operate in downstream markets that are characterised by competition in the services that they provide. As the choice of terminating operator and the resulting price affect the revenues of the called service providers, the party being called is both aware of and sensitive to the price of termination. In that respect, these services differ from traditional voice call termination services interconnecting two end-users. Therefore, in the case of calls to non-geographic numbers operated by service providers, the service provider may purchase termination from any network operator and is able to switch network operators with a view to increase its profit and/or to reduce its costs. As a consequence, the terminating operator is generally facing a competitive constraint, being presented with a risk that its service provider end customer can switch to another network operator in case of an increase of termination rates, causing a loss of revenue, unless there are objective and insurmountable obstacles to switching terminating operator.

Home zone

A home-zone product consists of a mobile voice service provided at a fixed location. Customers using this service receive a telephone number from the fixed numbering plan, containing the area code of the location where the service is provided. This can be realised both by fixed networks and mobile networks, but this type of product does not allow clients to switch between different cells of those networks. Thus, when end customers walk outside the range of a base station (usually hundreds of meters), their call will be disconnected. In the Explanatory Note to the previous recommendation mobile services which are confined in a

[39] OJ L 124, 20.5.2009, p. 67.

limited radius around a fixed location were considered as possible alternative to fixed telephony services. The inclusion of home-zone products in the fixed or in the mobile voice call termination markets would depend on whether, based on a substitutability analysis, the product offered is, from a consumer perspective, a substitute to calls at a fixed or at a mobile location. This can be assessed, for example, by analysing whether retail/wholesale prices of the home-zone product are similar to the retail/wholesale charges of a fixed or of a mobile operator, etc. For instance, regardless of the use of a different technology, fixed/mobile convergent services seem to have economic and functional characteristics similar to the traditional fixed telephony services. Thus, in the context of integrated fixed/mobile offers (where calls would be terminated to geographic numbers at fixed locations), a call may be technically terminated on a mobile network but charged at the level of a fixed termination rate.

VoIP

The substitutability of managed and unmanaged VoIP services at the retail level with standard fixed voice services will depend on a number of factors such as product characteristics, quality of service, broadband penetration, pricing, possibility of receiving calls according to domestic or international numbering plans, etc. Given the fact that managed VoIP services appear at present to have functional characteristics similar to those of standard voice calls services, they are usually considered as the latter's substitute and included in the relevant product retail market definition.

As to unmanaged VoIP services, the Explanatory Note to the Relevant Markets Recommendation of 2007 had qualified them as less of a substitute to narrowband telephony than managed VoIP, clarifying, however, that the distinction between managed and unmanaged VoIP could disappear over time as the quality of unmanaged VoIP services improves and technological features change.

At present, it appears that alongside the traditional unmanaged VoIP services, which are offered exclusively as content-based services on a best-effort basis by providers that are not electronic communications providers,[40] a new type of unmanaged services with distinct features is offered in some Member States by providers that are deemed to be electronic communications providers having certain control of network-specific equipment, and, *inter alia*, allocating to their end-users E164 numbers[41]. In fact, in some Member States with a very high broadband penetration and broadband networks supporting the provision of data-intensive services, it seems possible to offer unmanaged VoIP services (which require insignificant bandwidth only) at a quality and prices comparable from the end-users' perspective to that of narrowband telephony services. Thus, this type of unmanaged VoIP service appears to be a substitute from the end-user's perspective.

From the wholesale perspective, calling a geographical number of a party that uses a managed VoIP connection, irrespective of the originating equipment being fixed, mobile phone or internet based application (e.g. Skype), enjoys essentially similar functionalities as a PSTN call and still results in a fixed call termination rate being charged by the operator providing the VoIP line of the called party to the operator of the calling party. Similarly, termination of

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[40] The regulatory framework applies to regulation of electronic communication services, which are defined, in Article 2 of the Framework Directive as services excluding "content transmitted over electronic communication networks and services".

[41] According to ITU-T Recommendation on international public telecommunication numbering plan.

certain unmanaged VoIP calls by providers that are electronic communication providers (having certain control over specific technical equipment, and *inter alia*, allocating their end-users E164 numbers) and have the ability to charge termination fees seems to be characterised by a similar termination bottleneck, and may in such case be included in the relevant market.

Relevant geographic market

The geographic scope of each market coincides with the geographic coverage of the network concerned and is usually national. In principle, the termination of calls originated within the same Members State, within the Union or outside the Union should all be part of the same product market because the call termination service is functionally the same and often indistinguishable from the perspective of the terminating operator.

Three criteria test

i) Barriers of entry and development of competition

Each operator controls the access of other operators' subscribers to its own network. Call termination services can only be supplied by the operator to which the called party is connected. Thus, call termination is the least replicable element required for the provision of retail call services. There is no substitute at wholesale level since the calling subscriber's operator is unable to purchase termination on a given network from an alternative source. In principle, termination charges might be constrained via demand substitution, but there is no potential for demand substitution at the wholesale level. Consequently, the first criterion of high and non-transitory barriers to entry is satisfied.

ii) Dynamic aspects - tendency towards effective competition

The second criterion is also satisfied since each market for fixed and mobile voice call termination is a monopolistic market with all the operators enjoying a 100 % market share with no tendency towards effective competition. Indeed, termination markets are structural monopolies where competitive conditions are not prone to change due to the calling party pays principle (CPP) according to which terminating operators have not sufficient incentives to negotiate efficient termination rates to the ultimate benefit of final consumers. When choosing its operator, the called party is not directly affected by the price of calls paid by the calling party. As such the terminating operator is not constrained by the receiver of the call to set lower termination charges. By subscribing to an operator's network, the subscriber grants monopoly power to its operator on all parties requesting termination in that operator's network.

Article 7 practice shows that setting termination rates on the basis of commercial agreements is likely to lead to burdensome dispute settlements. Lengthy legal proceedings are at the expense of operators seeking access to call termination services who are obliged to engage in time consuming negotiations. Moreover, a general obligation of interconnection laid down in Article 5 of the Access Directive would not as such be sufficient to overcome market failures and to ensure legal certainty, potentially allowing a terminating operator to sustain prices at excessively high levels. Only following a market analysis (comprising market definition and SMP analysis), NRAs can impose appropriate remedies and, *inter alia*, set prices at an efficient cost level.

iii) Relative efficiency of competition law

As regard the third criterion, *ex post* intervention by means of competition law would not be sufficient to achieve regulatory certainty with respect to the conditions of purchase of voice call termination. Given the crucial importance to guarantee effective and timely

interconnection, *ex post* competition law alone is not yet able to address the termination markets bottleneck. Consequently, the complementary use of *ex ante* regulation appears indispensable, at least for the time being. Thus, the third criterion is also met.

Related aspects of SMP finding

A market definition for call termination on each network would imply that currently each network operator is a single supplier on its respective termination market, which suggests that each operator has a 100% market share. While a 100% market share provides a very strong presumption of SMP, in accordance with competition law principles, a finding that there is no SMP may occur if there is sufficient countervailing buyer power, which would render any non-transitory price increase unprofitable. This has been taken into account by the Explanatory Note to the 2007 Recommendation, which stated that the fact that each operator is a monopolist on its own network does not automatically mean that it has significant market power, and that the extent to which countervailing buyer power effectively constrains the ability of terminating operators to charge excessive termination charges has to be assessed on a case-by-case basis in the context of the SMP assessment. As noted in the Explanatory Note to the Termination Rates Recommendation, termination being a situation of two–way interconnection where two wholesale termination prices have to be negotiated, these could potentially be used as leverage in the negotiations. This would suggest that each terminating operator is facing a certain degree of bargaining power from its counterparts. Such reasoning could eventually lead to rates being set at a close-to-costs level among symmetrical networks. This type of agreements could however lead to excessive pricing on the termination markets, thus still allowing for anti-competitive behaviour in the form of e.g. foreclosure or collusion.

According to competition law principles, if indirect constraints coming from the downstream (retail market) are strong enough to make the termination rate increase unprofitable for a terminating operator, it might be concluded that this operator does not have SMP on its respective termination market. This could be the case if the calls to a fixed network can be substituted by other means of communication at the retail level. In other words, if the calling party, in order to avoid a pass-through of the wholesale termination charge, instead of calling the fixed number, selects an alternative, such as calling the mobile number belonging to the same person or using an OTT provider, this may result in a constraint exercised by another termination service.

Accordingly, in some Member States, on the basis of national circumstances, fixed and mobile services may be regarded as being to a significant degree substitutes, rather than complements. In line with the SMP Guidelines, however, this analysis must take into account that products which are only to a small or relative degree interchangeable with each other do not form part of the same market. In addition to being functional substitutes from a consumers' perspective, it is also necessary that the alternatives lead to an effective constraint on setting call termination charges by making it unprofitable for an operator to raise call termination charges. Any such finding of indirect constraints has to be supported with empirical evidence and evaluation of future trends. In order to estimate the degree of strength of constraints, NRAs would need to provide inter alia a qualitative and a quantitative assessment of factors including the effective pass-through from wholesale to retail prices (including an assessment of the wholesale/retail price ratio), the (in) capacity of operators to absorb termination price increases depending on competitive conditions on retail level, and the effective willingness of the call receiver to switch operators because the high termination charges applied by its network prevent him from receiving calls.

Additional observations

The Commission does not propose defining a separate market for SMS termination However, based on the above considerations, such market - including a traditional and a push SMS[42] - can be defined by an NRA on the basis of a three criteria test. The NRA could only do so if this would (still) be justified on a forward-looking basis. In this respect, the NRA should, in particular, consider implications on the substitutability of the traditional and the push SMS with emails and instant messaging which are more and more available due to an increase in smart phones and broadband penetration, including (free) hotspots.

Phasing out regulation in termination markets

For the reasons explained above, lifting SMP on the basis of indirect retail constraints might appear difficult even on a forward-looking perspective in the context of termination markets defined by the CPP principle. NRAs may eventually propose to lift regulation where operators in an all-IP environment would treat voice calls like any other category of data transfer and make such data transfers subject to the same peering arrangements, which, depending on relative traffic flows, may involve some payments to net recipients, as is the case today between operators belonging to the different tiers (one, two and three). This would presumably coincide with an abandoning of the voice termination model altogether; i.e. the identification of voice calls for the purpose of termination and respective billing would no longer be pertinent.

Indeed, in a future all-IP world, the distinction between voice and data for terminating purposes will be blurred and costs of both voice and data are expected to fall since NGN networks are expected to deliver most services over a common platform. The bottleneck which is intrinsic to the terminating network could eventually disappear, as long as the pricing scheme for a two-way interconnection of two networks no longer envisages distinct termination charges, when voice data is transferred from one operator's network to the other. This would consequently enable the NRAs to deregulate the fixed and mobile termination markets.

Alternatively, already today operators may decide to enter Bill and Keep (BAK) regimes (according to which each operator would not charge other participating operators for terminating traffic on its network). The transition towards such a scenario/pricing mechanism could be naturally assisted by a full implementation of the Termination Rates Recommendation[43]. Many NRAs have already implemented the recommended model or use appropriate benchmarking, in line with the Recommendation. The recommended model drives fixed and mobile termination rates towards lower and more convergent levels. Setting termination rates at incremental costs has also shifted the recovery of some costs to the competitive retail domain, thus not only leading to a more efficient cost recovery but also drawing the pricing structure closer to a peering or BAK regime, under which operators bill net costs incurred for termination to their own end-customers. However, the extent to which such potentially selective and temporary arrangements could give rise to a non-SMP finding

[42] The push-SMS concerns an application originated SMS, not originate on mobile but on fixed networks e.g. by internet access providers via a computer. Push SMS allows other player than mobile (virtual) networks operators to send SMS or deliver content and deliver services for mobile phones (e.g. for marketing purposes, content transmission, message services, closed group of users).

[43] It is recommended that the evaluation of efficient costs, for both fixed and mobile termination rates, should be based on current costs following a bottom-up modelling approach using long-run incremental costs (BU-LRIC) as the relevant cost methodology, without mark-up for joint and common costs.

cannot be assessed at this stage at EU level and should therefore eventually be subject to further scrutiny by the individual NRA.

4.2. Access to data and related services at a fixed location

The aim of this section is (i) to describe and define relevant markets for access to generic data services (in particular the provision of internet service) at fixed locations at a retail level, (ii) to define the related wholesale markets and (iii) to identify the relevant markets which are susceptible to *ex ante* regulation.

In the area of data services at fixed locations, the 2007 Recommendation identified the following markets as susceptible to *ex ante* regulation:

- *Wholesale (physical) network infrastructure access (including shared or full access) at a fixed location;*
- *Wholesale broadband access;*
- *Wholesale terminating segments of leased lines, irrespective of the technology used to provide leased or dedicated capacity.*

4.2.1. Retail markets

According to the SMP Guidelines (point 44), when defining the relevant product and services market, NRAs should begin by grouping together products and services consumers (end-users) use for the same purposes. The different customer types to be taken into account are residential customers and business customers, which can in turn be categorized into small, medium and large size enterprises, with or without multiple sites.

As a first step, NRAs should assess, at the retail level, whether, from a demand side perspective they can observe a difference in demand at the retail level for broadband and broadband-enabled services between different end-users. Such differences, for example, can in general be witnessed between residential customers and certain SMEs on the one hand[44] and SMEs with more sophisticated needs and large (multi-site) businesses on the other. Such differences in demand could primarily result from the fact that business customers usually need higher levels of transmission capacity and quality of service assurances, with specifications being often customized to end-user's needs, even though certain businesses might find their needs fulfilled with a standard service or bundle.

Therefore, NRAs should specifically analyse whether two retail products which would significantly differ in terms of quality of service levels, features and product characteristics such as (dedicated) capacity, availability, contention and the necessary or guaranteed repair times, could be regarded as substitutes from an end-user perspective. The NRAs should also conduct a supply-side analysis to determine whether providers of mass-market services are capable of offering bespoke high-quality services within a short time period and without incurring significant additional costs. It seems likely that, based on such differences in demand and where mass-market providers are unable to easily switch to offering tailored business products, NRAs will find that there is no substitutability between these products. In such cases, NRAs should define two separate retail markets, as described below.

[44] Certain SMEs may be satisfied with a retail broadband product with technical characteristics equivalent to those of products addressed to residential end-users but with higher levels of assurance in terms of support, repair times, etc.

Retail mass-market

Retail residential customers, as well as certain non-residential customers, have an increased tendency to purchase bundles, which are combined offers including several different types of services. Despite a large variety of combinations across Member States, services which are being bundled usually include a combination of two or more of the following services: voice, data access, TV, and mobile. It is important to bear in mind that despite the significant rise in the demand for bundles, the majority of operators continue to offer stand-alone services besides the bundle, especially in their core businesses, although certain operators have a strong tendency to bundle internet access with fixed telephony. Another important factor when assessing whether a retail market for bundles exists is the increased use of services offered by OTT providers, which break the link between network access and service provision, and users relying on OTT services would usually have no real incentive to subscribe to a bundled plan as broadband access alone may suffice for the delivery of the required service bouquet. Some NRAs may, however, identify a retail market for bundled offers.

At the retail level, a number of broadband access possibilities at a fixed location exist. These include copper-based DSL networks (which includes a variety of technologies, such as ADSL, ADSL2, ADSL2+, VDSL), fibre networks (FTTC, FTTB, FTTH) and cable networks, either standard or upgraded. Satellite and terrestrial TV networks (provided they have adequate capacity and are linked to a return path) are also capable of providing data services and access to internet.

In addition, from an end-users' perspective, services provided over non-fixed-line technologies (WiFi, WiMAX, mobile) may, under certain circumstances, also be regarded as a substitute for services over fixed infrastructures. However, mobile broadband based on 3G technologies has so far from a demand-side perspective generally not been found substitutable to fixed broadband, with limited exceptions in certain Member States. The main reason has been the fact that mobile services are designed with the mobility aspect in mind and would therefore usually not allow comparable maximum speeds and bandwidth. In addition, service reliability and resilience are usually lower, to a degree that makes consumers look at them presently as complements rather than substitutes in most settings. However, from a forward-looking perspective, the current lack of substitution might have to be re-assessed in the light of the announced widespread introduction of LTE technology, the pace of which will vary across Member States. LTE is expected to improve the bandwidth achievable through mobile connections, therefore – all else remaining equal – bringing it closer to the bandwidth offered by fixed broadband[45]. The extent to which it does so may vary between Member States and between sub-national regions (e.g. rural, suburban and urban) according to factors such as the spectrum available, territorial coverage obligations, density of networks and intensity of demand for a given cell's shared-resource capacity. On the other hand, fixed infrastructures are also expected to evolve, probably most quickly in more densely populated areas, so it remains to be seen whether LTE will be able to offer comparable capacity and speeds as fixed infrastructures in a given area, and, if so, whether this will be done at comparable prices. Since inclusion of LTE in the retail mass market will depend on a number of factors, which

[45] LTE is expected to be capable of distributing video content, at least to handheld devices with small screens, supporting different QoS levels as well as broadcast and multicast services, which in turn enables operators to offer multi-play bundles, a factor which further adds to the finding of substitutability.

are likely to vary from country to country, or even from region to region, it is not possible to draw conclusions at EU level regarding their substitutability. NRAs are best placed to undertake such a substitutability analysis in their respective Member States or parts thereof.

When looking into supply-side substitutability, NRAs should analyse whether operators providing retail services to residential customers are (or could easily start) successfully offering similar services with higher assurance levels, or tailor-made high-quality services.

In addition to the product market definition, NRAs have to define relevant geographic markets within their territory, taking into account whether the mentioned infrastructures providing data access and related services have a national coverage or are only present in certain geographic areas. The section on geographic market definition provides more details in this respect.

Retail high-quality market

Residential customers tend to demand standardised interpersonal communications and content services (i.e. ability to use fixed/mobile telephony, have internet access and, increasingly, IPTV). Many non-residential customers may also demand quite standardized services. On the other hand, many business customers need more advanced and reliable services to link their business units and locations and allow for internal communication[46]. These services would typically be offered with high-quality service level guarantees, guaranteed availability and often symmetric up- and download speeds. As a result, a standardised, mass-market retail broadband product would usually not meet such requirements, even though some businesses would find their needs satisfied with such a product or would occasionally complement a high-quality product with mass-market offerings.

The retail high-quality market would, therefore, include a variety of products that are geared towards the specific needs of these individual customers. A high quality of service level, and guaranteed availability, sufficiently high upload and download rates, limited contention and range, for example, are important characteristics of these retail products. The typical services enterprises would seek are a high-quality, high-bandwidth connection to the internet with limited contention, additional desk support, short repair times, mobile connection for employees, IP telephony, data centres and back-up, and, in case of multi-site companies, dedicated, uncontended data connections between several nation-wide sites. Many business users would also demand a value-added service, for example, virtual private networks.

Those retail high-quality services are typically provided over leased lines or equivalent copper-based or fibre-based connections (e.g. LLU, Ethernet connections). Due to these high-end demands, the retail high-quality market is in the majority of Member States not expected to include services provided over wireless and cable platforms. However, in case services provided over alternative platforms (especially cable) would be able to meet the specific needs of business customers, such as dedicated capacity and symmetrical bandwidth, NRAs should analyse whether these services belong to the relevant market.

Typical customers that demand high-end products, such as large businesses with multiple sites, would prefer to purchase different services from a single supplier (one-stop shop, even in the case of sites in different Member States). However, certain business customers still prefer to unpick the bundle and buy these services not only separately but also from different

[46] This especially applies to large, multiple site businesses. It does, however, not exclude other non-residential customers, such as, for example, SMEs with more sophisticated needs.

operators. Dual connectivity over different infrastructures avoids the negative consequences of having a network failure, since in case one connectivity solution encounters problems, the customer can still rely on the other solution which is provided by a different supplier. It will be up to the individual NRA to specify whether in their respective Member State the high-quality retail market is a market for bundles and identify the services of which it consists. If that would be the case, the NRA needs to ensure that alternative operators are able to offer bundled services at retail level by having access at the wholesale level – on commercial or regulated terms - to all the relevant inputs, such as for example traditional interface[47] and Ethernet-based leased lines and to broadband access products which may differ according to the level of service, bandwidth and other characteristics.

Analysis of the retail markets

As explained in section 2.6, any analysis of a wholesale market must be preceded by an assessment of the competitive conditions on the related retail market absent regulation. If the retail market is not effectively competitive absent regulation, the NRA should then examine the most upstream wholesale market. In the case of data access and related services at a fixed location this would be the Wholesale Local Access market at a fixed location. If one or more operators hold SMP in any such wholesale market, the NRA should impose *ex ante* regulation.

After imposing regulatory remedies at the most upstream wholesale level, a "modified Greenfield approach" should be carried out at retail level in order to determine whether *ex ante* regulation of a more downstream market- in this case Wholesale Central Access- is necessary as well in order to remedy any remaining competition problem. In their analyses, NRAs should consider whether the remaining wholesale local access products would allow for a provision of competitive retail products that meet relevant retail demand of both residential and non-residential end-users.

Evidence gathered through the Article 7 procedure suggests that both retail markets described above, i.e. the mass market as well as the market for high-quality business products, would in general remain characterised by a lack of effective competition in the absence of wholesale regulation in particular where there is only a single fixed network capable of offering access to broadband nationwide. In that case, regulatory intervention at the wholesale level would be required to address the competition failures at retail level. Regarding the mass-market, in the absence of appropriate wholesale regulation the fixed incumbent would in principle be the only operator with a ubiquitous network, which means that in certain areas, where alternative platforms are not present, the incumbent could act as a monopolist, for example by charging excessive prices. With regard to the high-quality business-oriented retail market, the fixed incumbent would be even less constrained, due to the fact that services offered over alternative platforms would typically not be able to compete at retail level and offer products with characteristics such as dedicated capacity and symmetric bandwidth.

4.2.2. Wholesale inputs to fixed broadband access

Current situation and technological trends

In order for broadband access to internet and related data services to be supplied to an end-user at a fixed location, a suitable transmission channel is required that is capable of passing data in both directions and at rates that are appropriate for the service demanded. Therefore,

[47] Typically SDH/PDH and TDM based technologies.

any undertaking willing to provide broadband services to end-users has the choice to either build or establish such a transmission channel network or obtain access to an already existing infrastructure in order to reach the end-customer locations that are served.

Access to the network can theoretically be granted at several network levels and therefore network infrastructures are typically segmented into network access products that can each be potentially replicated by the access seekers. Full replication of the network access occurs with the building/establishment of the entire access transmission channel to an end-user location, i.e. the local access or local loop. Following a typical demand and supply substitutability analysis, networks access products may fall into different broadband wholesale access markets.

Since the last revision of the Recommendation, the replacement of traditional copper network access infrastructures by newly built fibre infrastructures has accelerated considerably and is expected to continue in the coming years, although at different pace across the Union. The transition from copper to fibre has already induced significant changes in the design of the network access products and therefore has a notable impact on the boundaries and choice of the relevant wholesale access products.

NGA rollout

The 2003 Recommendation identified two wholesale markets that were linked to the broadband retail market: wholesale unbundled access (including shared access) to metallic loops and sub-loops, and wholesale broadband access (WBA). The 2007 Recommendation followed the same logic in differentiating the two wholesale markets, on the basis of their product characteristics and by virtue of a demand and supply substitution analysis. Wholesale unbundled and broadband access products are primarily differentiated according to their physical and non-physical nature, the different level of flexibility they give in supplying the retail service, and by means of the location at which access is obtained. Hence, unbundled local loops (LLU) and sub-loops (SLU) are respectively supplied at the main distribution frame (MDF) and at the street cabinet (SC) and are physical network access products giving access seekers a greater flexibility and control over the retail broadband service offered to the end-user than wholesale broadband access (WBA) provided in the form of a non-physical bit-stream service, which can be provided at the MDF or at higher points in the network (such as regional or national interconnection points). However, in recent years, significant technology developments have had a strong impact on the availability of the most appropriate network access products and, as a result, on the boundaries of the wholesale access markets. With newly deployed Next Generation Access (NGA) network architectures, a differentiation between the traditionally physical unbundling and the traditionally non-physical WBA using the above-mentioned criteria has become less obvious.

FTTx deployment and DSL acceleration techniques

NGAs can be defined as access networks which consist wholly or in part of optical elements, and which are capable of delivering broadband access services with enhanced characteristics, when compared to those provided over already existing networks[48]. Copper or coaxial cable (CATV) networks are then gradually being upgraded to NGAs enabling a range of enhanced

[48] Commission Recommendation on regulated access to Next Generation Access Networks (NGA), 20.09.2010, OJ L 251/35.

broadband services[49]. Several fixed NGA network architectures are possible. Where a Fibre-to-the-Home/Fibre-to-the-Building (FTTH/B) network is deployed, the copper loop is removed and the optical fibre extends all the way from the MDF (or a newly built Optical Distribution Frame – ODF) to the subscribers' premises or in its vicinity, and where the only remaining copper product is the in-building wiring leading into the dwelling. In the Union, two main deployment topologies are currently being used for FTTH. A Point-to-Point (PtP) topology extends a dedicated fibre optic cable to each home from an aggregated exchange point and allows the access seekers to take a physically unbundled access product at the MDF/ODF while a Point-to-Multipoint (PtMP) topology, which is commonly used by Passive Optical Network (PON)-based technologies, shares the capacity of one fibre line among multiple households.

Where a Fibre-to-the-Cabinet/Very-high-datarate-Digital-Subscriber-Line (FTTC/VDSL) network is deployed, optical fibre extends from the local exchange to the street cabinet closest to the subscriber's premises, whereas the remaining part of the access network from the cabinet to the customer usually remains a copper wire. In addition to increased FTTC/VDSL roll-out, one can witness over the past few years in a growing number of Member States, the development and implementation of certain (V)DSL acceleration techniques. This technological development is aimed at increasing the maximum speed over copper twisted-pair cable and deliver enhanced broadband services comparable to the ones offered on other NGA infrastructures[50]. Although the conditions of the implementation of VDSL vectoring (e.g. relatively short local (sub-)loops, cable threat that may push SMP operators to use this technology) may vary within the Union, this technology is expected to become widely available and to play a major role in the coming years.

The implementation of (V)DSL acceleration techniques may, however, have an impact on the availability of wholesale access products. In particular, due to the technical limitations of the current generation of VDSL, vectoring technology falls short of delivering significantly higher bandwidths when copper access is granted in parallel at the street cabinet, which may lead NRAs to withdraw the copper SLU access obligation. Such a withdrawal may be found appropriate, justified and proportionate, in particular where there is little or no demand for SLU products and in light of the increased performance that end users (and access seekers) would benefit from through the deployment of VDSL vectoring. However, NRAs should take into account the ongoing technical developments that may in the future allow the mentioned technical limitations to be overcome, thereby enabling the presence of multiple operators at the same street cabinet and enabling copper SLU. Nevertheless, in circumstances where physical unbundling is not technically or economically feasible[51], in order to safeguard a strong service-based competition in cases where regulation is still needed and in order to

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49 Such services are typically encompassing voice, very high-speed internet connectivity, and both linear and non-linear high definition audio-visual content typically provided above 30 Mbits bandwidths. See Broadband coverage in Europe in 2011, Mapping progress towards the coverage objectives of the Digital Agenda (Point Topic, Study commissioned by the European Commission, 2012).

50 Technologies such as VDSL "vectoring", "pair bonding" or "phantoming" could enable download speeds higher than 100 Mbps. DSL vectoring aims at reducing the crosstalk between signals travelling down nearby copper pairs.

51 Recital 60 of the Directive 2009/140/EC of the European Parliament and of the Council of 25 November 2009 amending Directives 2002/21/EC on a common regulatory framework for electronic communications networks and services, 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities, and 2002/20/EC on the authorisation of electronic communications networks and services ("Better Regulation Directive").

avoid a situation of stranded assets, NRAs may consider that a non-physical wholesale access product (e.g. a virtual access) offering equivalent functionality to copper sub-loop unbundling should be provided over VDSL vectoring, at the MDF or at the street cabinet, where appropriate. According to Article 8 of the Access Directive, the imposition of the most appropriate remedy by the competent NRA should be based on the nature of the problem identified, proportionate and justified in light of the objectives of Article 8 of the Framework Directive.

Therefore, the implementation of DSL acceleration techniques has the potential to impact both the identification of the relevant network access components used to provide broadband services and the delineation of the wholesale access markets thereof.

As regards market definition, NRAs' analyses so far have not shown significant breaks in the chain of substitution when comparing current copper-based broadband services to those provided over optical fibre. Therefore, fibre-based access products (FTTN/VDSL and FTTH/B) are included in the physical local loop and sub-loop unbundling or in the WBA markets in view of the increasing availability of fibre networks and the prospective deployment plans of operators. However, close attention should be paid to the nature of the access products when conducting the substitutability analysis. The choice left to the operators of rolling out one or the other topology (according to the technological neutrality principle) bears important consequences. While NRAs have been able to mandate physical unbundling on an SMP operator's PtP network, physical unbundling capabilities are limited for PtMP networks. In particular, it is widely accepted that PON-based technologies do not, at this point in time, allow for a physical access and that the timeframe for a commercial use of any such unbundled access products (for example wavelength division multiplexing or WDM), which is currently in a standardization phase, remains uncertain. Furthermore, in specific circumstances, it may not be economically feasible (e.g. due to low density and lack of scale and scope economies) to provide unbundled access to the local loop or sub-loop[52]. Therefore, as long as physical unbundling is not possible or feasible in specific situations, experience under Article 7 shows that NRAs are imposing non-physical or virtual network access functionally equivalent to copper loop unbundling as a substitute to physical wholesale local access. Any such virtual local access must be distinguished from a more traditional bitstream-type access.

As a consequence, in an NGA environment, the delineation of the relevant wholesale access markets according to their physical and non-physical nature has become less evident, and the characteristics of the products traditionally used to differentiate the physical loop and sub-loop unbundling and WBA markets should be re-assessed.

Upgrade of coaxial-based networks

The upgrade of coaxial-based networks (CATV) to EuroDOCSIS 3.0 (enabling high bandwidths typically up to 100 Mbits) combined with some deployment of fibre closer to the end-user has already been taking place on a large scale in the Union while the next generation of standards, DOCSIS 3.1 (which is expected to deliver even higher bandwidths) is currently under development.

CATV upgrade bears important consequences for the assessment of competitive dynamics on the broadband markets. In order to be able to match the cable operators' offers, fixed telecoms

[52] Recital 60 of the Better Regulation Directive.

operators tend to upgrade their copper networks to NGAs primarily in the geographic footprint of the coaxial cable operators. Also, it has been observed - although this has occurred in practice in a very small number of Member States to date - that cable operators are now technologically able to make economically viable offers of some type of wholesale access products on a commercial basis. The question of the inclusion of such an infrastructure in the relevant wholesale broadband access markets at a fixed location should therefore be assessed carefully.

Need for re-assessing the product characteristics and boundaries of the wholesale broadband access markets

In the next years, the newly built NGA access networks coverage will grow and should profoundly alter the current wholesale broadband market structures. At the same time, it is expected that copper-based technologies will continue to play an important role in providing access to high-speed broadband services thereby extending the lifetime of copper access networks.

Against this background, access seekers would still rely, for the time being, on two different vertically related wholesale inputs to address the retail markets. Bitstream-type products and unbundled access and related fibre inputs are therefore expected to remain complements rather than substitutes. As a result, it is expected that NRAs will continue to define separate product markets for the two types of access, i.e. wholesale access markets upstream and downstream of each other.

However, the boundaries between the physical loop and sub-loop unbundling and the WBA markets are likely to be subject to change. Whilst acknowledging that such changes may vary between Member States and will depend on the type and degree of network investments realised and the speed at which such investment occurs, the demand and supply characteristics of the two wholesale broadband markets must be re-assessed.

In view of the emergence of non-physical (or virtual) access products, it seems no longer appropriate to rely on the distinction between physical and non-physical access in order to draw the market boundaries between the different types of wholesale access products available to provide retail broadband services. Given the technological developments described above, it seems more appropriate to differentiate between those wholesale products functionally replicating the key features of traditional physical and local unbundling access (with such products potentially being delivered as non-physical or virtual products) from other forms of access.

Several key characteristics of the products should be assessed in order to distinguish the two wholesale products.

The first key characteristic relates to the actual location of the point of handover. Wholesale access provided locally (i.e. when the traffic is handed over at a level closer to the customer premises than the national or regional level) can be differentiated from access provided to the access seekers at a higher network level, i.e. more central in the network architecture (for example at regional and/or national hand over points). Local vs. non local access is therefore an important distinguishing factor.

The second key characteristic concerns the topology and core transmission features of the wholesale products, in particular regarding network contention[53]. Some products are contended in nature and enable access seekers to provide standardised retail services supporting limited features while others exhibit characteristics closer to the feature of LLU products, which is a generic access service providing access seekers with a service agnostic transmission capacity uncontended in practice, i.e. providing guaranteed bandwidths according to the access seekers' needs whereby respective access requests are subject to the principle of proportionality, and would normally not require the SMP operator to deploy new physical infrastructure.

The third key characteristic concerns the degree of flexibility the network control leaves to the access seekers for differentiating its retail offers. In this regard it is important to assess for each wholesale access which network elements and ancillary inputs (e.g. customer premises equipment) remain in the full control of the SMP operator and which ones are in the control of the access seekers.

To reflect this change, for the purposes of this recommendation, NRAs should differentiate between the "Wholesale Local Access at a fixed location" (WLA) market (encompassing access products enabling the access seekers a greater and more flexible control over the access lines) and the "Wholesale Central Access at a fixed location" (WCA) market (encompassing access products enabling access seekers a less direct and more standardized control over the access line).

4.2.2.1. Wholesale Local Access at a fixed location

Relevant product market

At present the WLA market primarily consists of physical or passive access products enabling transmission of internet and related data services[54]. Copper loop unbundling (LLU) and copper sub-loop unbundling (SLU) – although on a limited scale – are still the most relevant access products used throughout the Union.

So far experience under the Article 7 procedure has not shown significant breaks in the chain of substitution when comparing current-generation broadband services to those provided over optical fibre. Therefore, access to a FTTH, FTTB or FTTC/VDSL (either point-to-point or point-to-multipoint) network should be considered as functionally equivalent to traditional copper LLU. In this respect, NRAs should include in the WLA market all access products available at the physical layer in a point-to-point FTTH architecture, in a point-to-multipoint FTTH architecture or in FTTC/VDSL scenarios (e.g. ODF unbundling access, cabinet unbundling access, access to the terminating segments at the concentration/distribution points).

The identification of the access inputs falling in the WLA product market should be forward-looking. Therefore, NRAs are required to take into account when defining their relevant WLA market the availability of access inputs under development. In particular, in a PON scenario,

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53 Network contention generally refers to network capacity constraints when the demand for guaranteed bandwidth exceeds the total available capacity. Network contention may affect services in different ways, e.g. it may slow down the service or creates loss of packets deteriorating quality of the voice or video services provided.

54 Note however, that it is not justified in principle to include civil engineering infrastructures in the market given their lack of substitutability with access transmission products. Access to such an infrastructure can nevertheless constitute an ancillary service remedy on the WLA market.

no physical wholesale access products at the ODF are available yet for mass-market servicing. Should such products, enabling the alternative operators to provide unbundled lines on a user-by-user basis (for example WDM), become standardised and commercially available in the timeframe of this Recommendation, NRAs should prospectively include them in the relevant product market.

Furthermore, the identification of access products belonging to the WLA market is without prejudice to the NRA's discretion to impose the most proportionate and justified remedies pursuant to Article 8 of the Framework Directive. In this respect, Article 7 practice shows that physical unbundling is usually considered to be the most adequate access remedy, as it ensures alternative operators' ability to differentiate their retail offers and innovate. It is therefore expected that NRAs will continue mandating physical unbundling in market 3a. However, in situations where fibre physical unbundling is not technically or economically feasible or where the implementation of SLU unbundling would impede the realisation of the full benefits of VDSL2 vectoring (see section 4.4.2.2), NRAs have been mandating virtual access products as a more proportionate remedy without prejudice to future technological developments which may allow physical unbundling under appropriate conditions.

Against this background, it appears appropriate also to include access based on non-physical or virtual products in the WLA market when they exhibit functionalities equivalent or comparable to the key features of physical unbundling.

In this respect, any such non-physical or virtual wholesale access products should be presumed to be part of the WLA market when the following conditions are cumulatively fulfilled, i.e. where their functionalities are comparable to those of LLU as regards the parameters of relevance to access seekers:

- Access occurs locally. This means that traffic is handed over at a level which is much closer to the customer premises than access at the national or regional level as generally granted with traditional bitstream access. Such "localness" is typically given in a scenario where access is granted at or close to the central office/MDF (including newly built ODF) or the street cabinet[55]. However, while the virtual access product should aim to replicate LLU effectively, the number of interconnection points does not necessarily need to be equivalent to the copper network's points of interconnection.
- Access is generic and provides access seekers with a service-agnostic transmission capacity uncontended in practice, i.e. providing guaranteed bandwidths according to the access seekers' needs, whereby respective access requests are subject to the principle of proportionality, and would normally not require the SMP operator to deploy new physical infrastructure[56]. Uncontended access requires in principle the establishment of a dedicated logical connection between the customer facilities and the point of handover. The technical features of the connection (backhaul connecting the street cabinet and central office and capacity dimensioning in particular) should only be limited by the inherent capabilities of the access technologies deployed and support LLU-like services (e.g. multicast where appropriate).

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55 At Layer 2 of the International Standard Organisation seven layer model for communications protocols ('Data Link Layer').

56 Cf. Case C‑556/12 *TDC A/S v Teleklagenævnet*, judgement of 19 June 2014, not yet published.

- Access seekers need to have sufficient control over the transmission network to consider such a product to be a functional substitute to LLU and to allow for product differentiation and innovation similar to LLU. In this regard, the access seekers' control of the core network elements, network functionalities, operational and business process as well as the ancillary services and systems (e.g. customer premises equipment) should allow for a sufficient control over the end user product specification and the quality of service provided (e.g. varying QoS parameters).

Moreover, in order to identify precisely the boundaries of the WLA market, NRAs should, in line with competition law principles, assess the constraints stemming from CATV and from other platforms (e.g. LTE) providing services on the retail broadband market. In the absence of existing or potential CATV-based wholesale access, NRAs should nevertheless assess indirect constraints stemming from CATV and other platforms. However, experience under the Article 7 procedure has shown that, given the technical limitations of cable operators concerning the provision of wholesale access at local level on a scale which is comparable to copper or fibre-based network operators, such constraints are at this moment unlikely to be strong enough to constrain the pricing of WLA products at national level or even at sub-national level. However, from a forward-looking perspective and in view of the different patterns of CATV rollout and upgrade (e.g. to DOCSIS 3.1) in the Union, NRAs should continue assessing their substitutability, with regards to a possible inclusion in the WLA market. Regarding the services provided over LTE, it cannot be ruled out that they could prove sufficiently substitutable to fixed wholesale local access services. However, it is questionable that this evolution will happen in the given timeframe.

Three criteria test

In the large majority of Member States, the WLA market is characterised by the existence of only one infrastructure capable of offering local access products on a national scale. Given the high sunk costs and the time needed for any potential entrant to replicate the infrastructure of such a ubiquitous access network, the entry barriers in this market should be considered to be high and non-transitory. In addition, given the small number and often limited geographic reach of competitors operating their own alternative infrastructure it is unlikely, that without continued regulatory intervention, the competitive dynamics in this market will change significantly on a national scale over the foreseeable future. Fixed networks based on alternative technologies such as CATV are likely to remain limited both in terms of geographic coverage provided and availability of wholesale access products, which are substitutes for traditional WLA access products. Therefore, in the absence of direct constraints and, even though it is not excluded that indirect constraints become more significant over time, it is not expected that effective retail competition will be generally ensured in the absence of wholesale regulation. Last but not least, given the crucial importance to guarantee effective and timely network access, *ex post* competition law alone is not yet able to address such entrenched access bottlenecks. As a result, the complementary use of *ex ante* regulation appears indispensable, at least for the time being. The three criteria test therefore continues to be met for the WLA market.

Potential lifting of regulation on a geographic basis

The fact that the WLA market would in general pass the three-criteria-test is however without prejudice to specific competitive scenarios, which may justify the lifting of regulation in the WLA market, either on a national, or – more likely – on a sub-national basis.

In some Member States infrastructure or inter-platform competition is more advanced, although not always necessarily throughout the whole country. Here, the rollout of new NGA networks in parallel to the legacy copper network and the impact of upcoming technologies (in particular DOCSIS 3.1 and LTE deployment, as they materialise) could result in significant competitive constraints. However, the coverage of such alternative infrastructures is often regionally limited (or, in the case of LTE, the degree of competitive constraint it imposes may vary geographically). As a result, the competitive conditions in the WLA market may vary considerably across the territory of one Member State. This means that in Member States with a higher degree of inter-platform competition, in particular in areas where penetration of alternative infrastructures is high, an analysis of the relevant variables of competitive conditions in different parts of the country may be warranted. In such circumstances, NRAs should assess whether there is a case for defining separate sub-national (relevant) geographic markets and assess whether regulation should be lifted for particular geographic areas.

As has been set out in section 2.5 above, in conducting a sub-national market analysis, established practice under Article 7 states that NRAs when choosing a (sub-national) geographic unit, as the basis of their assessment must ensure that these units are (a) of an appropriate size, i.e. small enough to avoid significant variations of competitive conditions within each unit but yet big enough to avoid a resource intensive and burdensome micro-analysis that could lead to a fragmentation of markets, (b) able to reflect the network structure of all relevant operators and (c) have clear and stable boundaries over time. In the case of inter-platform competition, it is likely that the relevant geographic units are related to the geographic coverage of the competing alternative infrastructures. It is not excluded that administrative boundaries may serve as an appropriate proxy for the geographic analysis, if an NRA is able to show that competitive conditions are sufficiently homogenous within and appreciably different outside the chosen area.

Following the delineation and a first assessment of the competitive situation in such units, the NRA should aggregate those units with largely homogenous competitive conditions in the same geographic markets and then assess further whether the competitive conditions in each sub-national market warrant the imposition of *ex ante* regulation.

The natural starting point for any such sub-national market analysis of the WLA market are the competitive constraints at the retail level, which may exist absent regulatory intervention on the wholesale level. As has been set out more generally above in section 2.5 NRAs should look at a minimum at supply-side and demand-side substitution, including the number and size of alternative operators offering related retail services in a particular geographic area, the local / regional development of retail market shares and any pricing and price differences across geographies.

If an NRA can conclude that, absent regulation at the WLA market, the retail market(s) display(s) sustainable competition in a defined geography, it should lead the NRA to conclude that regulation is no longer needed at the wholesale level. As a result, the NRA should de-regulate the WLA market in this geography.

4.2.2.2. Wholesale Central Access at a fixed location (to provide mass-market services)

Relevant product market

Compared to WLA access products, WCA access products are typically provided to the access seekers at a higher and more central layer in the network architecture[57], and can be used to provide best-effort retail services to both residential and non-residential customers. It remains likely that there is a chain of substitution between copper DSL-based bitstream services[58] and fibre-based bitstream services provided over FTTH and FTTC/VDSL networks in the near- to medium-term future.

Therefore, where several non-physical access products are offered along the value chain, the key characteristics of such non-physical or virtual access products should be assessed in order to draw clear boundaries between the WLA, the WCA, and the high-quality access market. In this regard, access products (even point-to-point) offering a best-effort quality of service, no availability guarantees, a higher contention ratio, no symmetrical speeds and resilience, allowing access seekers to provide only standardised retail services or services supporting limited features, or which leave reduced possibilities for access seekers to differentiate their retail offers due to their limited control over the network (and the ancillary services and systems), should be presumed to fall into the WCA market. This market could also include non-physical or virtual access products with an improved quality of service, which could be used as an input for the provision of retail products for non-residential customers, as long as these do not fall within the boundaries of the wholesale high-quality access market, as outlined in section 4.2.2.3.

Further on, the question arises whether access provided over other network platforms should be included in the relevant WCA market. In this regard, NRAs should assess in particular potential constraints stemming from CATV and mobile networks (particularly LTE, whose coverage is expected to increase rapidly in the Union), if retail services and bundles provided over these infrastructures have been found substitutable at retail level[59].

When a commercial wholesale offer is provided or could technically and commercially be provided over CATV networks, NRAs should first assess whether such an access is substitutable to a copper-based or fibre-based WCA product. Simple resale of broadband connectivity over CATV networks should not be included in the WCA market. An access product which represents a functional substitute of copper and fibre-based bitstream should only be included if it creates sufficiently strong direct constraints. In order to include a CATV-based wholesale access offer in the market NRAs should, therefore, analyse whether a potential entrant into the retail broadband market would switch to a CATV-based WCA product in case of a SSNIP test of the other WCA product. In this assessment, the configurations of the broadband services (e.g. QoS, multicasting), the potential coverage provided (i.e. given the limited footprint of CATV, broadband services may be handed over to ISP at national level only), as well as pricing are determinant.

In the absence of existing or potential CATV-based wholesale access, NRAs should nevertheless assess indirect constraints stemming from CATV and other platforms in order to identify the precise boundaries of the WCA market. If there is competitive pressure stemming from alternative platforms at retail level, such platforms should be included in the WCA market if the following conditions are met: (i) access seekers would be forced to pass a hypothetical wholesale price increase onto their consumers at the retail level based on the

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57 At layer 3, i.e. typically referring to regional and national hand over points.

58 For example, ADSL, ADSL2, ADSL2+, and VDSL.

59 It is unlikely that constraints stemming from Wifi and WiMax networks, due to their limited capacity and typically limited geographic scope, would constrain the copper/fibre fixed access network provider.

wholesale/retail price ratio; (ii) there would be sufficient demand substitution at the retail level based on indirect constraints such as to render the wholesale price increase unprofitable; and (iii) the customers of the access seekers would not switch to a significant extent to the retail arm of the integrated hypothetical monopolist, in particular if the latter does not raise its own retail prices. When the above-mentioned criteria are fulfilled, constraints should be deemed to be strong enough so that the platform concerned is included in the market. When indirect constraints are found to exist but are not strong enough to constrain the price of other WCA products, they should be taken into account when assessing whether the incumbent operator has SMP on the relevant market, as well as alternatively in the assessment of the appropriate remedies.

Experience under the Article 7 process has shown that in a growing number of Member States direct or indirect constraints stemming from CATV-based WCA offers do exist, though occurring generally at an infra-national level (given the lack of ubiquity of the CATV networks). Given the upgrade of CATV to DOCSIS 3 which is expected to continue, it may become increasingly appropriate to include CATV bitstream in the relevant product market, especially when sub-national geographic markets have been defined.

The existence of indirect constraints from other technologies (especially mobile) will depend to a large degree on the expected timeframe of deployment and envisaged coverage of LTE relative to the expected deployment of fixed NGA networks. At this stage, however, it is not expected to have a notable impact on the boundaries of the WCA market.

Three criteria test

WCA products are typically provided by alternative operators using their own infrastructure or by relying on an upstream access product (for copper LLU or fibre-based equivalents). Experience under the market analysis and Article 7 notification procedures so far has indicated that in the majority of Member States the WCA market still exhibits, on a national scale, high and non-transitory entry barriers and is not expected to tend towards competition. This is due mainly to (a) at times slow take-up of LLU access products, (b) the lack of ubiquity of LLU-based entrants, which are not expected to provide their services on a national scale in the foreseeable future due to the strong economic disincentives to unbundle local loops or take up equivalent local access products in low-density and rural areas and (c) the lack of the presence of alternative infrastructure with nationwide coverage. As a result only one single infrastructure is usually – at least on a national market scale – able to offer wholesale central access and in view of this monopolistic market structure, and as a result, competition law alone is not expected to be able to address sufficiently the market failures identified for the WCA market. The three criteria test is therefore met for the WCA mass-market.

Potential lifting of regulation on a geographic basis

However, as mentioned already for the WLA market, the fact that the WCA is, in principle susceptible to *ex ante* regulation is without prejudice to specific national or sub-national competitive scenarios, which may justify the non-imposition or withdrawal of regulation in the WCA.

In light of the fact that competitive constraints in the WCA may result from alternative infrastructures (see above section 4.2.2.1 for more on the competitive effects of inter-platform competition) as well as from effective wholesale access remedies in the WLA market, the market for WCA may be in some Member States a potential candidate for (partial) de-regulation. The principles to be applied by NRAs in order to establish whether the regulation

can be lifted are similar to the ones discussed in relation to the WLA market. This means that an NRA should assess, starting from an analysis of the retail level, whether the competitive constraints stemming from either inter-platform or intra-platform competition are, absent regulation in the relevant wholesale market, sufficient to release the WCA market from regulation. If competitive conditions so suggest, this assessment should also be carried out on a sub-national level.

In addition to what has been set out above for the WLA market, the NRA should, therefore, also take into account the competitive pressure resulting from the take-up of wholesale access products in the upstream WLA market (e.g. LLU or VULA). Whilst in theory the resulting competitive conditions may be homogeneous across the entire territory of the Member State, the variations in take-up of access products as well as in the coverage of alternative infrastructures may often be significant enough so as to warrant a geographically varying approach. As a result, NRAs should assess also for the WCA markets whether there is a case for defining separate sub-national relevant geographic markets and assess whether regulation could be lifted for particular geographic areas.

Whilst the same principles for any such geographic market analysis apply for the WCA market as have been described above for the WLA market, a different choice of geographic units may be appropriate, given the potentially different sources of competitive pressure. While the geographic units still need to meet the general criteria set out above[60], in market situations where the competitive pressure largely results from strong intra-platform competition, for example through an effective LLU remedy, the most appropriate unit to be looked at may be the local exchange/MDF. In this case, the variations in geographic areas at the retail level will depend on the degree of competition exercised by LLU operators, which is ultimately related to the incumbent operators' local exchange footprint. The assessment of the most appropriate unit to analyse may change, the stronger inter-platform competition becomes. Depending on the specific situation in the Member State with the emergence of stronger inter-platform competition it may ultimately be more appropriate – similar to what was set out in relation to the WLA markets – to rely on the alternative operator's network topology or even administrative areas as the most appropriate proxy for a geographic analysis, as long as an NRA is able to show that competitive conditions are sufficiently homogenous within and appreciatively different outside the chosen area.

Following the market delineation and a first assessment of competitive situation in the chosen units, the NRA should then conduct an aggregation of all those units with largely homogenous competitive conditions into the same geographic markets. This is to be followed by a further assessment of the competitive conditions in each sub-national market to see whether the imposition of *ex ante* regulation is still warranted.

The following geographic market analysis should be undertaken pursuing the same principles as have been set out above. This means that starting from the competitive constraints on the retail level, NRAs should look at a minimum at supply-side and demand-side substitution, including the number and size of alternative operators offering related retail services in a particular geographic area, the local / regional development of retail market shares and any pricing and price differences across geographies.

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60 This means that the geographic units should be (a) of an appropriate size, i.e. small enough to avoid significant variations of competitive conditions within each unit but yet big enough to avoid a resource intensive and burdensome micro-analysis that could lead to a fragmentation of markets, (b) able to reflect the network structure of all relevant operators and (c) have clear and stable boundaries over time.

If an NRA can conclude (following a "modified Greenfield approach") that, absent regulation on the WCA market, the retail market(s) display(s) sustainable competition in a defined geographic area, it should lead the NRA to conclude that regulation is no longer needed at this wholesale level. As a result, the NRA should de-regulate the WCA market in this geographic area.

Conclusion

Given the link between the retail mass-market and the two corresponding input markets identified in this Recommendation and also the varying ways in which supply and demand characteristics could evolve over the coming period (and the speed at which they take place), it is proposed to identify two relevant markets as being susceptible to *ex ante* regulation as follows:

- *Wholesale Local Access at a fixed location;*
- *Wholesale Central Access at a fixed location for mass-market products*

The point in the network at which the demand and supply of either of these separate markets is defined will depend on the market analysis and in particular on the network topology and the state of network competition. Although these two wholesale markets remain distinct it is recommended that they are analysed together.

4.2.2.3. Wholesale high-quality access

Relevant product market

As discussed in the previous section, an analysis of the general market conditions and demand side both at retail and wholesale level across the Union suggests that mass-market and business demand differs significantly. To be able to meet the demand of retail business customers for high-quality access and, very often, connect their multiple sites (including cross-border), alternative operators use a number of different wholesale inputs, ranging from leased lines using traditional or alternative interfaces, independently of the underlying infrastructure, to other wholesale access products which fulfil certain quality characteristics.

The distinguishing product characteristics of leased lines are their ability to provide dedicated, and uncontended connections, and symmetrical upload and download speeds. Leased lines may be provided using a range of technologies. Legacy options (so-called "traditional" interface leased lines) include low-bandwidth analogue leased lines and digital lines at a wide range of bandwidths, for example, via SDH/PDH or TDM-based technologies. These are usually point-to-point connections. Increasingly, leased lines are offered over Ethernet-based technologies, allowing more flexibility, normally at a lower cost, and can be both PtP and PtMP. Ethernet-based leased lines, in particular carrier-grade Ethernet with larger frames, have been found substitutable to legacy traditional leased lines in most Member States.

What constitutes precisely a terminating segment of a leased line will depend on the network topology specific to a particular Member State. Most Member States have defined terminating segments of leased lines as the part between end-users' premises and the closest exchange of a service provider. However, a clear distinction between the terminating and trunk segment is important as the market for wholesale trunk segments of leased lines has been removed from the list of markets susceptible to *ex ante* regulation in the 2007 Recommendation. Nowadays, almost all Member States have deregulated this wholesale market for trunk segments. Therefore the presumption that trunk segments are replicable on a national scale remains valid. Consequently, NRAs should not revisit their analysis of trunk segments of leased lines

where these have been previously found to be effectively competitive. This assumption does not exclude, however, that individual NRAs might find that certain trunk routes fulfil the three criteria and thus warrant *ex ante* regulation.

Other, typically contended and asymmetric wholesale access products offered by a network owner to a wholesale access seeker over copper or hybrid infrastructures, can be regarded by access seekers as substitutes to leased lines, when they display certain advanced quality characteristics at the wholesale level, such as: (i) guaranteed availability and high quality of service in all circumstances including SLAs, 24/7 customer support, short repair times and redundancy, typically found in a services environment geared to the needs of business customers; (ii) high-quality network management, including of backhaul, resulting in upload speeds appropriate for business use and very low contention; (iii) the possibility to access the network at points which have been defined according to the geographic density and distribution of business rather than mass-market users; (iv) the possibility to offer separate Ethernet continuity (e.g. through an additional header allowing for several layers of virtual LANs).

Therefore, it appears appropriate, on a forward-looking basis, to define a wholesale market for high-quality access, which includes a wider range of access products necessary to fulfil the needs of business services providers (and ultimately large retail business customers) and which displays the service characteristics described above. These access products are not necessarily all direct substitutes of each other. However, they may still form part of the same market, provided they are in a so-called "chain of substitution". At one end, there are the terminating segments of traditional interface leased lines, which have been found substitutable to "carrier-grade" Ethernet services for all but the most demanding business applications. At the other end, users that can make some concessions on certain quality-of-services aspects could switch to a high-quality access service, which is not necessarily a terminating segment of a leased line. Nevertheless, as a result, the products we find at both ends of the chain belong to the same market as they are both constrained by the same product(s).

It is important to highlight that a market defined to include all wholesale products described by the above mentioned characteristics does not in any way prejudge NRAs' scope to decide on the most appropriate and proportionate remedy (or remedies) to be imposed on the SMP operator in order to address the identified competition problems on the market. In this respect, a question on the applicability of the Recommendation on non-discrimination obligations and costing methodologies[61] and the Recommendation on regulated access to Next Generation Access Networks (NGA)[62] could arise. These recommendations would in principle always apply to markets 3a and 3b. As to access products in market 4 which would have been previously regarded as part of market 5 of the 2007 Recommendation, this should be assessed on a case by case basis, and the outcome will depend on the actual patterns of substitution in market 4 identified in each geographic market. The applicability of the Recommendation on

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61 Commission Recommendation of 11 September 2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment (OJ L 251, 21.9.2013, p. 13). Point 5 of that Recommendation indicates that its principles apply to markets 4 and 5 of the 2007 Recommendation, or any markets susceptible to *ex ante* regulation identified by NRAs during a market analysis which substitute for these and cover the same network layers, including inter alia wholesale broadband access services provided over copper and fibre networks.

62 Commission Recommendation 2010/572/EU of 20 September 2010 on regulated access to Next Generation Access Networks (NGA), OJ L 251, 25.9.2010, p.35, hereinafter NGA Recommendation. Point 3 of this Recommendation refers to markets 4 and 5 of the 2007 Recommendation.

non-discrimination obligations and costing methodologies will also depend on whether the competitive dynamics underlying the Recommendation (e.g. competitive constraints from regulated copper access or other infrastructures) can be observed to a material extent in market 4 in the specific circumstances.

The business retail market is characterised by considerable divergent national conditions. It is therefore for the NRAs to ascertain whether any breaks in the chain of substitution can be observed. Following the 2007 Recommendation, a large number of NRAs has segmented the regulated leased lines market according to bandwidth. This division was warranted in order to take into account the fact that lower-bandwidth leased lines are no longer attractive to new entrants who prefer to focus their infrastructure investments on the more profitable, high-speed leased lines. Consequently, the market for high-speed leased lines was found competitive in a number of Member States. It is expected that such distinctions in the competitive conditions should remain a point of consideration for NRAs. National regulatory authorities should, however, keep in mind that the competitive conditions in the high-bandwidth segment may vary depending on the geographical area – more precisely, the density of business or other large customers. As a result, NRAs should be aware of the fact that when assessing the competitive conditions on a nationwide basis a larger presence of alternative operators in a limited number of dense business areas may have a significant effect on the market shares observed nationwide without necessarily allowing those alternative operators to provide competitive offers nationwide for multiple site contracts, which include connectivity for more remote sites. Such a phenomenon, if observed, could be addressed by a geographic segmentation of the market (see also below).

An issue related to the definition of the wholesale high-quality access market is whether *ex ante* regulatory intervention is required in a market for access to backhaul (distinct from the market for access to fixed networks) in order to facilitate or enhance the competitive provision of services. For instance mobile operators increasingly need access to fixed passive infrastructures (i.e. civil engineering including ducts and dark fibre) to develop mobile backhaul solutions in order to offload increasingly data-intensive services from their respective mobile networks. Moreover, regulated backhaul (outside the market for access to fixed networks) could also help to facilitate the extension of the network of competitors to enable the use of LLU and to improve more operational access to independent FTTx networks in remote areas.

However, to date, experience under the Article 7 procedure has not shown that there is enough evidence to suggest that there is a generalised market failure and that therefore access to regulated backhaul services through the definition at EU level of a separate market is essential to ensure competition in the above-mentioned scenarios. NRAs may however consider and analyse whether the provision of wholesale leased lines or equivalent inputs in the wholesale high-quality market is able to provide, for instance in remote areas, a connection to mobile stations and between the co-located equipment and the accessing operator's core network[63].

As a result, it does not appear, *a priori*, necessary to include a new market for passive access to backhaul infrastructures in the list of markets susceptible to *ex ante* regulation. This does not, however, exclude the possibility for NRAs to identify specific competitive problems on

[63] This does not in any way prejudge the NRAs' ability to consider, where justified and proportionate and where wholesale access to terminating segments of leased lines alone does not address the competitive concerns identified for the provision of high-quality business connectivity, mandating ancillary services such as dark fibre or duct access in the backhaul segment in order to promote effective competition.

the basis of national circumstances and define a separate market for passive access to backhaul infrastructure provided it meets the three criteria test.

Three criteria test

In the large majority of Member States, the relevant wholesale market is characterised by the existence of only one infrastructure capable of offering – on a nationwide basis – the full range of services described above, although this conclusion largely depends on whether submarkets, for example according to capacity, have been defined. Given that only the former incumbent usually has a ubiquitous access network, the entry barriers in this market remain high and non-transitory also in light of the investments and time needed for duplicating such an infrastructure. Absent regulation in this market, alternative operators would not be able to duplicate the incumbent's offer at retail level, as it might have to resort to either a more expensive solution or offer a product which does not satisfy the high-quality requested. The competitive dynamics are not expected to change on a national scale in the short to medium term, since even the development of alternative technologies such as cable TV or LTE would not be able to constrain the incumbent, as these are not currently capable of offering high-quality ubiquitous services in the majority of Member States. However in areas where cable operators can or will be able to meet to high-quality demands, any constraints stemming from such offers should be taken into account. Finally, the inability of *ex post* competition law to address the market failures identified in a sufficiently timely and efficient way makes *ex ante* regulation indispensable in the short to medium term. The three criteria test is therefore met for the Wholesale high-quality market at a national level.

Potential geographic segmentation

As for the geographic market definition, at retail level, companies with multi-site presence in the Union see an increasing need of having services provided across several Member States. However, at the wholesale level the access markets are likely to remain national in scope, given that on the supply side, the relevant access networks tend to be controlled by one operator with a ubiquitous national presence.

Nevertheless, experience under the Article 7 procedure has shown that there is a small but increasing number of Member States, in which the NRA justifiably has identified heterogeneous competitive conditions within the territory of its Member State leading it to conclude that there are sub-national markets. Given that the delineation of such geographic markets depends to a very high degree on the network reach of the incumbent and of alternative operators with their own infrastructure, and on the ability of competitors to reach and connect business sites, it seems more difficult to draw general conclusions as to the correct way of identifying sub-national markets for this type of products than in the WLA or WCA context. This is not to say, however, that where the NRA is able to identify appropriate geographic areas (taking into account the general considerations on geographic market delineation set out further above and, in particular the network reach of alternative operators, i.e. the general presence of duplicate infrastructure near business sites) with sufficiently heterogeneous competitive conditions, it can delineate such sub-national markets and introduce varying degrees of regulatory intervention (or even de-regulate certain defined geographies).

5. TRANSITION TO THE NEW RECOMMENDATION

The transition between editions of the Recommendation raises issues for all stakeholders. The underlying principle is that remedies that have been imposed should stay in place until a new

market analysis is undertaken. Allowing a regulatory measure or remedy to run its course, without risk of it being reversed mid-term, is an important element of regulatory commitment which reinforces the predictability of regulatory intervention.

However, NRAs should prepare in time for the new round of market analyses following the adoption of the revised Recommendation. Article 16(6) of the Framework Directive obliges NRAs to carry out an analysis of the relevant market and notify the corresponding draft measure in accordance with Article 7 within three years from the adoption of a previous measure relating to that market. Article 16(6) also stipulates that for markets not previously notified to the Commission, NRAs need to carry out an analysis and notify it within two years from the adoption of a revised Recommendation on relevant markets. Each of the markets in the current edition of the Recommendation corresponds to a market present in the 2007 edition. Therefore, NRAs should continue to apply a three-year market review cycle[64] if they have previously conducted a notified market analysis on the basis of the 2007 Recommendation. For the sole purpose of assessing the expiry of the three-year period mentioned in Article 16(6)(a) of the Framework Directive, NRAs should consider that market 1 corresponds to market 3 of the 2007 Recommendation, market 2 corresponds to market 7 of the 2007 Recommendation, market 3a corresponds to market 4 of the 2007 Recommendation, market 3b corresponds to market 5 of the 2007 Recommendation, and market 4 corresponds to market 6 of the 2007 Recommendation.

In accordance with Article 16(3) of the Framework Directive, when an NRA withdraws remedies imposed as a result of a market analysis, an appropriate period of notice shall be given to parties affected by the withdrawal of such obligations. Where no SMP is found in a market which is no longer included in this Recommendation, NRAs have no obligation to further review that market. Conversely, in order to justify continued imposition of regulation on markets not identified in this Recommendation, such markets must be made subject to the three criteria test and, subsequently, to a market analysis.

The circumstance may arise that an NRA is in the process of conducting a market review, including a public consultation in accordance with Article 6 of the Framework Directive, at the time when the Recommendation is adopted. If the NRA is considering the regulation of a market which is no longer included in the current edition of the Recommendation, then that NRA should apply the three criteria test in order to assess whether on the basis of national circumstances that market would still be susceptible to *ex ante* regulation. Therefore, the notified draft decision should outline and justify why the three criteria are satisfied. On the other hand, if the NRA is considering departing from a market definition as set out in the current edition of the Recommendation, its notified measure should contain a reasoned explanation of why this is appropriate in national circumstances, including in instances where the proposed market definition corresponds to the 2007 Recommendation. Finally, if an NRA notifies to the Commission a draft decision that reflects the market definition(s) set out in this Recommendation, having already conducted a public consultation on the basis of the market definition(s) set out in the 2007 Recommendation, the mere adoption of this Recommendation should not *per se* require that NRA to conduct a new public consultation.

[64] Subject to the exception applicable to new Member States set out in Article 16(6)(c).

6. PUBLICATION OF THE RECOMMENDATION AND SUBSEQUENT REVISION

Article 15 of the Framework Directive mandates a regular revision of the Recommendation. The length of the review period will depend first of all on the speed and significance of market developments, especially if they lead national regulatory authorities to gradually find retail markets competitive even in the absence of wholesale regulation. Moreover, timing of the next revision needs to take into account the need for predictability and legal certainty for all market players, as well as the length of the market review period followed by NRAs, which should normally be three years.