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ANCOM's Strategy for Digital Communications up to 2020

- Discussion paper -

September 2015

Purpose of the document

This document is a guide for discussion and represents the starting point of a dialogue between the National Authority for Management and Regulation in Communications of Romania (ANCOM) and all the entities interested in the future of the electronic communications sector in Romania. The pages below present the main elements identified by ANCOM in its initiative of prospective strategic analysis to ensure the competitive functioning of digital communications in Romania, to the end-users' benefit. It is the first step of an analysis and of a dialogue meant to outline a vision for the period 2016-2020, and to frame the priorities and define the directions of action for ANCOM's roadmap.

The publication of this document is the onset for an open and interactive public consultation: ANCOM aims at having a real dialogue and an active debate in order to find the opinions, ideas and suggestions of all the stakeholders in the realm of digital communications: residential and business users, network providers, service and online content providers, experts and consultants, associations and organisations, as well as public institutions and decision makers in designing policies with an impact on the level of digital communications.

The public consultation on this document will run from 29 September to 3 November 2015. Please send your contributions for consultation [here](#), by e-mail to consultare@ancom.org.ro, by mail or directly to the Registry office in 2 Delea Noua Street, 030925 Bucharest 3, Romania.

Moreover, in order to stimulate discussions on the real perspectives of the users, this public consultation runs in parallel with focus-group meetings with various social and economic categories of communications users, members of the academia, students, specialised personnel in the field and public institutions employees.

The contributions resulted from this public consultation will be presented and discussed during a [public event](#) on 17 November 2015. Registration is open [here](#), until 3 November 2015.

ANCOM's strategic analysis initiative will continue with a position paper to be publicly consulted in Q I 2016, thus enabling the completion of a strategy document in the first half of 2016.

CONTENTS

1. Introduction	4
2. ANCOM Mission	5
3. Evolutions & trends up to 2020	6
3.1. Demand and services	6
3.2. Networks and equipment	8
3.3. Operators	10
3.4. Perspectives in legislation and regulations	11
4. Strategic priorities for 2020	13
4.1 Promoting competitive networks	13
4.2 Maximising availability of services	15
4.3 Capitalizing the benefits of IP	16
5 Main action directions	18
5.1 Towards an increasingly symmetrical regulation	18
5.2 Adjust to increasingly shared networks	20
5.3 IP interconnection for voice services	22
5.4 Adapting numbering regulations	24
5.5 Improving licensing processes	26
5.6 Improving spectrum planning and use	27
5.7 Stimulate service demand	29
5.8 Coverage requirements in the licences for the use of radio frequencies	32
5.9 Extending network coverage by reducing TUS	32
5.10 Net neutrality benefits	35
5.11 Broadband internet access – a universal service?	36
5.12 Network and service resilience and security	37
5.13 Equipment market surveillance	39
Annex 1 – Strategy diagram	41

1. Introduction

The National Authority for Management and Regulation in Communications of Romania (ANCOM) promotes competition in the Romanian electronic communications market, ensures the efficient management of radio frequencies and numbering resources, with a view to protecting and promoting the electronic communications users' interests and to stimulate investment and innovation. Moreover, ANCOM is a control and surveillance authority of the radio equipment market and in the field of essential requirements regarding electromagnetic compatibility. In pursuit of keeping focus on the key objectives of their mission, despite the complex array of interests, laws, regulations and rules involved, ANCOM's specialists regularly turn to the public in order to ensure the optimum direction of market evolution and that ANCOM's interventions effectively target real problems.

The context in which ANCOM launches this strategic analysis process is a propitious one, since, on the one hand, it follows the recent adoption of critical sector policies and strategies both on the national¹ and on the European² level, as well as the completion of the text for the Regulation on a Connected Continent³ and – on the other hand – it runs side-by-side with the debates on the review of the European regulatory framework for this sector⁴ and with the transposition in the Romanian legislation and implementation of significant impact European measures⁵. Moreover, the third review of the European Commission Recommendation 2014/710/EU⁶ adopted at the end of 2014 allowed the capture of the competitive gains acquired over the recent years and a fine tuning of the regulatory instruments to the latest developments in the electronic communications markets.

The strategic analysis is an opportunity to examine a wider set of issues regarding competition, innovation, investment, service availability and affordability, promotion of end-users' interests and end-user empowerment. This process complements the market analyses performed by ANCOM for *ex-ante* regulation purposes.

Such a process has already been performed for the postal sector, the sector strategic analysis in the postal services field for the period 2012 – 2016 being already published⁷ and will be subject to a separate review.

¹ For example, [The National Strategy for a Digital Agenda for Romania - 2020](#) and [The programme for implementing the National Plan for Next Generation Networks\(NGN\) Infrastructure Development](#)

² [A Digital Single Market Strategy for Europe](#)

³ The proposal for a regulation of the European Parliament and of the Council on establishing certain measures regarding open internet and for amending Regulation (EU) No 531/2012 of the European Parliament and of the Council of 13 June 2012 on roaming on public mobile communications networks within the is anticipated to be adopted and enter into force in the first half of November 2015

⁴ <http://ec.europa.eu/digital-agenda/en/news/public-consultation-evaluation-and-review-regulatory-framework-electronic-communications>

⁵ For example, [The Cost Reduction Directive](#)

⁶ [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 of 7 March 2002 on a common regulatory framework for electronic communications networks and services

⁷ http://www.ancom.org.ro/strategia-de-reglementare-2012-2016_4781

2. ANCOM Mission

By the regulations it adopts, ANCOM must promote economic efficiency, sustainable competition, efficient investments in infrastructure and innovation and to maximize the end-users' benefits.

ANCOM must manage and administrate the radio spectrum and numbering scarce resources so that to ensure their effective, efficient and rational use, as well as to prevent spectrum hoarding. Furthermore, ANCOM is entrusted with the surveillance of the market of radio equipment and telecommunication terminal equipment, including other electric and electronic equipment, insofar as electromagnetic compatibility is concerned.

ANCOM contributes to the development of the single European market, by removing the barriers from the Europe-wide provision of networks and services, harmonising the management of the scarce spectrum and numbering resources, encouraging the setup and roll-out of pan-European networks, pan-European service interoperability and end-to-end connectivity. To this end, ANCOM's regulatory and administrative decisions must contribute to the development of coherent practices in these fields and to the homogeneous and harmonised enforcement of the European Union legislation, taking utmost account of the Commission's recommendations for the harmonised application of the community rules and through collaboration with BEREC⁸.

In pursuit of achieving its statutory objectives, ANCOM applies the principles of objectivity, transparency, non-discrimination and proportionality in the regulatory activity, among which, by:

- a) promoting predictable regulations by ensuring a consistent approach, reviewed at adequate intervals;
- b) ensuring compliance with the principle of non-discrimination in the treatment of electronic communications network and service providers in similar situations;
- c) fostering competition to the benefit of the end-users and promoting infrastructure-based competition, where necessary;
- d) promoting efficient investment and innovation in new and improved infrastructure, including by ensuring that all the access obligations imposed take into account the specific risks associated to the investment and allow for cooperation agreements between investors and access seekers, so that they share the investment risks, while ensuring competition in the market and observance of the non-discrimination principle;
- e) taking into consideration different competitive conditions and needs of the providers in various geographical areas;
- f) imposing *ex ante* regulatory obligations only where no sustainable or effective competition is present and relaxing or withdrawing these obligations where such conditions are fulfilled.

ANCOM promotes the interests of the end-users in the European Union (EU), especially by:

- a) ensuring a high level of end-user protection in their relationships with the providers;
- b) involvement in ensuring a high level of protection of personal rights, especially of the right to privacy, as regards the processing of personal data;
- c) promoting the provision of clear information, especially as regards tariff transparency and the conditions of using publicly available electronic communications networks and services;
- d) ensuring the conditions for exercising the right of access to services within the scope of universal service;
- e) promoting the specific interests of disabled, aged users or of users with special social needs;
- f) ensuring the protection of the integrity and security of the public electronic communications networks;
- g) promoting the end-users' possibility to access and disseminate information or to use applications or services according to their own decisions.

⁸ [Body of European Regulators for Electronic Communications](#)

3. Evolutions & trends up to 2020

This section proposes a forward looking review of the major trends and technological developments that will influence the telecommunications sector, of the evolution of demand and user behaviour, of markets, services, networks, equipment and operators, as well as the of the regulatory developments. Thus, ANCOM will be able to better formulate and make a clearer design of the priority areas to focus in pursuit of its mission.

The envisaged assumptions rely on maintaining the favourable economic conditions and the competitive pressures at levels at least similar to the current ones, capable to stimulate investment and innovation and to exert pressure on retail tariffs, to the end-users' benefits.

3.1. Demand and services

The demand for digital services in Romania is and will remain uneven and deeply heterogeneous, with a wide range of situations, from intensive users and central (mass) users, to marginal users, while non-users will keep a significant share. Despite the fact that at approximately 80 Gb/month, the average fixed internet traffic per line in 2014 is probably among the highest in the EU, the internet non-users (estimated to be 30% of the population in 2020) and marginal user segments will stay at significant levels, given a persistent substantial deficit in demand levels. The targets of the Digital Agenda for Romania reflect significant lagging behind (in some areas, by even 1:4), in spite of the committed lag time. Actually, an expression of the particular degree of economic development, all the demand-related targets provided for 2015 in the Digital Agenda for Europe feature far more ambitious levels than those in the Digital Agenda for Romania, provided for 2020.

The major gap in the service demand at the general population level will not hinder the growth of demand for high quality and high speed internet in the residential and business segments. Although the marginal residential demand will be comparatively lower, the average (central) user demand will ensure continuous and consistent internet traffic growth. The business environment gradually adopts cloud-based services and applications, M2M⁹ and M2P¹⁰ for efficiency reasons, while a large chunk of the bandwidth demanded by residential users is driven by streaming online content on larger and better screens, to the detriment of file sharing and transfer.

The mostly extensive growth in mobile internet, driven by extended mobile coverage and customer base (and due to the lack of alternatives to fixed internet access), by the increasing number of smart devices and by the commercial policies of *"no SIM without internet"*, will be replaced by intensive growth, based on the traffic growth driven by tariff decreases, by improved quality of coverage following densification of base stations and enhanced efficiency in spectrum usage. Maintaining the competitive pressures at retail level is a key ingredient for the intensive growth of mobile internet.

Convergent, fixed-mobile, service bundles will become mass products. Users will be able to choose from more and more services and applications, available anytime, anywhere (at home, at work, on holiday, stationary or on the move etc.) and on any device (desktop PC or laptop, tablet,

⁹ machine-to-machine

¹⁰ machine-to-people

smartphone etc.). With the increasingly intelligent end-user devices, the boundaries between traditional electronic communications services - as we currently know them - and "applications" or "content services" - known as OTT¹¹ - will fade out. Tighter competition between OTT and traditional services will drive the latter to evolve from network-dependent services to device- and network-agnostic (independent) services, which make use of fixed or mobile networks and enable seamless transfer from one network to another and from one operator to another during the session. Internet access has already become such an agnostic service, taken over from one network to another and from one operator to another, depending on the location and intelligence of the user's device.

The connected objects of the internet of things will start to penetrate large urban centres and the main transport routes towards the end of the period, driving an exponential growth in M2M demand, together with the rise of 5G networks which integrate network capacities with processing and storage capacities in a unified, programmable infrastructure.

Although the internet becomes the "key" product for an increasing number of users (to the detriment of classical television¹²), "simultaneous" communication, dependent of the action or response of at least two parties¹³, will continue to feature additional value added compared to "successive" communication, where the participants' "delayed response" does not hinder its achievement. The users will engage more and more often in simultaneous communication through a wide variety of devices and applications. TV or tablet video-phony will replace ever more often the classical family and friends voice calls, while the laptop conferences many of the business meetings.

Once new services proliferate, amid increasing consumption and multiple connected devices, especially with the uptake of "services & devices" bundles, the users' dependence on services will increase, as well as the pressure on the households' and enterprises' budgets. Thus, users in Romania are likely to continue being rather highly price-sensitive, preferring discounts, low cost offers and flexible 4-play¹⁴ bundles, which enable random and progressive configuration, to the detriment of rigid, expensive and pre-configured ones.

On the other hand, consumption of communications services features also a significant hedonistic component, within which users would rather base their choices and decisions on attitudes towards and experiences with the communications services, than on purely practical, utilitarian criteria. Hedonistic consumption will continue to contribute to market segmentation and create market niches.

Despite being increasingly and intensely substituted with OTT applications, telephony will continue as an individual service, not as much as a result of user demand, but rather because VoIP adoption must continue to ensure calls "any-to-any", including to traditional networks. The differences between fixed and mobile telephony will gradually fade out, fixed telephony will lose relevance and will become an obsolete service that no longer justifies subscription (becomes an incremental, "pay-as-you-go" or even "free ride" service).

¹¹ Over The Top – content, services or applications provided on-line by means of open internet (excluding private IP addresses). OTT examples: applications for the social networks, for maps, for instant messages or e-mail, audio-video communication etc.

¹² CaTV, DTH, terrestrial

¹³ i.e. services provided in two/multi-sided markets

¹⁴ Internet, TV, mobile and telephony

More and more services will be offered on a pan-European level: the removal of roaming charges within the internal market, as well as the advent of IoT services for connected objects, devices, and equipment will greatly impact this evolution. The users' mobility within the internal market underpins the upsurge of cross-border service offers, which also reflect historical and cultural similarities and emigration-immigration flows. The benefits included in the mobile service bundles acquire an ever more consistent and extended European footprint, at levels that target mass consumption (average user).

3.2. Networks and equipment

Romania has some of the most performant fixed broadband networks in the world and the best in Europe¹⁵ and this favourable situation is expected to continue alongside the significant growth in the number of users. According to the latest data available, the average connection speed at peak hour registered in fixed networks in Q I 2015 in Romania was 71.6 Mbps (5th highest in the world)¹⁶, while at the end of 2014, 49.5% of the fixed broadband connections allowed transfer rates equal or superior to 100 Mbps¹⁷. In the perspective of 2020, increased customers numbers and traffic is likely to lead to some network congestion, which could indeed impact the transfer rate at peak hours. Nevertheless, taking into account the market structure and dynamics, the flat and relatively limited costs of upgrading transfer rates on the existing fixed networks, respectively the prevalent technologies for enlargement of existing networks, it is unlikely that future extension of customer bases will take place mainly through inferior speed networks, so as to witness a degradation of the market share of connections enabling at least 100 Mbps. Therefore, it can be considered Romania can achieve the only objective of the Digital Agenda for Europe relevant for the quality of broadband fixed networks at the end of 2015¹⁸.

On the other hand, in a comparative European context, the current performances of mobile networks are relatively unassuming: LTE coverage was the 4th lowest in the European Union at the end of 2014¹⁹, and as far as speed is concerned, Akamai – for example – does not include Romania among the countries with an average speed per mobile connection above 4 Mbps²⁰.

Technological progress will be incorporated at relatively fast rates in switching and transmission networks, mainly by the IP-MPLS technology and by network function virtualization following the implementation of SDN²¹ and NFV²² solutions for increased scalability as a reply to major quick developments in demand levels (such as those associated to migration of services in the "cloud"), and for integrating additional operational and investment efficiencies. Public estimates indicate that a rapid transition towards IP, accompanied by legacy networks switch off - PSTN, SDH etc. –, could be stimulated by cost reduction targets. Technological progress in the realm of routers and switching equipment, together with the persistent reduction in the tariffs or IP transit services in large internet hubs (collocation centres for internet traffic exchange), substantially contribute to reducing the unit production costs (per Mbps), stimulating networks efficiency.

¹⁵ See [The 2015 Report on the implementation of the EU regulatory framework for communications](#)

¹⁶ [Akamai Report - Q1 2015](#)

¹⁷ ANCOM Statistics

¹⁸ 5 years earlier than the EU target

¹⁹ Ibidem footnote 15

²⁰ Ibidem footnote 16

²¹ Software Defined Networks

²² Network Function Virtualisation

Network function virtualization will enable the development of business models where infrastructure is a “software” service, respectively the emergence of new players on the value chain, where the current network and service providers can rely on newly created infrastructures and can share them, by various technical means and under various contract arrangements.

Access networks will benefit from the gradual introduction of FTTH on the fixed networks and of LTE on the mobile networks, simultaneously with the co-existence of other connectivity supports: cable, copper, UTP/FTP on fixed networks, GSM and UMTS on mobile networks. LTE population coverage will grow from over 60% at end-2014, to almost 95% in 2018²³, whereas LTE-Advanced will exceed 50% of the population, on the same date²⁴. Mobile networks will have to cope with mobile internet traffic growth by densification, sectorisation, use of additional radio frequencies, large-scale use of MIMO²⁵ solutions and SDR²⁶ equipment, installation of progressively smaller cells (pico-/femto-/nano-cells), as well as by the deployment of more performant backhaul networks, increasingly based on optical fibre.

The networks’ natural progress to meet rising demand, the convergence of user devices and services, along with the proliferation of *wi-fi* solutions, will make fixed and mobile networks resemble from more and more viewpoints, including the usage experience, while increasingly intelligent devices will contribute to eroding structural barriers to network access.

Aerial cables have started to spread on the Romanian cities’ skies in mid-90s once with the first cable television services, and subsequently have become a means of rapid and convenient roll-out of broadband networks. Cable overcrowding and associated problems related to urban planning, land management and citizen safety, have begun to concern some local and central authorities, triggering measures to foster their underground installation or even for their removal. Nevertheless, the number of aerial cables remains significant, including in places where their presence is actively deterred by the authorities.

Although removed from areas with a special urbanistic regime, in 2020, aerial cables will remain in operation outside the demand concentration areas, as well as in localities with high demand density. In a partially “grey” area insofar as legislation is concerned, aerial cables within demand concentration areas contribute to the substantial reduction of network capital expenses, while public intervention for their removal proves effective especially to the extent it offers alternative, economically comparable solutions. The operators’ resistance to the underground installation of cables, respectively the persistence of aerial cables is yet more vigorous as, in certain cases, the alternatives available are more expensive or have the vocation to create local monopolies and/or to extraction of rents from access to ducts, which risk being transferred onto the users through ineffective interventions from the part of local public authorities.

The shared use of networks and of the associated facilities becomes and increasingly profitable and frequent practice, under its various forms: passive or active elements, on voluntary bases or stimulated by public intervention, among communications networks providers or between them and other providers of compatible civil infrastructures. In the horizon of 2020, one can

²³ Operator public forecast

²⁴ ANCOM forecast

²⁵ Multiple-Input and Multiple-Output

²⁶ Software Defined Radio

deem that the shared use will evolve from passive elements towards more and more active network elements, including the virtualized switching capacities, and from medium term access agreements to long-term co-investments. Moreover, public intervention on aerial cables could influence network roll-out: ruling out aerial cables in urban areas is susceptible to stimulate the competitors' effort to joint ducts building, while acceptance of aerial cables in rural areas may stimulate network sharing.

3.3. Operators

Cloud- and software-based services, mass consumption of online streaming, require an internet with superior resilience parameters, and with remarkable quality and bandwidth. Internet traffic management, to the extent allowed by the net neutrality rules (managed versus best effort), becomes an increasingly profitable activity for network operators, and also of critical significance for innovation and development of new services.

Ensuring connectivity to open internet is the main ingredient feeding long-term competition among operators and organic business growth, but competition with the content and on-line application providers is expected to intensify, given service substitutability with the OTTs. Proliferation of "agnostic" services, indifferent to the type of the network, generates the operators' interest towards convergence and rethinking of conventional business models, centered on the fixed-mobile differentiation. On the other hand, OTT solutions developed by traditional providers in their attempt to better compete with the content and online application providers, feature a greater potential, the more independent the apps content and usage are from the developers' networks.

Competitive agreements and collaborations among electronic communications operators cease to be rare exceptions and aim to diminish the competitive disadvantage generated by the lack of fixed-mobile integration, as well as to reduce administrative barriers and the delays implied by the (civil) works authorisation and permitting, as well as to ensure the offers' ubiquity, quality and competitiveness, while exploiting the resulted economies of scale. The range of inter-operator collaboration situations will diversify, from the mutual provision of wholesale services in different geographic environments (e.g. national roaming) or on compensation basis (e.g. fixed access in exchange of mobile access, bit-stream in exchange of MVNO), to active or passive network sharing of network elements. The shared use of civil infrastructure elements between electronic communications network providers and the providers of other types of networks, is expected to grow, including following public intervention. Moreover, collaboration between network providers and content or online application providers will become a rule, especially taking into account the contribution of content providers to the creation of added value in digital ecosystems.

Amid the diversification of services and applications and with the growing number of connectable devices – to the internet or to networks – operators innovate, aiming to provide more advanced services, to offer "bundles" composed of services, applications, M2M and M2P services, content and terminal equipment, which enables them to sell more, lock customers in and make it more difficult and expensive for the customers to switch providers.

Communications network operators are expected to make stronger entries on other markets outside the communications sector, which enable organic growth, of extensive or intensive

nature, to exploit the synergies with existing networks, scale or scope economies etc. or even to leverage in other markets their competitive advantage on the communications markets. Such examples are the markets of money transfer, electrical power distribution, (online and/or audio-visual) content, sale of internet connectable equipment/devices etc.

Fixed network operators continue to consolidate in order to better exploit scale or density economies, especially through the acquisition of localized and/or small operators, and may lead to more credible competition among stronger market players. Nevertheless, consolidation situations that could adversely impact competition cannot *a priori* be excluded, and the role of small operators in ensuring the contestability of the market for internet access services cannot be ignored. On the other hand, the competitive market dynamics and the risks of value regarding assets such as the radio frequencies, lessen the consolidation perspectives in mobile communications.

Operators present in several European countries substantially contribute to the performance indicators of the Romanian communications market. These are both Romanian subsidiaries of pan-European operators and national champions that extend their business in the European single market. However, the active market presence of challengers, of operators that do not belong to strong pan-European groups, is a major advantage for the sector competitive performances.

Question 1 – What is your opinion on this overview of the main trends in technology developments, of the consumer behaviour and demand evolution, of the performance of service markets, of networks, equipment and operators? What other phenomena or impactful developments should be taken into account and why?

3.4. Perspectives in legislation and regulations

The implementation of a series of legislative provisions, such as the inventory of networks and associated facilities provided for by Law 154/2012 on the regime of electronic communications network infrastructure, repeal of the tax on infrastructure, the efficiency stimulatory mechanisms provided in Directive 61/2014, the establishment of net neutrality rules and the removal of roaming charges in the internal single market etc. are expected to bring about beneficial effects for the development of the sector development in Romania.

On the other hand, the evolution of the regulatory framework, both in Romania and at European levels, in reaction to the evolution of technologies and services and to the ever stronger development of the internal single market, will ensure more accurately targeting and remedying the problems that hinder effective competition and limit consumer choice, in order to reduce barriers to investment and stimulate innovation. Ensuring predictability and confirming the fundamental principles of the existing regulatory framework will be probably accompanied by promoting the objectives regarding the universally-connected society.

In this context, despite the ever more pronounced functional substitutability of traditional services (such as telephony, messages etc.) by certain OTTs, the latter are not subject to the current regulatory framework, a phenomenon susceptible to impact the level playing field and investment

capacities and to recommend a review of the regulatory framework, including for the purpose of balancing the competitive conditions, as well as for achieving a better focus on the market failure areas.

Furthermore, technological developments in the networks and the enhanced importance of digital ecosystems may have an impact on the currently established concepts, regarding the authorisation regime, spectrum and numbering management and licensing, the territorial relevance of infrastructures and services, the security of information and the protection of the end-users' rights.

ANCOM's regulatory initiatives will continue to fully consider the competitive gains achieved in Romania since the market liberalization, especially as regards infrastructure-based competition, as well as on the treatment of the areas where persisting competitive problems require regulatory intervention with a view to prevent abuse of dominant position. In this context, maintenance of termination services at levels that accurately reflect the costs of the required additional capacities may call for more frequent tariffs reviews, at least until the problem is effectively solved in a larger frame²⁷.

On the European level, capitalisation of the good practice regulatory experiences acquired after several regulatory cycles, as well as through closer collaboration within BEREC and RSPG²⁸, are expected to bring actual added value to the regulation in the member states, to disseminate the best practices in the field and to trigger more coherence and predictability. A thorough harmonisation of the regulations is recommendable, especially to the extent that it envisages pan-European services with identical competitive circumstances in all the Member States, such as the call termination services or the roaming services, or where scale economies are better exploitable on the Union scale, such as the rules on net neutrality or the OTTs regulatory treatment.

On the other hand, to the extent that access networks are essentially local (national) and not pan-European, the competitive conditions for the provision of access services may witness substantial differences on the local (national) level, within the various geographic configurations of the single internal market, therefore they must keep benefiting from specific treatment, in accordance with the problems identified on the local (national) level.

ANCOM deems that a "bottom-up" development of coherent and harmonised regulatory and administrative practices, based on a harmonised interpretation and enforcement of the Community law, while keeping the fundamental principles of the current regulatory framework, is the most effective means for regulators to contribute to the progress of the internal single market. Nonetheless, in the context of the coming review of the European regulatory framework, "top-down" harmonisation cannot be excluded and ANCOM will find a way to adapt to such developments.

Question 2 – Do you agree with this outlook on the possible developments in the field of legislation and regulations? What other developments should be minded in this respect and why?

²⁷ Some examples of pan-European solutions in the field may be mandating the bill & keep principle, or a single tariff in the single market.

²⁸ Radio Spectrum Policy Group

4. Strategic priorities for 2020

ANCOM's strategic priorities are defined within its mission, as a reaction to the developments anticipated in markets, technologies and consumption behaviours, as well as taking into account the means available to ANCOM. Thus, this process does not envisage to interpret or rephrase ANCOM's statutory mission and objectives, which are defined by law.

4.1 Promoting competitive networks

Consumers benefit from better services at more competitive tariffs if they can be served by a reasonable number of competing (rival) networks, while investment and innovation are better promoted by infrastructure-based competition, than by services, access based competition.

The recent draft market analysis realised by ANCOM on the markets for the services of access to infrastructure elements and for the broadband access services²⁹ indicates reasonable levels of competition based on fixed communications infrastructure, while the presence of four mobile communications networks was being considered sufficient in 2012, if we account for the spectrum caps and the absence of reserved frequencies for a potential new-entrant. Moreover, the long-term preference of the Romanian communications sector for an infrastructure based competitive profile is detectable on a structural level also in a variety of statistical indicators.

In search of competitive advantages, the operators have invested in network roll-out according to their own investment cycles: see the massive growth in the number of localities covered by broadband fixed networks during 2008-2012, respectively the increase of the UMTS mobile coverage starting from 2010 and the first significant real steps towards LTE in 2014.

More efficient networks, with superior technical performances, innovate more, may better compete and enable the provision of more competitive services in larger geographical areas. ANCOM will directly promote efficiency and competitiveness growth of the communications networks, by specific instruments:

- Guarantee the benefits derived from infrastructure-based competition, including during the investment stimulating processes aimed at meeting the requirements of a universally-connected society;
- reduce barriers to network roll-out and operation, including by reducing the investment impact in associated infrastructures required by the shared use and by the implementation of measures facilitating access to properties;
- ensure competitive access conditions to adequate amounts of harmonised radio frequencies with superior propagation characteristics, where equipment compatible with the respective allocations exists, and in which the risk of harmful interference has been minimised.

Furthermore, ANCOM will keep promoting increased network competitiveness, investment and innovation also indirectly, by already known means or by extending the scope of existing instruments:

²⁹ http://www.ancom.org.ro/uploads/forms_files/EM_piete_bucla_locala_-_varianta_publica_11439470601.pdf

- stimulate the uptake of technological progress in the networks, for example, by using the most effective technologies as reference in regulations, including in the regulated tariffs, or by minimising the restrictions in the use of frequency or numbering resources;
- continue to use the marginal investor concept for the remuneration of investments recovered from the regulated tariffs, in the context of the strong presence of multinational companies susceptible to direct investment funds towards other European markets;
- allow regulated companies' the possibility to obtain profits from the own network operation above the cost of capital (for example, as a result of admitting a risk premium), through reducing the costs for long term customers and subsequent transfer of savings to the end-users;
- promote transparency as regards the actual performance of the networks and the quality of the services, susceptible to foster quality improvement.

In this context, ANCOM intends to publicly report, for example once in three years, on the status of the infrastructures in Romania as regards the coverage of networks and services, their performances and capacities, effective spectrum usage, infrastructure shared use, network security and resilience. Such systematic and detailed reports should address fixed, mobile, wi-fi and audio-visual retransmission networks, fixed and mobile voice, data transmission and audio-visual transmission services and contain detailed analyses of the operator data, external field research, as well as an assessment of the main implications at the strategic and regulatory policy levels.

Question 3 – Do you think that more competitive networks incorporate technological progress more rapidly and allow more innovation and better performance in the services they provide? Please detail your view.

Question 4 – Do you think that more efficient networks may find it commercially interesting a larger number of geographical areas/zones and may pursue roll-out towards them? Please detail your view.

Question 5 – How would you explain the fast roll-out pace of fixed broadband networks during 2008-2012 in Romania, taking into account the market circumstances and the macroeconomic context in that period?

Question 6 – Do you think that regular reporting, for example once in three years, on the status of the infrastructures in Romania would be a useful initiative? Why?

Question 7 – Do you agree with the direct and indirect means identified by ANCOM for promoting network competitiveness? What other measures should ANCOM take into account? Please detail your view.

4.2 Maximising availability of services

The beneficial phenomena related to the extension of the geographical coverage of the networks highlighted above cannot compensate the magnitude of the network deficits in terms of population coverage, predominantly in geographical areas where the concentration or intensity in demand is insufficient to ensure the commercially attractive service provision.

In order to reach its general objective regarding the development of advanced electronic communications networks with national coverage, as well as its specific objectives, the Government's NGN Plan identifies 5 action directions:

- a) encourage access to the existing passive infrastructure;
- b) improve transparency and coordination in the relevant civil construction works;
- c) enhance the efficiency of the authorisation procedures for the construction of electronic communications networks;
- d) norms regarding the NGN infrastructure for new buildings;
- e) use the potential of the New Generation Wireless technology for accelerating the extension/implementation of broadband infrastructure in rural areas.

ANCOM has a greater role in drawing up the roadmap and in the implementation of some of the measures provided in the NGN plan, and a lesser involvement in others, according to its mission and in view of the institution's information and expertise.

In the implementation of the national policies in the field, ANCOM sets the maximising of services' availability as a priority strategic objective: **the largest possible number of inhabitants and enterprises should be able to connect to performant networks, in the geographical areas of their interest.** Thus, ANCOM envisages with priority network coverage – irrespective of the used platform (fixed, mobile) - which should enable **connectivity at transfer rates that are compatible with the Digital Agenda targets**, both at the residential users' homes, at the business premises and within localities, as well as along transport routes or outside localities.

ANCOM will directly contribute to maximising service availability by a series of specific measures, such as regulatory intervention for reducing asset duplication and reducing the costs of network roll-out through the shared use of infrastructures, increasing the amount of UHF frequencies available, inclusion of coverage requirements in future licences and stimulating investment in mobile network deployment to new areas through the tariff policies on radio spectrum usage. As well, ANCOM intends to investigate the implications, costs and benefits of introducing broadband internet access among the services relevant for the scope of universal service.

Moreover, for a more systematic development of optical fibre networks, ANCOM considers evaluating the national technical regulatory framework for the installation and roll-out of optical fibre networks on FTTx and completing this framework as necessary.

ANCOM will pursue ensuring the necessary numbering resources, in the event of a major advance of M2M communications. Furthermore, the Authority will continue its active involvement in the issues regarding 112 calls, to the end of achieving a European harmonised approach³⁰, especially

³⁰ See the PT ES activity in the field

as regards the improvement of the caller location accuracy and security, as well as in respect of improved availability of emergency services in NGN networks.

A set of measures may indirectly contribute to maximising services availability, such as those that promote competition in general and maintain a regulatory framework for access to broadband networks that reflects the competitive conditions in the Romanian market. Preserving the competitive pressures is expected to stimulate the search for competitive advantages in currently unserved areas, by extending the coverage of networks with superior efficiencies.

ANCOM also estimates that additional transparency regarding the quality of coverage and of services may stimulate competition among operators, thus contributing to coverage extension and increasing services availability.

Question 8 – Do you agree on how the objective on maximising availability of services is formulated? What other elements should be taken into account in shaping this objective?

Question 9 – How do you appreciate the direct and indirect means identified by ANCOM in order to promote maximising service availability? What other means could be taken into account? Please detail your view.

4.3 Capitalizing the benefits of IP

The evolution towards IP networks based on distinct transport layers from service layers and towards digital services provided in the online environment reduces barriers to service provision, enables the development of new services and solutions and recasts the value chains for creating and distributing the added value.

On the other hand, the current *ex-ante* regulatory framework and a series of administrative rules from Romania and the European Union have been developed and are based on traditional hypotheses on the functioning of networks and services that do not capitalize the actual potential of the digital ecosystems and of the online environment. In this context, **ensuring fair competitive conditions and a non-discriminatory regulatory treatment for all the electronic communications service providers and providers of applications and online content** is at the centre of reflections occasioned by the framework review. Furthermore, the global availability of digital services raises territoriality issues for national authorities and not for them only: the enforcement of fragmented rules at Member States level may inhibit an upswing of digital services.

Capitalizing the potential (and the realities) of digitalized communications in the online environment objectively involves the reconsideration of a great variety of rules and obligations, from the reporting obligations and from the information collection capacities to the rules regarding interconnection, numbering, access to emergency services, end-user protection or directory enquiry services.

Net neutrality is a *sine-qua-non* condition for the promotion of innovation in the online environment and the development of digital services, a reality involving different approaches, especially to service quality. The quality parameters, the assessment indicators and the frequency of the measurements, as well as their role and significance, will become more and more important. Increased dependence on internet-based services rises the importance/significance of the issues regarding net neutrality, the security of the networks and of the data transmitted through these networks, the protection of personal data and of the right to privacy, spam fighting etc.

ANCOM will endeavour to adopt regulations and administrative measures that provide adequate answers to the challenges driven by the networks evolution towards IP, by capitalizing their benefits. Thus, ANCOM will reflect technological progress towards IP not only in the regulated tariffs, but also in the obligations imposed as regards interconnection and will consider the review of the numbering policies.

Moreover, ANCOM will work to protect innovation in the online environment by guaranteeing net neutrality, once this neutrality has been transposed into legislation.

Question 10 – How do you deem the formulation of the objective regarding the capitalization of IP benefits? What other elements should be taken into account?

Question 11 – Do you agree with the means identified by ANCOM with a view to capitalizing IP benefits? What other means could be taken into account? Please detail your view.

5 Main action directions

Next, the discussion paper presents the main directions for action ANCOM is likely to adopt up to 2020, subsequent to the identified strategic priorities. They are adjustable based on the actual developments. All the measures adopted by the Authority for achieving the action directions will be based on detailed analyses of the problems and will be publicly consulted.

5.1 Towards an increasingly symmetrical regulation

The introduction of regulatory measures after the full liberalization of the Romanian electronic communications market was characterised by a prudent approach, marked by the principles of proportionality and of minimum intervention, in response to the competitive circumstances of that period. For example, as regards interconnection for the provision of telephony services, fixed alternative network operators were not regulated until the second regulatory cycle, and similarly, the first regulations in mobile telephony were focused on the first two service providers, while the "*challengers*" at that time benefitted initially from a less restrictive regulatory treatment. Once adopted, the tariffs regulation of the fixed telephony alternative operators and of the mobile telephony *challengers* was initially set at comparatively higher levels, as a form of temporary assistance for strengthening competition, symmetrical regulation of tariffs being introduced in the third analysis cycle.

Asymmetric regulation of the former monopoly provider in respect of access network throughout several analysis cycles introduced competitive access conditions³¹, enabling alternative operators to explore new dimensions of acting as competitors. Nevertheless, the results registered after 10 years of regulation were below expectations, the operators preferring to develop their businesses by rolling out their own networks, instead of purchasing access services from the former monopoly provider. Furthermore, the superior performance of the cable operators' and "neighbourhood" broadband networks reduced the attractiveness of a regulated copper-based product that did not allow the potential buyers to provide VDSL.

Given that civil works for the installation of ducts, trenches, poles, cables etc. hold a share of 60%-70%³² of the annual efficient costs of a cable/copper access network, it is obvious that access to passive infrastructure elements (ducts, poles, masts etc.) is a major obstacle in the network development and roll-out. The persistence of competitive bottlenecks is registered also in the context of NGA convergent networks and is less dependent on the position of one or another operator in the market of communications service provision, but rather on the status in a market of passive infrastructure elements that are compatible with the communications networks. Therefore, asymmetric traditional regulation, starting from analysis in the market for access services to communications networks, is limited and cannot satisfactorily answer to the existing competitive bottlenecks.

Starting from these considerations, a series of legislative measures have been adopted laying down, in a symmetrical manner, *ex officio*, the conditions for access to infrastructures. Thus, [Law no 154/2012](#)³³ introduces more transparency and objectivity in this respect, establishing the conditions in which electronic communications networks providers have access on the private or

³¹ For example, extensive ORA and CIRA, among the most competitive access tariffs in Europe

³² ANCOM estimate based on the developed cost calculation models

³³ on the regime of infrastructures for electronic communications networks

public property with a view to install, maintain, replace and move electronic communications networks or associated facilities, by stimulating the shared use of infrastructures, and by introducing measures for building authorisation and for an inventory-map of networks. Additionally, the transposition into the national legislation of [Directive 61/2014](#)³⁴ (estimated for the end of 2015) is expected to significantly improve the conditions of access to infrastructures, by a series of well targeted specific measures, e.g. reduce bureaucracy in the process of authorisation issuance, transparency of plans and civil works coordination and increase the occupation rate of the existing physical infrastructure (trenches, ducts etc.), for example by stimulating the co-existence of communications networks with other utility networks.

Currently, ANCOM is capable to impose obligations and conditions regarding the shared use of infrastructures *"in well-grounded cases, taking into account the coverage area of the infrastructure elements and the availability of similar elements in certain areas."* Moreover, ANCOM is competent also as regards network terminal segments, due to the likelihood of competitive bottlenecks and in recognition of the negative impact of undue replication of assets such as in-building wires: *"Where the duplication of **infrastructure elements is economically inefficient, of physically impossible**, ANCOM may impose on a provider of electronic communications networks or on the infrastructure owner the **obligation to allow other providers of electronic communications networks to share the ducts installed in buildings or up to the first concentrator or network distribution point situated outside the building.**"*³⁵, ANCOM's competences extending to the access conditions and costs sharing.

Depending on the developments of the regulatory framework and on the actual cases encountered by ANCOM, regulation of competitive bottlenecks at the level of in-building wires cannot be excluded, irrespective of the communications flow they enable (fixed or mobile traffic), either by identifying a relevant market for the physical civil infrastructures compatible with communications networks, or as a complementary instrument to the significant market power (SMP) regulations, through symmetric regulation or reciprocity.

Such a symmetric regulation could bring about significant benefits: it would cut the network roll-out costs reducing the risk of in-building monopolies, it would effectively contribute to reducing *the business case* for aerial cables and may contribute to sustainable competition. Furthermore, such a regulation would be more effective, less complex, easier to enforce and more predictable compared to SMP-based regulation, thus maximising the end-users' benefits.

Measures in the field of access to in-building wires for FTTH networks have already been adopted with visible/tangible effects in Spain and are under implementation in France and Croatia.

In the end, with a view to promoting competition in new services based on NGA networks, ANCOM could encourage initiatives on the provision of open access to such networks. For example, the technical specifications and the operational aspects of some wholesale access products over NGA networks, such as a layer 2 bit-stream for optical fibre networks or for cable networks, could be agreed on voluntary bases, in an industry forum with ANCOM's participation.

³⁴ on measures to reduce the cost of high-speed broadband

³⁵ Art. 22 (2) of Law no. 154/2012

Question 12 – Do you deem useful that ANCOM should conduct, on a regular basis, public reports on the implementation and impact assessment of Law no. 154/2012 and, forward-looking, of Directive 2014/61/EU?

Question 13 – Do you consider that the analysis of a possible market for civil infrastructures compatible with the communications networks could contribute more efficiently to reducing the barriers to entry and to network roll-out, compared to symmetrical or reciprocity-based regulation? Please detail your view.

Question 14 – If you favour symmetrical or reciprocity-based regulation, what network segments should be primarily envisaged and under what terms? Please detail your view.

5.2 Adjust to increasingly shared networks

Recent years' experiences have shown that – in search of operational efficiency and in response to the demand for investment needed to rapidly introduce technological progress, or as the networks extend to satisfy demand for services or towards less profitable geographical areas, or even amid competitive pressures, electronic communications network operators resort to sharing network elements, among them or with other providers of compatible networks. There are multiple shared use formats, from access based on rental, reciprocity, provision of equivalent services or barter-based or even joint investment for the purpose of risk sharing.

Introduction of optical fibre networks on the access segment and wires miniaturisation (micro-fibres) create the possibility for previously incompatible networks, such as communications and power supply networks, to coexist over the same infrastructure. Furthermore, wires protection technologies allow the use of heating and sewage networks, while future developments may confirm coexistence on further infrastructures. Such developments have already fostered the establishment of the legal framework that encourages shared use³⁶.

Network sharing is not limited to passive elements such as ducts, trenches, sites, poles, pillars or power supply sources. It can also include (dark) optical fibre, transmission or switching capacities, and, in absence of legal interdictions, even the shared use of frequencies is technically possible.

Therefore, the networks potential for shared use is on the rise even absent public intervention.

Information on the location, trajectory, type and current use of the electronic communications network infrastructures³⁷ and respectively of the civil works for physical infrastructures³⁸ is a highly useful instrument to increase regulatory effectiveness, as well as for the operators to optimise their own networks. Therefore, the availability, accuracy and thoroughness of an inventory including such information is a *sine-qua-non* requirement for the value of this instrument. Thus, ANCOM intends to take measures in order to ensure that, once completed, **the inventory does not allow to** accidentally or intently **omit parts of the networks**, or data

³⁶ Directive 2014/61/UE

³⁷ grounded on Law no. 154/2012

³⁸ Unique contact point in directive 2014/61/UE

that compromise the **accuracy of the geo-location information**. ANCOM will exploit if possible the synergies between the inventory of communications networks and the database regarding the physical infrastructures associated to the unique contact point, by integrating them in one instrument.

The data collected in the setup of network inventory and due to the single information point will be used, on the one hand, to settle the requests regarding the shared use of associated facilities and, on the other hand, to monitor the nationwide development of public electronic communications networks and of the associated facilities, to identify less developed areas and encourage network expansion and investment in infrastructures.

ANCOM deems that, **competition overtly manifested at the deepest possible level**, based on electronic communications infrastructures, **does not necessarily involve competition in the provision of civil infrastructures**. Moreover, the shared use of network elements is more beneficial to competition than the agreements for mutual provision of wholesale services³⁹, featuring the potential to reduce costs and duplication of assets, to improve services coverage while allowing the providers to keep the benefits derived from innovation and from the capacity to control the quality of services.

Nevertheless, competition may be adversely impacted by the shared use of network elements, to the extent that exclusion of rivals is applied or even by virtue of the specific conditions for network access, or following the insufficient protection to commercially-sensitive information. Furthermore, some forms of sharing active network elements may be deterrent for competition and must be treated with caution.

Therefore, formulating opinions on the shared use of networks will require greater attention on exclusion policies, as well as on access conditions and on the adequate protection for confidential business information.

Furthermore, once with the developing functionalities of the equipment in the radio access mobile networks, ANCOM could investigate the impact - on competition, investment and efficiency of use – of the shared use of radio frequencies by several licence holders, for example by aggregating radio channelling in certain geographical areas.

Question 15 – What other mechanisms could be taken into account to stimulate the shared use of networks and of physical infrastructures? Please detail your view.

Question 16 – Do you deem that investigating the technical possibilities and the impact of frequency sharing use should be sped up? Please detail your view.

³⁹ See the competition issues raised by CNMC in 2015, resulted from the national roaming agreement between Orange and Yoygo in Spain

5.3 IP interconnection for voice services

The growing demand of broadband services, along the migration from operating parallel networks with specific functions (telephony, audio-visual re-transmission, data transmission) to multifunctional IP networks, the closing lifecycle of switched circuit networks (PSTN/ISDN) and the implementation of optical fibre networks and technologies, change the architecture and functioning of the networks, the services they provide to their own users, as well as the way networks interconnect.

Obviously, IP peering or IP transit interconnection - be it direct or via IXP⁴⁰ - is used for most of the traffic exchanged between networks, reflecting the major contribution of data traffic to the overall network traffic⁴¹. Nevertheless, the internet ecosystem has successfully managed to adapt such IP interconnection arrangements so that they reflect - in a flexible and dynamic manner – technological progress, evolutions in the relative bargaining power of the parties involved, changes in the demand and in business model levels, without any regulatory interventions. Mutual commercial relationships among network providers, content providers and internet users – on which internet functioning is based - ⁴², as well as the bill & keep charging system specific to such IP interconnection agreements, have had an overwhelming contribution to preventing the use of such traffic exchange for anti-competitive purposes. Though, such evolutions cannot be *a priori* excluded, since a network provider's capacity to exploit the users' access to open internet ultimately depends on the degree of competition in the retail market. An illustrative example is the systematic incapacity of the first two Romanian broadband network providers to ensure sufficient bandwidth on the data interconnection link (IP peering) between them, which may be a result of anti-competitive practices that require monitoring.

On the other hand, telephony interconnection in Europe has established another charging principle - "the calling party pays" – which allows anti-competitive use of the access to end-users and turns call termination markets into natural monopolies that require regulation by default.

The Romanian experience reveals the presence of IP interconnection in telephony as well, especially for the provision of termination services by small operators, ANCOM having registered 24 such agreements. On the other hand, the main providers of call termination services seem to resist to the conclusion of IP interconnection agreements for call termination, insisting on the use of TDM/SS7 interconnection despite migration of own networks to IP.

In the context of the Romanian operators' migration to IP networks - including that of Telekom, which is to happen at the end of 2018⁴³ - continuation of TDM/SS7 call termination interconnection can no longer be deemed to promote economic efficiency or innovation, especially considering that starting from April 2014, the fixed call termination tariffs per minute reflect the provision of services on one interconnection level, exclusively by means of an IP network⁴⁴. Furthermore, Telekom Romania has already replaced international transit switches with IP networks and has

⁴⁰ internet exchange

⁴¹ For example, in [the costing model](#) used by ANCOM for regulating fixed call termination tariffs, peak hour voice traffic stands at 1.1% of the network peak hour traffic, in 2015.

⁴² The internet data "demand" is not given by the content provider that transmits (originates, initiates the traffic), but by the network providers' users that have already paid for their internet access, while the network providers' demand for internet access services is given by the success of the very online content, created by content providers.

⁴³ Presentation [Deutsche Telekom Capital Markets Day 26/27 February 2015](#), page 7

⁴⁴ Indeed, adapted for receiving and delivering TDM/SS7 traffic

announced plans to discard a large number of transit switches. Under these circumstances, preserving interconnection on TDM/SS7 may represent an unfair burden for network operators and spurs the artificial increase of interconnection costs, at the expense of end-to-end connectivity.

On the European level, former monopoly providers have been imposed the IP interconnection obligations for voice services in 13 countries⁴⁵: Austria, Bulgaria, Croatia, Cyprus, Denmark, France, Germany, Greece, Hungary, Italy, Slovenia, Spain and Sweden, and data available to ANCOM show that these services are functional in 10 countries. In the rest of the countries, the reference offers either have not been finalised yet or this type of interconnection is offered only upon request (Austria, Cyprus). However, there are countries where the former monopoly provider offers IP interconnection on a voluntary basis, in absence of a regulatory obligation (Macedonia, Netherlands, Slovakia, and Great Britain). IP interconnection for voice is more popular among alternative operators: in 17 countries, they have already started providing such services, and in one country that imposed IP interconnection obligation, alternative providers offer these services before the former monopoly.

There are 5 countries (Austria, The Czech Republic, Denmark, France, Serbia) where mobile network operators have been imposed the obligation to offer IP interconnection for the provision of voice services and 6 countries where mobile network operators already provide this type of interconnection.

Therefore, the need of providing voice termination services via IP interconnection naturally follows all-IP migration. ANCOM deems that, to the extent that each operator has its own IP migration schedule, the imposition of the obligation of IP interconnection for voice services must accompany the obligation to ensure TDM/SS7 interconnection the soonest possible, and the corresponding tariffs must be reviewed so as to stimulate transition to IP interconnection: the operators lagging behind in their IP migration may continue to register additional costs, which however can no longer be recovered from termination or from ancillary services.

Amid the preparation and management of the transition to IP interconnection for voice services, regulatory intervention is likely to set coordination issues between operators, for example, regarding a possible migration schedule (or the switch off of TDM/SS7 interconnection), or regarding the number and location of the interconnection points that should enable national coverage within one interconnection layer. In this context, assuring that, in their transition towards IP, operators interconnected using TDM/SS7 do not need to provisionally interconnect over the short-term at new transitory interconnection points, may gain special weight. Moreover, a set of technical measures for the preparation of IP interconnection will be required, such as those related to interconnection architecture, signalling protocols at the interconnection point, additional services allowed, physical transport interfaces etc.

Question 17 – Do you agree on the fact that mandating IP interconnection for voice, in parallel with the TDM/SS7 interconnection, would better reflect the migration to IP networks? Please detail your view.

⁴⁵ See [The 2015 Report on the Implementation of the EU Regulatory Framework for Electronic Communications](#)

Question 18 – In case of IP interconnection for voice, should tariffs continue being expressed per minute or per capacity? Please detail your view.

5.4 Adapting numbering regulations

Numbering is a critical resource for a variety of electronic communications services and applications, while the realities of transition to IP networks and the generalised use of internet protocol, the fundamental changes induced on the networks, technologies, on the operators' commercial agreements and even on the users' devices, able to ensure the provision of increasingly diversified communications and which are less and less dependent on the platform used, naturally trigger the need to review the regulations on numbering.

Administration of numbering resources based on the prominence of voice services is no longer adequate. Alternative forms of electronic identification have emerged, and the growth of IP digital services progressively reduces the significance of voice services among electronic communications services.

In this context, ANCOM has published an extensive and detailed analysis of the regulations and developments impacting this field in Q4 2014⁴⁶ and has publicly consulted a series of alternatives to adapt and modify the management and use of numbering resources.

Increasing nomadism of businesses and people, abandoning the use of fixed telephony by some or even giving up installation of such services at new domiciles, the affordability and ubiquity of mobile telephony, have all determined a decrease in the use of geographical numbers. Given the fact that, according to the National Numbering Plan (NNP) in force, fixed telephony services may be provided both by means of geographical numbers and by location-independent numbers, we witness a year-on-year growth of the amount of location-independent numbers assigned by ANCOM, upon the service providers' request. Although fixed telephony traffic dropped down to just 6% of the total telephony traffic in 2014, and fixed telephony calls are only 4.9% of all the total telephone calls registered throughout this period, the (overall) amount of fixed telephony numbers used has not decreased significantly. Some users continue to consider these numbers more familiar and associate them with lower tariffs, which is susceptible to feed (generate) the demand for fixed telephony numbers from VoIP service providers. Location-independent numbers allow VoIP service providers to compete with traditional providers while meeting the most restrictive requirements associated with the use of geographical numbers for VoIP services, enabling location portability and countrywide nomadism. Whereas usage conditions for the location-independent numbers (opened in 2007) have been adapted to the technological advancements, the usage conditions for the use of geographical numbers have been established based on legacy, historical criteria.

In the above-mentioned analysis document⁴⁷, ANCOM revealed that "*one of the major advantages of geographical numbering (maybe the most important of them) was the fact that it offered the end-users transparency regarding the tariffs charged. Geographical numbers were associated to*

⁴⁶ [Public consultation on the future use of numbering resources, in line with technological development](#)

⁴⁷ Ibid.

relatively low tariffs, on the one hand, and with tariffs dependant on distance – more exactly, with tariffs dependent on an area prefix.” On the contrary, in the recent years, despite some users’ perception, geographical numbers have stopped bearing any indication regarding the level of retail tariffs:

- although there still are 41 geographical “areas” (prefixes) in use, distance-based tariff differentiation (between local or distance calls) ceased 5 years ago, both in the offerings of Telekom RC and in those of other operators, being replaced by offers which differentiate on-net from off-net calls, irrespective of the network type;
- most of the telephony offers currently purchased include bundled “benefits” comprising at least national call minutes, irrespective of whether the called number is geographical, location-independent or mobile;
- given the fact that fixed numbering includes two different categories (geographic and location-independent) with different usage conditions, the pressure for removing geographical constraints has increased;
- starting 2014, termination tariffs reflect only the costs of the additional capacity required to hand over termination traffic, therefore their levels are about to become negligible, being expected to continue the downward trend amid economies of scale and scope and technological progress;
- once with the introduction of “homezone” fixed telephony offers by mobile operators, despite the technical possibilities allowing service nomadism, the usage restrictions/conditions established in the numbering regulations limit their valorisation.

ANCOM’s analysis regarding the removal of the geographical significance of numbering resources envisaged technical implications on how networks function and interconnect, as regards retail tariffs, end-user awareness, as well as to increase the efficiency in the use of numbers, number portability, access to 112 emergency services (call routing, caller location). This analysis revealed that giving up the geographical significance of numbering resources would not essentially influence the market, inkeeping with the technological progress of networks.⁴⁸

Removing the geographical significance of numbering in Romania does not need to amend the numbers format in the NNP nor does it trigger the removal or the inclusion of new numbering domains in addition to the existing ones. It requires amending the usage conditions for the numbering resources that are now part of the geographical numbering, by removing the interdiction to use numbering resources currently including a geographical area indicative, for the provision of services in a different geographical area. There will be users, especially companies, that would prefer having numbers within their local area, but there will be also users that would wish to benefit from advantages that cannot be provided without giving up the geographical character of the numbering resources (e.g. additional services, facilities offered by the new technologies). Therefore, the providers will have the opportunity to request numbering resources per geographical area, if they intend to address subscribers who prefer keeping their geographical identity, but will no longer restrict the assignment of geographical numbering to a certain area.

Given the developments on telephony networks and services in Romania, it is obvious that the relevance of the geographical significance of numbering resources is over. Nevertheless, the

⁴⁸ Similar conclusion resulted from the [Position paper on the long-term perspective \(2012-2022\) of numbering resources](#) drafted by the Working Group “Numbering and Networks” of the Electronic Communications Committee within the European Conference for Post and Telecommunications

geographical significance cannot be removed at once. An implementation timeframe needs to be established so as to allow for the technical changes required on the IT systems and interconnection architectures. Therefore, such a decision must be thoroughly prepared and announced sufficiently in advance.

Although it is accepted that IP addresses (especially IPv6) will represent the identification and addressing solution in communications over the longer run, E.164 numbers are the main option in the short and medium run, taking into account their relatively simple implementation in the networks based on the existing infrastructure. Moreover, as indicated by the technological development, the numbering plan E.164 should become less and less fragmented in the future. ANCOM deems that telephony numbering in Romania should evolve from the current historical approach to **user-oriented numbering plans and principles that are neutral from the platform and service points of view.**

Unification of the conditions of use for fixed and mobile numbering resources in the long run will be certainly established, the enforcement roadmap being objectively influenced by the achievement of the following premises:

- first, giving up the geographical significance of numbers;
- levelling up the retail tariffs for calls to services provided at fixed locations and for those to mobile locations;
- reducing the difference between the tariffs for fixed call termination and those for mobile call termination.

The above-mentioned consultation document also proposes solutions that enable to satisfy the estimated demand for numbering resources required for M2M communications. The answers received were not conclusive enough to make a decision. In the next period, ANCOM will revisit the regulatory options, including the conditions regarding the extra-territorial use of M2M numbering.

Question 19 – What are, in your opinion, the main elements that keep feeding the operators' demand for geographical numbers and respectively for location-independent numbers?

Question 20 – What other elements should be given priority when adapting numbering regulations? Please detail your view.

5.5 Improving licensing processes

2012 marked a significant improvement in the processes of licencing radio frequencies in Romania, with the organisation of the first competitive selection (auction) procedure. The great complexity of this process was brought about by managing the refarming of some bands and the amendment of radio frequency channells, by the amount and variety of frequencies under the hammer, by adapting the technical conditions of use to technological advancements, mediating legitimate public interests of promoting competition, fostering investment and maximising the effective use of limited resources.

In the vein of and refining the experience gained during the 2012 procedure, ANCOM organised further auction procedures⁴⁹, and another such procedure is in progress on the date of drafting this document⁵⁰.

On the other hand, 90 MHz - respectively 15% of the 575 MHz that went under hammer in the 2012 auction - remained unawarded, including due to the large amount of frequencies auctioned out and to the financial conditions in the procedure, which provided - *inter-alia* – substantial payments to be made on a short notice and significantly in advance of the scheduled entry into force of the licences. The licences for the national DTT multiplexes raised only low general interest in 2014, including as a result of the amendments of the relevant national strategy which took place during the 2010 multiplex auction⁵¹, amid the powerful presence of alternative television broadcasting (cable, DTH or IPTV) and the strict deadlines imposed by the calendar of transition to DVB-T2.

ANCOM will keep up working on improving licensing processes, developing and refining the experience gained with the previously organised auctions. To this end, future auctions will be organised by ANCOM with utmost consideration of the instruments that, while favouring competition among bidders, raise more interest in frequencies above 2 GHz and contribute to the full award of the available frequencies. Of course, promoting legitimate public interests regarding competition, investment and the effective use of scarce resources will continue to be at the heart of designing the coming auction procedures.

Question 21 – Do you agree on the elements identified to improve licensing processes? What other issues should be taken into account? Please detail your view.

5.6 Improving spectrum planning and use

In the transition from 2G to 3G and, recently, to 4G, the efficiency of the operators' using the spectrum increased considerably, by up to 8-10 times. Far from being exclusively the result of the implementation of new technologies with superior spectrum efficiency, the operators used the spectrum they hold with increased efficiency by base station densification, additional sectorisation of base stations etc. Moreover, SDR equipment introduced allow optimised spectrum use as in response to the rapid evolutions of service demand.

ANCOM will continue envisaging the maximisation of the social and economic benefits derived from spectrum use by a series of specific measures combining market mechanisms and public intervention: the prompt revision of the NTFA⁵² tuned up to the evolution of policies and technologies, promoting the harmonised use of frequencies, promoting the shared use of frequency bands⁵³ and ensuring spectrum availability under less and less restrictive usage conditions. Furthermore, ANCOM will contribute to improving spectrum use by timely organising

⁴⁹ Awarding licences for the national and regional DVB T2 multiplexes

⁵⁰ 3410 – 3800 MHz bands

⁵¹ Credible pan-European operators that bought the Terms of Reference for the 2010 auction did not show interest in the 2014 one

⁵² [National Table of Frequency Allocations](#)

⁵³ For example, in G/NG regime

selection procedures adequate to the specific situation in each band, by charging spectrum usage tariffs that stimulate the effective use of frequencies and by improving the effectiveness of preventive (monitoring) and reactive (control) measures, and by the regular public reporting of the results of such measures.

Particular attention will be granted to mediating the divergent usage requirements of key-bands, especially in lower frequencies, and the opportunity of changing the destination or of refarming some frequency bands will be analysed through cost-benefit analyses, in pursuit of the relevant legal provisions such as Article 29 of the Government Emergency Ordinance no. 111/2011. As well, spectrum planning and use will consider capitalising the competitive gains associated to unlicensed “wi-fi” spectrum.

Moreover, in the perspective of awarding new spectrum resources, ensuring radioelectric protection in border areas and coordination for the assignment of preferential frequencies require ANCOM’s active involvement, especially in the context of differences between different countries’ policies of using certain frequency bands. For example, although harmonised on the RSPG level for mobile communications, the continued use of the 700 MHz for national defence purposes in Bulgaria and the lack of plans for freeing up this band for mobile communications⁵⁴ raise the problem of coordinating these bands.

Viable competition in the mobile communications field requires a reasonable number of networks that can use sufficient amounts of lower and higher frequencies. Nonetheless, for the purpose of viable competition, networks do not require exactly the same frequency portfolios. In this vein, the asymmetries in the frequency portfolios acquired in the 2012 auction⁵⁵, highlighted by the subsequent developments in the number of base stations installed by operators, may be due to different business models, which are beneficial for competition.

In the short run, the demand for spectrum with a view to providing mobile communications may be deemed satisfied following the 2012 auction, as indicated by the opinions expressed in the public consultation on awarding rights of use in the 800 MHz and 2600 MHz bands, conducted in 2014. However, in the medium run, ANCOM intends to make available new UHF spectrum resources for mobile communications, in the 700 MHz band, following the release of the 2nd Digital Dividend.

Furthermore other frequency bands are susceptible to being awarded for mobile communications, for example the 1.5 GHz (from 1452 MHz to 1492 MHz) band, while possible developments on the ITU or EU levels regarding the “L” band (1427 - 1452 MHz/1492 - 1518 MHz) may recommend revisiting also the Romanian allocations and applications currently provided for.

Question 22 – In your opinion, how many times has increased your spectrum usage efficiency, starting from 2000?

Question 23 – Do you agree on the means identified by ANCOM with a view to improving spectrum planning and use? What other aspects should be envisaged? Please detail your view.

⁵⁴ See the [2015 Report on the Implementation of the EU Regulatory Framework for Electronic Communications](#), page 51

⁵⁵ For example, a stronger presence of operators in the 1800 MHz band was accompanied by a weaker presence in or even absence from the 2600 MHz (FDD) band.

Question 24 – What do you deem to be the effects of regularly making public the quantitative and qualitative results of ANCOM’s monitoring and control actions in the radio spectrum field? Please detail your view.

5.7 Stimulate service demand

Despite benefiting from the most performant fixed networks in Europe, Romania keeps registering the lowest internet uptake rate in the European Union: at the end of 2014, the penetration of broadband access connections had barely reached 49% of households (20% of population), and the penetration growth rate has been falling constantly, since 2012. The draft relevant market analysis recently published by ANCOM regarding the markets for the services of access to infrastructure elements and to broadband access services⁵⁶ reveals mainly causes that are not inherent (exogenous) to the communications sector.⁵⁷

ANCOM cannot contribute to treating exogenous causes. Nevertheless, ANCOM’s contribution to stimulating service demand is necessary and opportune in directions that converge with its mission and attributions.

Improving market fluidity

A first set of measures could envisage extending the areas of competition among providers by improving the fluidity of retail markets, affected by the proliferation of offers, as bundles of services and equipment. Thus, the ongoing diligence of reducing barriers to switching providers⁵⁸, by a possible revision of the regulatory framework and the establishment of rules that ensure enhanced protection of end-users’ interest and diminish/prevent the providers’ possibly abusive behaviour, as well as a review of the of the porting rules are issues to be considered in this respect.

Possible examples of effective interventions for reducing barriers to switching providers, with or without porting, may include introducing a trial period in continuing contracts, that should enable the user to stop the ongoing contractual relation in the first days since the contract conclusion, without justification and without indemnity, the possibility of drawing up and publishing regular reports on aggressive retention techniques applied by identified providers (“name & shame”), introducing the possibility of levelling up the different expiry dates of the minimum contractual duration of multiple services or bundles, introducing the possibility to transfer personal data, content and applications, once with the switching to a different provider, by porting.

Increasing the porting attractiveness, for example by providing the possibility of transferring the personal data stored in the terminal and in the SIM card, and/or by reducing the cost of this process may be an effective action direction, especially taking into account the fact that ANCOM is committed to covering all the costs incurred with the maintenance and access to the database

⁵⁶ http://www.ancom.org.ro/uploads/forms_files/EM_piete_bucla_locala_-_varianta_publica_11439470601.pdf

⁵⁷ PC penetration, digital literacy, poverty conditions for certain population segments, etc.

⁵⁸ Change of provider *lato sensu*, ceasing contractual relation with the service provider, with or without porting, within or outside the minimum contract duration, where applicable.

for ported numbers. As well, given the expected development of M2M and M2P services, the significant increase of the daily porting capacity and more flexible procedures accompanying a request for simultaneously porting a large amount of numbers are necessities to be considered.

Question 25 – In your opinion, should continuing contracts for communications services be exempted from the trial period? Why?

Question 26 – Do you deem effective the introduction of a “name & shame” practice for limiting the providers’ abusive or aggressive behaviour as to the users?

Question 27 – What other measures could be effective for improving retail market fluidity?

Reducing information asymmetry and increasing transparency

Secondly, ANCOM may continue adopting measures with a view to reducing the information asymmetry of the demand as compared to the offer and to increasing the transparency of useful information in the process of choosing an offer, for promoting a rational and informed consumption behaviour, to the detriment of emotional, hedonistic consumption behaviour.

[Veritel](#) and [Netograf](#) are powerful instruments for reducing the users’ information asymmetry in relation to the service providers, and they are increasingly accessed. [Veritel](#) registered a significant number of users since its launch and had a rapid impact on substantially reducing the complexity of tariff plans in the offers, especially for mobile telephony. [Netograf](#) statistics registered more than 110,000 valid tests on the users’ internet access speed in its first 8 months. Additionally, these instruments available to ANCOM allow the effective monitoring of the evolution of service tariffs and of the real quality of internet connections.

ANCOM intends to maximize the usability of the data that can be extracted from these instruments, by regularly drawing up and publishing comprehensive reports on the actual evolution of retail tariffs and the real quality of internet connections. Such reports, containing also indices and indicators on the evolution of tariffs and of the quality of internet access services, will provide visibility to market evolution and will enable the users to better understand the available offers in direct relation to the services they use, by placing the latter in the larger context of all the offers launched on the market since the beginning of their “minimum contract duration”.

Third, the growing number of intelligent terminals enabled for fixed or mobile connectivity (smartphones, tablets, laptops etc.) and the enhancement of the competitive relevance of internet access services augmented the importance granted by end-users to accurate information regarding serviced coverage and the quality of this coverage. Additionally, in the context of the operators’ using network coverage information as a marketing tool, the users’ checking information on the actual service coverage in the interest areas – at the points of sale or at the distributors’ points – is practically impossible.

Therefore, ANCOM aims to reduce information asymmetry between users and service providers as regards the service coverage by drawing up, publishing and updating interactive maps presenting the territorial coverage of networks, on a regular basis. Such initiatives of making

coverage maps for information and indicative purpose – not on a contract basis – is a regular practice in a significant number of European countries, both as a regulatory intervention and as the operators’ self-regulatory initiative. Currently, such maps are posted on the Romanian providers’ websites,⁵⁹ but their detail level and accuracy are still to be improved – especially given the fact that such maps are marketing instruments, while sanctions for the provision of inaccurate or incomplete information are inefficient or difficult to apply, from the perspective of the users’ contract duration.

ANCOM’s interactive maps will allow the graphic representation of a selected network’s coverage, by service quality categories that the users can easily understand and that can spur awareness of the expected service quality, in the overall network, and especially in the users’ interest areas. For example, the maps will present coverage information as regards data transfer rates, available technologies, terminal equipment used, as well as the quality level of the coverage – basic coverage (possibility to make calls and access the internet in open spaces, outdoors), good and very good coverage.

This initiative will envisage primarily mobile network coverage maps, due to the inherently uneven (variable) character of mobile network coverage and to the greater number of mobile internet users.

With a view to best exploiting the usability of service coverage maps and to additionally using the intensive spectrum monitoring activities, ANCOM intends to draw up and publish regular reports on the extent and quality of service coverage.

ANCOM’s initiative of drawing up and publishing interactive service coverage maps and coverage monitoring reports will indirectly stimulate also the operators’ efforts to improve their network coverage. Moreover, these instruments will be valuable information sources for ANCOM’s assessing and classifying the localities where access to services require public intervention.

Not the least, ANCOM aims at analysing the opportunity to establish a minimum set of quality indicators for the provision of mobile telephony service, to be included in end-user contracts, published on the providers’ websites and reported to ANCOM, on a regular basis.

Question 28 – In drawing up service coverage maps, what do you deem to be the role of on-site measurements and of software simulations?

Question 29 – Do you think that service coverage maps should present results also based on the users’ terminal equipment (e.g. tablet vs. mobile telephone)?

Question 30 – In your opinion, what would be the main difficulties associated with the calculation of price indexes and how can they be overcome?

⁵⁹ Following ANCOM’s Decision no. [158/2015](#)

5.8 Coverage requirements in the licences for the use of radio frequencies

The auction for frequency bands of great economic value organised by ANCOM in 2012 enabled the introduction of licence provisions regarding the priority coverage of 676 rural localities unserved by 3G networks. The coverage conditions were established for operators holding licences in the 800 MHz or 900 MHz bands, in proportion to the acquired bandwidth, and envisaged the priority coverage of areas inhabited by 90% of the population of the 676 localities, with mobile communications services in the UMTS technology, IMT-advanced technologies (HSPA, HSPA+), or LTE or equivalent, by means of their own infrastructure and not later than 5 April 2016.

ANCOM permanently monitors and verifies compliance with all the obligations in the licences, but it will also place great importance on reporting and publishing the conclusions of its activities in the field. Thus, ANCOM will publish a thorough report on the licence holders' compliance with the priority coverage obligations regarding the 676 localities, indicating the technologies used for ensuring coverage and the quality of this coverage, in each locality.

Coverage obligations cannot be amended for the licences in force or after licence issuance, but - in line with the 2012 auction model -, the mobile communications licences to be awarded by ANCOM until 2020 are susceptible to containing priority coverage obligations regarding unserved localities and geographical areas. Such obligations may be imposed both in newly licensed bands and upon possible licence renewal, assuming a greater interest in frequencies that are already in use. Moreover, coverage obligations in the newly licensed bands will be formulated taking into account specific propagation characteristics, while in frequency bands where licences are renewed, new coverage obligations will aim at extending coverage to further geographical areas.

Question 31 – Do you think that potentially higher interest in licence renewal may recommend more demanding coverage requirements, compared to requirements in newly licensed bands? Please detail your view.

Question 32 – In the perspective of licences to be awarded up to 2020, do you deem useful to establish concrete blocks, with extended coverage requirements? Please detail your view.

5.9 Extending network coverage by reducing TUS

According to the NGN plan⁶⁰, "ANCOM will analyse the opportunity of taking measures for bringing tariffs for the use of spectrum (TUS) below the value established by law, in the radio frequency bands used for the provision of New Generation electronic communication services, that – by their characteristics – contribute to meeting the targets of the Digital Agenda for Romania - 2020. The above-mentioned measures may be taken only in the context in which they have a vocation to contribute to achieving the objectives of the National Plan for NGN Infrastructure Development,

⁶⁰ [The programme for implementing of the National Plan for NGN \(Next Generation Network\) Infrastructure Development](#) page 47

ensure compliance with the national legislation, respectively with the EU legislation, on state aid and only upon the favourable advice of the Competition Council. The percentage reduction of the tariff for the use of spectrum cannot exceed 20% from the legally established value."

ANCOM will analyse with priority the technologies – from the ones currently used by the operators paying a tariff for the use of spectrum – that, by their characteristics, qualify for meeting the targets of the Digital Agenda for Romania - 2020. While LTE is the favourite candidate, ANCOM's analysis may also focus on the characteristics of WIMAX and HSPA+, including with a view to ensure a technologically neutral intervention, of equal treatment applied to operators and considering the possible impact on competition.

In ANCOM's preliminary opinion, an effective contribution of reducing TUS to achieving the objectives of the National Plan for NGN Infrastructure Development will be binding this measure to an amount of network investment at least equivalent to the TUS reduction. As well, investment in extending mobile network coverage by new generation services may be more effective in pursuit of the objectives of the NGN plan than improving the coverage of existing networks, such as upgrading GSM or UMTS by LTE technology in already covered areas.

To justify public intervention by TUS reduction, this investment should be achieved in geographical areas that would have remained unserved (in absence of a TUS reduction), should cover other areas than those envisaged by other public intervention and should drive to actual NGN service provision in the respective areas. In principle, taking into account the frequency amounts in the 800 MHz and 900 MHz bands made available by ANCOM, as well as the number and the geographical distribution of base stations, this mechanism should limit the financing of investment in pillars, masts and passive infrastructure in general, intended exclusively for serving localities that are uncovered by any communications networks and in exceptional geographical circumstances.

ANCOM will launch for public consultation an effective mechanism for ensuring the contribution of TUS reduction to the achievement of the National Plan for NGN Infrastructure Development, the soonest possible.

Based on ANCOM estimates, the full and thorough implementation of this reduction may clear investment funds amounting ranging between 40 to 63 million EUR up to 2020, depending on the eligible frequencies.

Question 33 – Do you agree on the preliminary elements identified by ANCOM for stimulating coverage extension by the policy regarding the tariffs for the use of spectrum? Please detail your view.

Intervention characteristics and classification of localities

The range of interventions available to (but not limited to) ANCOM given the magnitude of the coverage deficit, objectively require concerted action, so that the different intervention steps for maximising service availability should be most impactful. Therefore, these actions must be

complementary and should not overlap in any localities, despite their focus on different network elements. The number of localities and the number of inhabitants that are not covered by any networks are too big for doubling public intervention. For example, the requirements regarding priority coverage to be introduced in future licences will refer to other localities than those where investment has been financed by the TUS⁶¹ policy, while the state aid option will be available with respect to other localities than those envisaged by the previously mentioned measures. In this context, the continuity of service provision in the areas covered following the measures for maximising service availability will remain in ANCOM's constant focus.

It is obvious that the commercial attractiveness and the costs of network roll-out will substantially differ from one currently unserved locality to another, therefore a classification of such localities may be recommendable, based on a series of objective criteria such as population density, potential service demand, type of absent (or present) services, proximity to covered localities or to existing network backbone, particular geographic circumstances etc.

On the other hand, possible public interventions feature different characteristics: priority coverage requirements in the licences involve changes in the schedule of investment resource (capital) usage, the mechanism "TUS for investment" involves transfer of resources within the sector (from OPEX to CAPEX), whereas resorting to EU funds or state aid involves attracting additional resources. Under these circumstances, maximising efficiency of resource usage in the long run could recommend that localities ranking lowest in the classification should be targeted first by measures that involve attracting additional resources, those in the medium range - by measures that involve resources transfer within the sector, while localities ranking highest should be targeted by measures that alter the schedule of existing investment resources.

To the extent that the identification of localities susceptible to being covered by networks through public intervention may influence the operators' decision to invest from own funds, it is likely that confidentiality rules will be enforced regarding these localities or parts of the respective classification. Moreover, the classification of unserved localities may be useful in ANCOM's issuing its advice on conformity for other authorities' public intervention aiming the roll-out of communications networks, once again for the purpose of avoiding double public intervention in one locality.

Question 34 – Do you agree that overlapping public interventions for ensuring connectivity in one locality may reduce the efficiency of results and should be avoided, at least as long as there are localities still uncovered by communications networks? Please detail your view.

Question 35 – Do you think that, for enhancing the efficiency of public intervention, the benefits of classifying unserved localities exceed the costs and difficulties (information-, methodology-related etc.) associated to drawing up and updating this classification? Please detail your view.

Question 36 – Taking into account the scope of aspiring to a universally-connected society, do you deem that, by their characteristics, different forms of public intervention can be differently prioritized, based on locality classification?

⁶¹ Tariff for the use of spectrum

Question 37 – If you answered YES to the previous question, do you think that maximising the results of public intervention for connecting unconnected localities should be analysed with priority from the perspective of resource usage efficiency in the long run or in the short run? Please present your opinion on best prioritising different types of public intervention, based on a classification of unserved localities?

5.10 Net neutrality benefits

Net neutrality⁶² has been at the core of vivid discussions and controversies throughout the world, especially in recent years. The essence of net neutrality and the issues under debate envisage mainly the best means of keeping an open character of the internet network, of continuously ensuring high-quality service provision for all and of spurring innovation, while contributing to observing and valuing fundamental rights, such as the freedom of expression and the freedom of commercial activities. The European Commission, by the proposal for a regulation on establishing certain measures regarding open internet, expresses its firm intention to uphold the European citizens' rights of access to the internet in a non-discriminatory manner and to guarantee access to open internet.

Ensuring transparency on the quality of the internet access service is seen as having a crucial role in the process of ensuring a *net neutrality*⁶³, and ANCOM has already taken a series of important steps in this direction: certain technical⁶⁴ and administrative⁶⁵ indicators for characterising the quality of internet access services acquired contractual vocation, their minimum (or, maximum, as applicable) levels being mandatorily included in contracts. Furthermore, for purposes of monitoring and transparency regarding the degree of actual implementation, administrative indicators are regularly released within public reports⁶⁶, and the launch of [Netograf](#) application, in 2014, enables the users to assess the real performance of their services, both over time and against the contracted values, on the one hand and, on the other hand, it has recently allowed ANCOM to find and publish the actual fixed and mobile internet speeds⁶⁷.

A [Netograf](#) version dedicated to mobile terminals, expected to be launched in the near future, is likely to include additional functions, such as the possibility of uploading/sending the results directly in/to ANCOM's service coverage maps, for increasing the relevance of information contained in these maps on crowdsourcing bases. Configuring test frequency may be another [Netograf](#) function for mobile terminals.

Moreover⁶⁸, in pursuit of its role, ANCOM must understand and assess the occurrence and magnitude of practices such as **service degrading, obstructing or delaying traffic among**

⁶² Although no universally valid definition of *net neutrality* has been established, in BEREC documents, this concept is based on the principle according to which all electronic communications transmitted through a network must be treated on equal bases, irrespective of their content, applications, technology, service, equipment (device), sender or addressee. The sender and the addressee refer to the provider of the respective service/content/application and to its end-user.

⁶³ The principle of equal treatment of the traffic on IP protocol-based networks.

⁶⁴ See Decision no. 1201/2011: network latency, packet delay, jitter and packet loss

⁶⁵ See Decision no. 1201/2011: service provision deadlines, fault repair term, settlement of complaints etc.

⁶⁶ http://www.ancom.org.ro/rapoarte-calitate-internet_5029

⁶⁷ http://www.ancom.org.ro/vitezele-medii-reale-de-internet-fix-si-mobil-ale-operatorilor-din-romania-disponibile-pe-netografo_5420

⁶⁸ The provisions of Article 61 (4) of the Government Emergency Ordinance no. [111/2011](#) on electronic communications, approved with amendments and completions by Law no. 140/2012, with the subsequent amendments and completions

networks, which is essential in preserving *net neutrality*. ANCOM could aim, first, to develop, use and disseminate information on instruments for monitoring traffic management practices that may breach the neutrality principle⁶⁹. To this end, a first step could be extending the current functionalities of [Netograf](#) by integrating – in its online interface – of additional interfaces that enable testing the operators’ network reaction to using standard applications such as e-mail or HTTP, Peer-to-Peer file transfer, Flash video etc. Information available in the public domain⁷⁰ show that such interfaces have already been implemented by the regulatory authorities in Cyprus, [Greece](#), [Germany](#) and [Portugal](#).

An alternative to developing the Authority’s own net neutrality monitoring applications could be joining a pan-European application, to be developed by cooperating regulators.

Since ANCOM deems important to identify and monitor indicators of practices that breach the neutrality principle, for the purpose of determining a reference line, market monitoring along a period of time may enable the detection of out-of-range indicators. Thus, the technical parameters registered by [Netograf](#), possibly enriched by neutrality testing functionalities, will be analysed in annual reports on the quality of the internet access service that reveal whether quality-related statistics indicate service degrading or an existing risk of breaching the neutrality principle and could justify regulatory intervention, in some cases. Furthermore, publishing regular reports contributes to achieving greater transparency and may foster the uptake and effectiveness of [Netograf](#), while user awareness of the providers’ obligation to observe a neutrality principle may deter the latter from breaching this principle.

Question 38 – Do you deem that a joint, pan-European platform for assessing *net neutrality* breaches could be more beneficial than a platform developed by ANCOM? Please explain what conditions should be met.

Question 39 – What other measures, additional or complementary, could ANCOM consider with a view to ensuring compliance with the neutrality principle?

5.11 Broadband internet access – a universal service?

ANCOM’s recently published analysis⁷¹ shows that - at end-2014 – 664,000 people (3.3% of Romania’s population) did not benefit from broadband internet access services provided at fixed locations, as they lived in one of the 3,439 localities uncovered by networks able to provide such services. Absolute figures are overwhelming and reflect the situation in rural geographical areas that are relatively remote or difficult to reach, the average density standing at 193 inhabitants per locality unserved by fixed networks. Comparatively, rural localities served by one network feature an average density of 557 per locality. Despite the year-on-year improvements in networks coverage, the pace of “connecting” localities by market forces falls dramatically, the further networks are deployed into remote areas, with lower and lower demand concentration, where investment risks rise exponentially: from an average number of 1,170 localities per year,

⁶⁹ For example, *throttling* or *shaping*

⁷⁰ BEREC Report no. [117/2014](#) on monitoring the quality of internet access service, in the context of *net neutrality*

⁷¹ *Ibidem* footnote 30

newly-connected to broadband fixed networks during 2008-2012 (in spite of the economic downfall), to an average number of only 12.5 newly connected localities per year, during 2013-2014.

[Ro-NET project](#)⁷² will substantially contribute to the roll-out of fixed broadband networks in disadvantaged white areas, by financing backhaul networks and access points in 783 localities (22% of all the unserved localities) providing for a total cost estimated at 69 million EURO, i.e. approximately 90,000 EURO/locality. Moreover, the term for covering with 3G networks 676 unserved localities following the 2012 spectrum auction organised by ANCOM will be up in II 2016.

Furthermore, the first specific objective of the Digital Agenda for Romania provides that fixed broadband network coverage should reach 100% of the population, up to 2020.

In consideration of the existing universal service instrument and in pursuit of its mission, ANCOM may catalyse industry efforts for concerted actions, complementary to the measures already provided in the Digital Agenda for Romania and in the NGN Plan, for achieving the target of 100% fixed broadband network coverage.

The inclusion of broadband access services within the scope of universal service could contribute to effectively approaching the objective in the Digital Agenda for Romania, by using with priority the available resources. However, taking into account the Romanian electronic communications sector's capability of generating revenue for a contribution to the universal service fund, as well as the characteristics of this intervention instrument, universal service could not ensure, by itself, the amount of investment required for network roll-out in the more than 2,600 localities that would remain uncovered after the Ro-NET implementation.

In the end, in the context of reviewing universal service regulations, legacy services should be excluded from the scope of this service, where they no longer reflect current circumstances, for instance public pay telephones and hardcopy subscriber directories (phonebook).

Question 40 – Do you deem adequate to include broadband services within the scope of universal service? Please provide details, especially from the perspective of the usefulness of a universal service which in 2020 would be limited to fixed telephony services.

Question 41 – What would be the impact of including broadband services within the scope of universal service on the use of European funds and of state aid for extending network coverage?

5.12 Network and service resilience and security

Resilient and secure communication of information through electronic communications networks acquires increasing importance for the whole economy and society in general. Due to system

⁷² For building a national broadband infrastructure in disadvantaged areas, by using structural funds

complexity, incidents caused by system or human errors, natural phenomena or cyberattacks could affect the availability and functioning of the physical infrastructure that ensure the provision of electronic communications services to the users. As well, the security and integrity of electronic communications networks and services face ever greater risks, once with the networks' development and with the increasing user needs.

With a view to enhancing the level of security of the electronic communications networks and services, ANCOM intends to monitor the implementation of the current framework⁷³ by monitoring security incidents and the providers' response to incidents, to draw up annual reports on the reported incidents and to analyse the degree of implementation of the security measures, as well as the efficiency of the security measures adopted by providers. Moreover, ANCOM envisages drawing up guidebooks for the implementation of security measures, with a view to guiding the providers in the implementation of adequate measures for the protection of electronic communications networks and services, thus aiming at reducing the frequency of incidents and at increasing the users' trust in the contracted services.

New generation IP networks may fail featuring service resilience comparable to legacy PSTN networks, especially in power black-out situations at the end-users' point. This is a key issue, especially taking into account the historic role of PSTN networks in providing access to emergency services. Given that, in 2014, 45% of all the incidents were generated by power supply problems⁷⁴, another potential direction of intervention could be implementing security measures that ensure service continuity in the event of incidents caused by power supply problems, by imposing minimum requirements with respect to automatically switching equipment to back-up power supply.

Despite the significant improvement of the electronic communications networks performances, in the IP context, these networks feature specific vulnerabilities, sometimes even greater than those of traditional networks, and trigger a wide range and an enlarging number of threats, different from those considered for traditional networks.

Furthermore, given the increasing importance of the internet infrastructure, and the necessity of assessing the resilience of the Romanian internet ecosystem, we need a general picture of the internet infrastructure at a national level. In this context, ANCOM aims at identifying the means to determine internet nodes and connections at a national level, at determining the critical nodes and connections and monitoring their availability, as well as at integrating the findings in regular reports on the status of infrastructures in Romania.

Since electronic communications networks and services are more and more vulnerable in the event of attacks enabled by information technology means, in consideration of initiatives taken at a national level by adopting regulations in the cybersecurity filed, ANCOM, within the scope of competence provided by the law, will consider a more thorough approach of the information security field, by studying the possible risks, threats and vulnerabilities posed to the functioning of electronic communications networks and the adequate means of detection, analysis and response to security incidents and by identifying the corresponding measures.

⁷³ Decision no. [512/2013](#) on establishing minimum security measures to be taken by the providers of public electronic communications networks and of publicly available electronic communications services and on reporting incidents with significant impact on the provision of electronic communications networks and services

⁷⁴ The latest ANCOM report on [incidents that affected the security and integrity of electronic communications networks and services](#), in 2014

Question 42 – How do you deem that emergency service availability on IP networks could be best ensured for a reasonable period, in the event of a total black-out?

Question 43 – What other problems should recommend the prioritisation of ANCOM's diligence for ensuring the resilience and security of networks and data? Please detail your view.

5.13 Equipment market surveillance

Market surveillance guarantees that fact that the products entering the EU market are compliant with the applicable essential requirements. In situations of failure to meet these requirements, steps need to be taken to prevent the placing on the market, putting into service of the respective products, their withdrawal or call back, while ensuring the dissemination of related information to the public, to the European Commission and to the other Member States.

ANCOM's and other MS market surveillance authorities' experience revealed that not all the equipment in the market is compliant, despite the manufacturers' presenting test reports showing that the documented equipment meets the provisions of the relevant standards. Therefore, ANCOM's accredited testing laboratory is an effective means of verifying equipment compliance, based on the relevant standards. Reports drawn up upon tests being conducted in accredited laboratories are difficult to challenge, for any enterprise.

Accrediting and starting tests in its Laboratory will allow ANCOM to fulfil, in an optimum manner, the objectives related to market surveillance in the electromagnetic compatibility field.

Substantial enhancement of ANCOM's capacity of market surveillance and conformity checking capabilities, reflected in reduced the duration and increased accuracy and efficiency of the activities of measuring electromagnetic emissions produced by electrical and electronic equipment, as well as performing immunity tests regarding the functioning of such equipment in various conditions, will enhance the regulatory action on the equipment market level.

Taking into account the intended widening of the programmes for market surveillance⁷⁵ once with the commissioning of the Laboratory, and in the context of transposing into the Romanian legislation of the new directives in the field of electromagnetic compatibility and of radio equipment, ANCOM intends to explore adequate methods for rendering conformity checks more efficient.

Question 44 – To what extent do you deem that surveillance of the radio equipment market or that of checking compliance with the essential requirements in the electromagnetic compatibility field fosters a safer electromagnetic environment, adequate for the functioning of electronic communications networks and, therefore, - as applicable - for higher quality electronic communications services? Please detail your view.

⁷⁵ <http://www.ancom.org.ro/programul-sectorial-de-supraveghere-a-pietei- 4645>

Question 45 – What other issues should be approached by ANCOM as regards market surveillance (e.g. conduct information and awareness raising campaigns on the market surveillance field/topic, what are the minimum requirements of which a buyer of equipment/devices must be aware etc.)? Please detail your view.

Annex 1 – Strategy diagram

