

**Telecom Italia response to
EUROPEAN COMMISSION Consultation
on
Open Internet and Net Neutrality in Europe**

30th September 2010

General comments

Telecom Italia welcomes the opportunity to answer the Commission questionnaire on the Open Internet and Net Neutrality in Europe.

Before addressing the specific questions, we would like to provide our view on the main issues of the consultation.

Openness of the Internet and network management

Telecom Italia supports the main principle of Net Neutrality which is the openness of the network, meaning that - as stated in the provisions of the EU directives - all customers are able to access the content, applications and services of their choice, irrespective of the technology used, be it fixed or mobile, in ways that provide all of them with the best possible experiences and services.

It is a matter of fact that data traffic is growing exponentially (a 130% per year increase in data traffic over the next three years is expected¹) and that, in the future, "bandwidth hungry" applications (for instance video) will represent over 90% of network traffic. This market evolution will require a network evolution and an efficiency improvement by Operators: investments for this massive network capacity growth have to be financially sustainable and take into account the intrinsic IP resource limitations and the need for an efficient use of available resources both in the fixed networks (e.g. backhauling, line rate,...) and mobile networks (e.g. spectrum scarcity).

The foreseen traffic growth, therefore, cannot be faced only by expanding the network capacity as this approach would require a massive capacity increase that would not be financially sustainable by Operators in the fixed networks and utterly impossible in the mobile networks, where frequencies are not expandable at wish.

The explosion of data and multimedia traffic due to an increasing plurality of different applications, therefore, requires that Operators, as appropriately recognized also in the New European Regulatory Framework², introduce more efficient network management tools with the aim to provide a sufficient quality of services for all applications, end users and service providers.

Without the possibility for Operators to manage their networks, the traffic explosion would indeed inevitably lead to a decrease in the quality of service and thus negatively impact the customer experience. It's important to underline that traffic management methodologies we consider are not aimed at limiting or interfering with the freedom of expression, media pluralism and cultural diversity.

On the other hand, more efficient networks evolution and related additional investments will enable the improvement of the average quality of services provided to all end users, allowing the access operators to continue providing mass market broadband access at affordable conditions notwithstanding the investment increase. Indeed, without the possibility for operators to manage their networks, the cost of the (significant) additional investments on capacity increase required to keep up the quality of services would necessarily be "passed on" to the retail market and thus paid by customers by means of price increase and may hamper the diffusion of broadband and ultra-

¹ Source: Cisco, 2009

² We refer to the Directives 2009/136/CE and 2009/140/CE

broadband access to the European customer as requested by the targets of the European Digital Agenda.

In order to prevent the above-mentioned negative impact on customers, Operators need to manage services on their networks to deal with dynamic traffic flows and different application requirements to tailor delivery to the specific individual service requirements, within the limits of constrained capacity and network resources.

Telecom Italia therefore considers essential and appropriate what defined, in the context of the principle of “openness of the network”, in art. 1 and 8 of the Framework Directive and in recital 34 and art. 1 and 22 of the Universal Service Directive.

The application of non discriminatory network management practices leads to a “win-win” situation as Operators can optimize network resources and customers will benefit from the enhanced medium quality for both critical and bandwidth intensive multimedia applications.

Managed Services issues

Telecom Italia does not believe that an un-managed approach, whereby all services have to be provided on a *best effort* basis only, can be sustainable in the long term.

In order to deliver the right customer experience, beyond the ‘intelligence’ of the network, considered essential as explained before, the possibility for Operators to offer different levels of Quality of Service could be an appropriate evolution to meet market needs. Our perspective is that quality differentiation on the basis of application requirements in terms of speed, bandwidth availability and other service features, will be a natural customer expectation.

It is important to underline that the reason why operators are evolving their networks towards the so-called Next Generation Networks consists in the provision of a wide range of differentiated end-to-end managed services and so with the possibility to offer predefined levels of quality of services, reliability, security, session control, traceability and accountability of user activities, mobility control, roaming, service continuity across different technologies and providers.

The segmentation of the market with differentiated offers (for instance with different levels of quality of service) leads to the appropriate allocation of the costs of specific services to the customers who are willing to use them, thereby allowing customers with lower requirements to pay a lower price.

On the other side, Telecom Italia deems important that Operators be able to differentiate their offers also at wholesale level (B2B).

On the one hand this would allow application and content providers to ask for the appropriate quality levels for their services. On the other hand, wholesale quality and price differentiation would constitute an incentive for application and content providers to use the network more efficiently, thus reducing network investments needs; and it would provide the remuneration for the use of Operators’ network resources (reducing inefficiency and misuse of the network).

In this context, Telecom Italia makes it clear that complete end-to-end managed services (for instance telephony) are not involved in network management issues. Such services are fully managed by operators over the whole provisioning chain and are offered guaranteeing end-to-end determined features and specific performances. As a result of their intrinsic quality characteristics, they need specific network conditions and requirements both at service and transport level and therefore pure Net Neutrality principles can not apply.

End-to-end managed services are not offered through the so-called Big or public Internet but are based on new and specific architectures, generally included in Next Generation Networks solutions, consisting in common and standardized complete transport and service platforms.

There lies the (evident) difference: in the case of services offered by the ISP on the Big or public internet, where the ISP can't have the full control over the whole networks chain, the intrinsic nature of the Big or Public Internet - which consists of various national and international independent networks - enables the provision of just a *best effort*³ pure end-to-end IP connectivity service. Indeed, using IP connectivity to provide end-to-end specific electronic communication services (ECSs), for instance a telephone service, *best effort* services provision will result (also regarding each single communication set up between end-users). In such a case a specific common software client needs to be used in each terminal or PC; that is the reason why VoIP services simply operating on Internet by end users and/or software client providers (for instance Skype) are generally not interoperable with each other, unlike existing telephone networks that provide PATS, in a context of technological neutrality principle as well.

In conclusion, Telecom Italia deems the introduction of differentiated offers based on QoS levels the lever to widen the offer available for customers and deliver the right customer experience. Such offers intrinsically need specific network architectures and the use of specific network resources that have to be properly remunerated in order to support network evolution and the related investments.

The Internet Value Chain

The Internet ecosystem is complex and involves multiple activities and players: content right owners, online services, enabling technologies, connectivity providers and user equipment. Telco Operators represent just one link of the chain.

Indeed, the Internet service value chain involves many additional subjects in comparison with the traditional telecommunication value chain, whereby network Operators play the role of network as well as service providers.

In the internet value chain, there can be a dichotomy between service providers and the ones who provide the infrastructures to deliver those services. In this scenario, network Operators bear all the weight of the investments needed to build technologically advanced networks to support the innovative services developed by application and content providers. As a consequence the current Internet business models have to evolve to follow the new scenario to catalyze the potentialities associated with market evolution and innovation.

³ "best effort" characterization means that it is not possible to define or assure a specific pre-defined quality of service between network end-points towards end users and related set of applications directly operated inside own terminals or PCs.

Network Operators have to avoid the risk of being a mere “dumb pipe” for application and content providers. This result would risks to be short-sighted: a totally neutral network, not governed by specific wholesale agreements involving all the commercial actors of the chain would lead to a non sustainable and, indeed, not viable TLC market development for network Operators, which need a reasonable return, including a fair risk premium, to keep investing in advanced broadband and ultra-broadband infrastructures that promote social and economic development and create new business opportunities for content and application providers.

In the medium/long run, the lack of adequate investment return, would freeze the network investor interest, leading to a poorly commercial scenario with progressive degraded *best effort* quality and decrease of network technological developments with, as a consequence, lower and lower support to advanced services.

To avoid this scenario, actions should be taken today to create a level playing field and a fair allocation of value among all players of the internet value chain, in particular between web based content providers, internet service providers and network operators.

In order to support market innovation for multimedia services new business models should be encouraged: we anticipate that both application/content service providers and customers could need greater certainties in the provision of applications/contents and, therefore, more predefined and reliable Internet access services may be required to increase Internet robustness in a medium/long term view. As a consequence, business models are likely to evolve towards differentiated retail as well as wholesale offers on the basis of agreed quality of service.

Such differentiated quality IP connectivity offers should be appropriately remunerated by the whole value chain, so that costs would not be exclusively levied on the Internet access service providers and end users, but also content/application providers at wholesale level would be charged according to the used applications and the required network performances.

The realization of this scenario is unlikely though, as long as a level playing field is not created among all players in the value chain.

As a matter of fact, the European Framework enforces rules only to specific players, the Telco, of the internet enlarged arena, thereby generating a concrete asymmetry on “negotiation power” that reduces *de facto* the flexibility for network Operators to define alternative business models aiming at efficiently recover their investments.

Moreover, while Telco players are mainly national, and in any case European, web based content providers are typically international (mainly from the US). An unbalance between the different players thereby directly impacts on the competitiveness of Europe towards the rest of the world, and the US in particular.

Telco operators already face a distortion in competition in other sectors, such as Data Privacy, where stricter rules are applied to European players, than those levied on extra European players.

Telecom Italia believes that a further tightening of the regulation only over Telco players, who already suffer from asymmetric treatment, would hamper their possibilities to adopt adequate business models and drive the innovation process.

In conclusion, Telecom Italia believes that the current Internet business model is not sustainable for network operators and, therefore, sensible changes should be

implemented in order to avoid a potential hampering of market evolution and innovation. Actions should be taken today to create a level playing field and new incentives for a fair allocation of value among all players of the internet value chain, in particular between web based content and application providers, internet service providers and network operators.

Answers to specific consultation questions

Question 1:

Are there currently a problem of net neutrality and the openness of the internet in Europe? If so, illustrate with concrete examples. Where are the bottlenecks, if any? Is the problem such that it cannot be solved by the existing degree of competition in fixed and mobile access markets?

- The European Regulatory Framework and particularly the revised new Directives entered into force at the end of 2009, as well as the high degree of competition of the European telecommunications markets, ensure complete freedom of access to Internet applications and services by end users and in the meantime competition between internet access service providers and freedom in the provision of any service/application/content over the Internet.

In Europe, internet access service providers operate within a robust framework that ensures openness and competition amongst them. As correctly stated by the Commission on the questionnaire, *“The degree of competition that exists in the local access market as a result of regulation [...the unbundling of the local loop and other regulatory measures affecting the local access market (e.g. bit stream access)] may be one of the reasons why issues of net neutrality have not arisen more prominently in the EU...”*.

The high degree of competition in the European market, as well as the very two-sided nature of the internet market itself, induces Operators to offer the widest possible range of services to its customers at the best available prices.

The only “limits” imposed on customers either derive from the need for operators to face problems of network congestion (network management) or from the offer segmentation, implemented to address customers needs (differentiation by application or by quality of service). In both cases operators manage their network in the best interest of customers: on the one hand aiming to provide all customers with an acceptable level of quality, on the other hand allowing customers to choose among the broadest possible range of options, thereby ensuring a real open and dynamic internet.

Customers are fully protected from potential anticompetitive behaviour both by the Transparency and by the Non Discrimination principles, which are rooted in the European regulation and have even been further enhanced by the recent review of the framework.

In EU there have been a very few cases of anticompetitive behaviour by Operators, which either have been solved directly by the Operator itself before any formal intervention of the Authorities, or, as in the case of Italy, have triggered an intervention of the Italian Antitrust Authority (i.e.: Tele2 case, due to a lack of transparency with regards to Peer-to-Peer traffic shaping).

Therefore Telecom Italia maintains that the New European Regulatory Framework is a sound ground to establish at the national level appropriate rules that on the one hand will allow customers to be fully informed about the management of the networks of their choice and, on the other hand, make sure that operators can efficiently manage the networks.

The European context is very different from the one of the U.S.A where the Net Neutrality debate was born to protect the users against any limitation to Internet access and associated services and applications. In fact, the U.S.A. regulation is mainly based on antitrust principles acting ex-post while ex-ante impositions and the related analysis of relevant markets are not considered.

On the other hand the robust regulatory framework applied in Europe is sufficient to ensure complete freedom of access to Internet applications and services by the users and in the meantime competition between internet access service providers and freedom in the provision of any service/application/content over the Internet.

If a bottleneck exists, it is indeed of another nature, and problems are bound to arise in other parts of the internet value chain (please see answer to question 2).

Question 2:

How might problems arise in future? Could these emerge in other parts of the internet value chain? What would the causes be?

- Recent market developments changed the competitive framework of Internet services, so that the main competition issues arise at the level of the so called "Over The Top" players that have gained a predominant role in the value chain, controlling the majority of Internet service revenues with a much lower percentage of total investments.
- The transnational nature of the Internet causes a gap between the European law-abiding players and other non European Internet players to the detriment of the EU competitiveness (e.g. in the different rules for on line "profiling").
- European rules should evolve also taking into account the global dimension of the current internet service market.

TI believes that problems are already arising in other parts of the internet value chain. Recent market developments and new successful business models have in fact given birth to a large number of matters, which are not easy to deal with.

There is broad consensus that five main markets can be pointed out in the internet value chain: Content Rights, Online Services, Enabling Technology/Services, Connectivity, and User Interface.

In the light of the distinction among these markets, it has to be recognized that other players, who operate "Over The Top" (OTT), have definitely changed the scenario and the competitive model, so that the main issue is no longer the competition among network operators, but rather the competition between network operators and OTTs.

Indeed, while Telcos still have significant market power in one side of the market (Access Services), with market shares which are however steadily declining over time, considering the whole internet value chain, their revenues are shrinking due to the fact that other players have gained a predominant role in the value chain controlling the majority of Internet service revenues with a much lower percentage of total investments.

It is worthwhile to underline that these other players (not being in any way notified as having significant market power and generally operating worldwide) are not subject to the same rules as Telco operators (who have significant market power and operate generally in their national market) and are efficiently managing to exploit the networks without the typical constraints the latter have.

Indeed, while they definitely contribute to increase the bandwidth demand by creating their services and applications, they do not share with Telcos the burden of the investment.

Hence, in our opinion, the net neutrality debate should take into account also these issues, focusing on the relationships between operators on the one hand and the content, service and application providers on the other.

The Net Neutrality principle cannot be misused by OTTs unjustifiably strengthening the disadvantages of Telco operators and allowing the OTT to access the network without foreseeing an appropriate remuneration of the network resources they use. Telecom Italia deems that the New European Regulatory Framework, by recognizing the possibility for operators to apply traffic management techniques with a transparent information to customers, also regarding possible not discriminatory limitations to specific application provision, is the right way to face the issue of Net Neutrality and in the mean time support market innovation.

This will enable as well new business models which could foresee the possibility to agree among OTT and Telco providers' connectivity services with a variety of quality levels and performances adequate to the plurality of different applications and services.

As a matter of fact, OTTs not only have a huge power on customers, but even more so on Telcos: it is indeed impossible for a Telco to restrict or deny access to high-bandwidth-demanding OTTs web services, as in this case, in a competitive market such as the European Broadband market is, the customers would simply shift network operator and the Telco would lose its only source of revenues, as customers generally pay a flat fee for their broadband access.

Moreover, OTTs have grown developing vertically-closed systems, where services (i.e.: email, chat, etc.) and sometimes devices, are linked and tied to each other. As a result, once customers enter the "ecosystem", it is hard for them to leave it, thus it is impossible for Telcos to haggle with OTTs over common business models or basic commercial agreements.

In addition, it is worthwhile to underline that OTTs, being usually extra-EU players, have an additional advantage compared with Telco operators. They are indeed not subject to any of the EU regulation. This situation leads to a lack of a level playing field among players operating at different levels of the value chain.

National laws and regulations are by definition "territory-linked", whereas the internet lives and prospers in virtue of its "transnational" nature.

In fact, the transnational nature of the Internet causes a gap that the European law-abiding players hardly manage to fulfil, hindering competition among players who operate in the same market but are established in different countries.

An example of this transnational leverage is the on line "profiling" for advertising purposes which is ever more debated also at an EU-level. A non-European player has, de facto, more effectiveness in understanding habits, trends and preferences of the users, due to lesser constraints about privacy. This causes an unfair competitive advantage at the expense of a fair functioning of the market and, in general, of the European countries competitiveness.

Here is the aforementioned asymmetry: Telcos are facing an enlargement of the competitive arena, bound with rules that have been designed for a very different world. As often happens, the real market runs faster than regulation; we must acknowledge that the competitive arena is dramatically different from the one that inspired the actual regulatory framework: this must be modified, to take into account the evolutions, and adapted to cope with the needs arising from the environment.

New business models create new actors on the market; these actors can not live in a perpetual regulatory holiday: they need to be subject to clear and sound rules.

At the same times, nation-specific rules are out of context and even dangerous because they allow subjects operating in a transnational environment to benefit from a perpetual competitive advantage.

Rules and regulation must evolve, considering the owner of the information/service besides the owner of the network, taking into account the geographical extent of the current internet market, that's evidently measurable in a global dimension. Imposing new constraints at a European level applicable to the network access provider may strengthen the current unbalance among the different players of the Internet value chain.

Question 3:

Is the regulatory framework capable of dealing with the issues identified, including in relation to monitoring/assessment and subsequent enforcement?

- European *ex ante* and *ex post* regulation, combined with the increasingly high level of competition observed in telecommunications markets, is sufficient to avoid any potential harm to customers.

In order to answer to this question it is necessary to precisely identify which is the regulatory goal pursued.

According to Article 8(4) of the Framework Directive "*The national regulatory authorities shall promote the interests of the citizens of the European Union by inter alia: (...) promoting the ability of end-users to access and distribute information or run applications and services of their choice.*"

This goal, which the consultation document defines as promotion of net freedoms, is compatible with traffic management mechanism applied by operators, as already recognized in the Universal Service Directive.

It cannot be questioned, in fact, that non discriminatory traffic management tools are widely required to assure to all end-users similar quality levels, improving the capability to access and distribute information and/or run whatever application or service they might want to run.

Regulators are therefore called to identify the best possible alternative in order to achieve the aforementioned goal and to adapt regulation accordingly.

In doing that, they have to take into consideration Article 8 (1) which applies the proportionality principle to this specific context by reminding them that "*(...) measures shall be proportionate to those objectives (...)*".

This means that their intervention must be limited to what is necessary to achieve the relevant objectives thus choosing the approach which leaves the greatest freedom to the Member States and individuals.

The New European Regulatory Framework already includes the regulatory principles allowing both the provision of differentiated services in a competitive environment and a complete freedom of choice among the different services by users. Moreover National Regulatory Authorities and Governments have the power to monitor the situation and intervene in the application of the regulatory principles.

Telecom Italia deems that the combination of competitive markets, the new safeguards introduced by the New European Regulatory Framework and the enforcement of the competition law are widely sufficient to avoid any potential harm to customers.

Question 4:

To what extent is traffic management necessary from an operators' point of view? How is it carried out in practice? What technologies are used to carry out such traffic management?

- IP traffic dynamically and rapidly evolves with geographical aggregation and diffusion not foreseeable that cause local congestion conditions. Therefore, IP network traffic needs to be monitored through appropriate traffic management mechanisms usually defined and recognized by international standardization Bodies (for instance ITU).
- Traffic management techniques not discriminating specific service categories or applications, operators or service providers and if transparently communicated to end users, allow real net neutrality, enabling compliance with the performance parameters of each service and avoiding a misuse of the network by some users to the detriment of other ones.

As regards network planning and traffic management, it is important to underline that any network needs to be governed through such technical approach, which is essential also for the provision of pure IP connectivity for Internet services.

Since network resources are not unlimited the assumption that operators should simply increase the network capacity to meet demand and avoid network congestion is not concretely viable, above all when facing exponential IP traffic growth. In fact, it is not possible to design a network able to manage unlimited amount of traffic and to satisfy every specific local and dynamic need without applying network resources planning and traffic management mechanisms. Moreover, that approach will imply that all the costs of network will be completely sustained by end users also for the consumption of network resources used by services that are not directly used by them.

The application of network planning and traffic management principles is indispensable to manage local congestion situations and make the use of network resources efficient also from the economical point of view, allowing the sustainability of the more and more heavy network investments.

The Net Neutrality principle itself, applied to all users, needs the application of traffic management mechanisms in order to ensure satisfactory average quality levels and application policies specified into the user service subscription. In particular, for the generic Internet access, the traffic

management application enables the same satisfactory average levels of quality to each user independently of the used specific applications/services and above all it protects, in perspective, the whole customer base against the misuse of the network by someone (using the so called bandwidth hungry applications) to the detriment of the others. Only the use of such mechanisms ensures the possibility to pursue the provision of a plurality of applications by content/application providers and their real use by end users.

Traffic management therefore implies granting to all internet users a common satisfactory average level of quality. Notwithstanding the rapid diffusion of bandwidth hungry applications, ISPs cannot ignore the fact that a substantial part of their traffic is still dedicated to real time applications. Any form of segmentation which would jeopardize the quality of these applications would therefore be strongly detrimental of ISPs average quality of service and business success. Segmentation and network management, therefore, would normally lead to a more efficient use of the bandwidth.

ISPs have so far put in place little or no segmentation of traffic flows. The result is that, in many instances the inefficient and uneven distribution of bandwidth between end users as well as absence of any form of management has led to substantial impossibility for many users to access applications and/or services of their choice.

This is what happens where there is a situation of partial or total congestion of the network due to an excess of traffic. These circumstances occur the more and more often as the penetration of bandwidth hungry applications increases.

This would normally bring to a scenario in which:

- there is a highly inefficient use of bandwidth thus increasing substantially the likelihood of total or partial network congestion;
- the available bandwidth would be in great part used by bandwidth hungry applications which are more aggressive and run by smart users thus leaving the majority of users (normally using real time applications) with a highly deteriorated service;
- apart from investing in the expansion of the network, ISPs have little room for interventions aimed at increasing the average quality of service;
- innovative and enhanced services would have a hard time to be introduced and made available to those users who are willing to pay for them

With traffic management tools application, ISPs can handle traffic flows with adequate not discriminatory connectivity network performances both at the B2B and at the B2C level. This scenario would normally bring to a more efficient use of the overall bandwidth which should be managed as much as possible according to business needs.

This would normally bring to a situation in which:

- efficiency in use of bandwidth would be maximized;
- ISPs would have the possibility to grant an acceptable average quality of service to all their users;
- ISPs would have the possibility of developing adequate business models for the introduction and diffusion of enhanced services;
- success and penetration of enhanced services would favour investments in expanding existing networks;

Traffic management mechanisms are usually defined and recognized by international standardization Bodies (for instance ITU), to provide a similar medium quality to all applications on IP networks.

In fact even if designing and dimensioning strategies on IP networks are applied, considering the intrinsic IP technologies characteristics and the static nature of network dimensioning and planning, local congestion conditions will happen, since IP traffic dynamically and rapidly evolves with geographical aggregation and diffusion with no possibility to foresee it in the designing and planning phase. As a consequence IP network traffic needs to be monitored through appropriate technical tools, usually consisting in traffic shaping and packet inspection techniques application as indicated by common international “best practices”.

Network planning and traffic management, if used in the right way without discriminating specific service categories or applications, operators or service providers and if transparently communicated to the users, allow a real net neutrality, enabling a more efficient use of the network and the compliance with the performance parameters of each service and avoiding a misuse of the network by some users to the detriment of other ones.

In light of the above, it is therefore possible to argue that the best approach to protect end-users freedom to exploit the whole potential of the Net is that of leaving the market forces free of allocating bandwidth according to end users preferences and efficient network management.

Question 5:

To what extent will net neutrality concerns be allayed by the provision of transparent information to end users, which distinguishes between managed services on the one hand and services offering access to the public internet on a *best effort* basis, on the other?

- Full and transparent information to end users, provided by all actors in the Internet value chain, is likely to guarantee the openness of the Internet, allowing fully informed customers' choices between “managed” and “best effort” Internet services.

Telecom Italia believes that in a competitive environment such as the European markets are, transparency can address most of the concerns about the openness of the Internet, as customers who are fully and transparently informed about the characteristics of the services offered by the different providers will be able to make their selections according to their individual preferences.

Telecom Italia is therefore in favour of the maximum transparency towards the customers and agrees with the provisions of the New European Regulatory Framework whereby each service has to be provided ensuring the maximum transparency of information towards the user and complying with all the conditions indicated into the contract. Such conditions include also:

- information on quality of service;
- information on the applied network mechanisms in order to preserve a well functioning of the network and possible related limitations.

Moreover, we deem that transparency over restrictions to access to services and to openness should apply to all actors in the internet value chain.

Question 6:

Should the principles governing traffic management be the same for fixed and mobile networks?

- Mobile operators face an additional bandwidth constraint, due to spectrum scarcity, that need a higher degree of freedom in managing their networks, as recognized also by Google in its recent agreement with Verizon.

The New Regulatory Framework does not distinguish between fixed and mobile networks. Nevertheless, the two networks have intrinsic characteristics that render a different treatment necessary.

In particular, while in the fixed network access resources are dedicated to the single customers, in the mobile network, spectrum resources are shared among an unpredictable and variable number of customers who are physically in the same cell at the same time.

Moreover, the additional bandwidth constraint of the mobile networks imply an even more pressing need for mobile operators to implement network management tools to ensure a common medium level of quality to all customers.

The need of a different treatment of mobile networks has recently been recognized also by other actors of the internet value chain (see Google-Verizon proposal: “we both recognize that wireless broadband is different from the traditional wire line world, in part because the mobile marketplace is more competitive and changing rapidly. In recognition of the still-nascent nature of the wireless broadband marketplace, under this proposal we would not now apply most of the wire line principles to wireless, except for the transparency requirement”) and the FCC has postponed any decision of the matter and required further information from the stakeholders.

Telecom Italia supports this position. While, technically speaking, network management techniques are the same for fixed and mobile networks, considering that mobile networks have more rigid bandwidth constraints and require more efficient network resources use to provide high quality services, mobile operators will indeed need to develop new techniques to manage the strain on network capacity that will be imposed by increased mobile broadband adoption. Dramatic traffic increase, coupled with rigid bandwidth constraints, will make the implementation of network management techniques essential to provide a good customer experience to clients.

Therefore mobile network operators will need to have a higher degree of freedom in managing their networks, while transparency will be key to ensure customer protection.

Question 7:

What other forms of prioritisation are taking place? Do content and application providers also try to prioritise their services? If so, how – and how does this prioritisation affect other players in the value chain?

- Traffic management techniques do not introduce traffic prioritisation mechanism, but they shape IP traffic to correctly manage network resources to guarantee satisfactory average quality levels and better service performances to all the customers

- IP networks may also be managed by operators to provide some QoS classes for different IP connectivity services and to realize end-to-end “managed” services (in addition to the intrinsically “best effort” Internet services) appropriately remunerated by all the segments of the value chain

First of all it is important to distinguish end-to-end managed services (for instance telephony) from Internet services based on a generic Internet access.

In fact end-to-end managed services are fully managed by operators over the whole provisioning chain (through appropriate wholesale agreements) and they are provided through Next Generation Networks, consisting in common and standardized complete transport and service platforms and architectures and they use specific network resources in accordance with the specific service requirements.

Such complete end-to-end managed services do not impact on Net Neutrality issue since they are particular services with specific features (in terms of quality of services, reliability, security, session control, traceability and accountability of user activities, mobility control, roaming, service continuity across different technologies and providers) and a specific network use also based on traffic dimensioning and planning.

On the other hand, providers offering services based on internet access can't have the full control over all the network resources and components used by the service due to the intrinsic nature of the Big or Public Internet that is constituted by various national and international networks. Services offered by such providers are therefore intrinsically *best effort*.

In any case, traffic management is required also for these services in order to guarantee medium quality levels and better service performances to all the customers.

Generally speaking traffic management tools do not introduce traffic prioritisation mechanism, but shape originating IP traffic to correctly manage network resources hungry applications with respect to other applications, assuring an effective neutral IP network.

IP networks could be planned and managed by operators to provide some QoS classes for different IP connectivity services. This could be related both to general Internet access services and/or to access to specific content/application service providers, through direct and specific wholesale bilateral agreements.

Such a possible future scenario could support market innovation for multimedia services and encourage possible new business models, whereby application/content service providers who need greater certainties in the provision of their own applications/contents to end users - and, therefore, more predefined and reliable Internet access services - may require to increase Internet robustness in a medium/long term view. As a consequence business models are likely to evolve towards differentiated wholesale agreements on the basis of agreed quality of service.

Such differentiated quality IP connectivity offers should be appropriately remunerated by all the segments of the value chain, so that costs would not exclusively fall on the Internet access service provider and related end users, but also content/application providers at wholesale level would be charged according to the applications' use and related impact on required network performance.

In this case we do not see any specific Net Neutrality issues, since it concerns the possibility for operators to provide premium services and specific offers towards end-users and/or service providers through their own IP networks.

Finally, considering that the New European Regulatory Framework already provides appropriate measures to analyse and prevent any market distortion and to protect end users, we do not see any particular regulatory issues for this possible offer evolution in the future, since it is a commercial and market driven context.

Question 8:

In the case of managed services, should the same quality of service conditions and parameters be available to all content/application/online service providers which are in the same situation? May exclusive agreements between network operators and content/application/online service providers create problems for achieving that objective?

- Non-discrimination principle does not preclude the possibility for network operators to offer different prices for services delivered with different quality levels, provided that equivalent conditions are applied in equivalent circumstances.

Telecom Italia believes that managed services make no exception as regards the application of the non discrimination principle, which is so rooted both in the EU and in the National legislation.

In particular, art 10 of the Access Directive (2002/19/CE, as amended by 2009/140/CE) states that "*Obligations of non-discrimination shall ensure, in particular, that the operator applies equivalent conditions in equivalent circumstances to other undertakings providing equivalent services, and provides services and information to others under the same conditions and of the same quality as it provides for its own services, or those of its subsidiaries or partners.*"

The non discrimination principle does not preclude the possibility for network operators to offer different prices for services provided with different quality levels, both at retail and at wholesale level, provided that equivalent conditions are applied in equivalent circumstances.

Thus content, application and service providers should be allowed to reach an agreement for purchasing Quality of Service differentiated offers with network operators without the possibility for the latter to put in place any kind of barrier that might hinder competition. More specifically, agreements should be open to all partners interested in the proposed business model.

Question 9:

If the objective referred to in Question 8 is retained, are additional measures needed to achieve it? If so, should such measures have a voluntary nature (such as, for example, an industry code of conduct) or a regulatory one?

- The European framework is sufficient to guarantee the availability of the same quality of service conditions and parameters to all content/application/online service providers which are in the same situation.

Telecom Italia deems the current regulatory framework sufficient to protect application, content and service providers from discriminatory actions by network operators.

Notwithstanding, Telecom Italia is available to participate to possible working groups which have in charge the improvement of the quality of services and the transparency towards the customers.

Question 10:

Are the commercial arrangements that currently govern the provision of access to the internet adequate, in order to ensure that the internet remains open and that infrastructure investment is maintained? If not, how should they change?

- The European regulatory approach should consider the unbalance of the traffic flows between network operators and application/content providers and leave the market free to evolve towards an appropriate remuneration of the network resources.
- Service providers should be able to agree with network operators differentiated level of connectivity quality.
- Regulators shouldn't hamper the development of new business models by imposing pre-defined interconnection model.

The commercial agreements nowadays in place have contributed to the successful development of Internet.

In fact, peering agreements among IP Service Providers are in place with different rules in each nation context, but always respecting the principle of non-discriminatory access. Moreover, connectivity services like bitstream, available at different network levels and infrastructure services, like LLU, encourage the alternative operators to invest for building their networks, in order to differentiate their offer respect to their competitors.

However the evolution of the market and the success of some players of the internet value chain providing more and more appealing contents and applications, has resulted in an increasing unbalance of the traffic flows between network operators on one side and application and content providers on the other, making peering agreements no longer adequate.

The result of the combined effect of limitations on the access and on interconnection could invalidate this ecosystem and discourage investment in infrastructures.

With regards to the access, the possible blind application of "Net Neutrality principles" would lead to the impossibility for operators to manage their networks and to the prohibition to provide differentiated offers.

With regards to the interconnection, the possible imposition of Bill and Keep wouldn't allow operators to be remunerated for the resources they provide.

If the network provider was compelled to provide the same level of quality independently on the type of application and level of interconnection, this would imply that both network operators and service providers would be discouraged to invest in infrastructure: the former not seeing any remuneration of its investment on network upgrade, unless incremental network costs be "passed on" to the retail market; the latter not having any convenience to invest in network infrastructure, nor to efficiently use it, receiving the same level of quality for any application, independently on level of interconnection.

Traffic segmentation, based on the level of quality and on the type of application, is an important feature that should be reflected in each bilateral agreement at wholesale level. In that way, each service provider would be able to differentiate its service by agreeing with network operators a connectivity quality which is adequate to the type of application.

First attempts of service differentiations are springing at national level for the interconnection and bitstream services. In the medium-long term, the traffic segmentation could be reflected also in the International IP interconnection agreements among network operators and service providers, in order to provide and manage a level of connectivity adequate to the type of application, respecting the principle of non-discriminatory access of any provider to such agreements. The success of these agreements will be driven by the market demand at both retail and wholesale level.

From a commercial standpoint, it is therefore desirable that IP transit services could evolve towards the support of different QoS classes, in order to better serve specific traffic streams, such as video, HD, gaming/gambling, alongside the current *best effort* practice and guarantee the adequate quality for those applications. This would likely lead to the introduction of new business models that may sustain the necessary economic returns of the investment required for the infrastructure evolution and to ensure an adequate level of quality for the customers.

The regulators shouldn't in any way hamper the development of new business models by imposing pre-defined interconnection model but should leave the market free to determine which model best responds to the market needs.

Question 11:

What instances could trigger intervention by national regulatory authorities in setting minimum quality of service requirements on an undertaking or undertakings providing public communications services?

Question 12:

How should quality of service requirements be determined, and how could they be monitored?

Question 13:

In the case where NRAs find it necessary to intervene to impose minimum quality of service requirements, what form should they take and to what extent should there be co-operation between NRAs to arrive at a common approach?

- Telecom Italia is foreseeing the co-existence of pure internet connectivity offers, based on "best effort", and "premium access", with a predefined guaranteed quality, at a higher price.
- Specific quality levels should exist only in accordance with the conditions agreed among operators and final customers.
- The imposition of a minimum level of quality should represent a second best solution, depending on possible continued anticompetitive behaviour and degradation of the quality of the pure Internet connectivity. The extreme difficulty in ensuring a minimum quality level from the technical point of view has to be considered

The scenario Telecom Italia is foreseeing is one of co-existence of pure internet connectivity offers, based on *best effort*, and "premium" access, with a predefined guaranteed quality, at a higher price.

This scenario on the one hand is beneficial for the market as it would (a) allow quality sensitive customers, willing to pay for a higher quality, to be ensured a better user experience and (b) create the right conditions for services particularly sensitive to delays to develop (these would certainly never take off without a priority access, and therefore a guaranteed constant level of quality).

On the other hand, the remuneration of services offered at certain guaranteed level of quality would supply operators the financial means to invest in further network enhancement. Therefore the introduction, and even growth, of managed services wouldn't produce negative impacts on the customer experience of clients adhering to the basic offers of pure internet connectivity.

Moreover, we retain that the offer of pure internet connectivity should always remain at *best effort* and that specific quality levels should exist only in accordance with the conditions agreed between the operator and its counterpart (both the retail customer and the wholesale customer that agrees on quality diversification).

The imposition of minimum level of quality could be envisaged in the long run by Regulators, when managed services will be widespread and only in case evident and continued anti-competitive behaviour were perpetrated by operators or of excessive and continued degradation of the quality of the pure internet connectivity service and only after all existing competition tools and transparency options have fully been exploited.

In this regards, Telecom Italia supports Ofcom position that, in case the evolution of the internet economy leads to a reduction of the space available for the *best effort* internet, regulators could consider the possibility to impose to operators to reserve a specific amount of bandwidth to connectivity services offered on a *best effort* basis: *"It is possible to postulate a future scenario in which the introduction of traffic management and the kind of charging models described in this chapter lead to a different kind of internet economy, in which the space available for the best effort internet – and the low barriers to market entry and innovation that it guarantees – is reduced. If this outcome starts to emerge, it is likely that this would lead to pressure to regulate to avert this. One possibility would be to use the powers to impose minimum quality of service to define a best effort internet to which all network operators and ISPs would have to designate a certain proportion of network capacity. However, we re-emphasise that there is as yet no evidence that this problem is arising, and good reasons to doubt that it will arise, given the current competitive market structure and the incentives on network operators and ISPs existing within that market structure"*⁴.

We would also underline the extreme difficulty in ensuring a minimum quality level from the technical point of view, so we think that any provision in this context should be mandated only in presence of evident market failure, i.e. when customers cannot change access provider in presence of a scarce or unaffordable quality level.

In addition, it has to be remarked that the actual demand for managed services is uncertain and it is safe to suppose that the majority of the operators' customer base will continue to subscribe to pure internet connectivity offers, based on a *best effort* quality. Therefore it would be short-sighted for operators to degrade the quality of these services.

⁴ "Traffic Management and Net Neutrality – a discussion document", Ofcom, 24-06-10

Question 14:

What should transparency for consumers consist of? Should the standards currently applied be further improved?

- Telecom Italia reiterates that the implementation of the New Regulatory Framework will suffice to address at National level any remaining transparency concern.

Question 15:

Besides the traffic management issues discussed above, are there any other concerns affecting freedom of expression, media pluralism and cultural diversity on the internet? If so, what further measures would be needed to safeguard those values?

- Traffic management practices constitute an appropriate solution to the Internet traffic growth, provided that they are not aimed at limiting or interfering with the freedom of expression, media pluralism and cultural diversity.

The political, cultural and social dimension of the Internet is confirmed by the growing role that new social media have conquered on the European public opinion. The openness of the Web has fostered the creation, development and diffusion of a large variety of blogs, online magazines, social networks, IP televisions and internet communities whose activities have increased media pluralism and guaranteed a higher degree of freedom of expression. The spring of these initiatives is a confirmation of the vitality of European democracies and a safeguard of their cultural diversity.

In the meantime, technological evolutions have encouraged a new approach of Internet users to the research of information online. Internet users are not simple information consumers any more but contribute actively to the production, collection and spread of information. In this way, the Internet has a large impact on the public opinion because it enables citizens to share online their own news and videos with their contacts and to reply with their own comments and opinions to the web sources, becoming active players in the media circuit.

As a consequence, the fast path of development of Internet connections over the last years has allowed users to increasingly participate to the online public sphere. However, this growing trend requires a boost of the current speed of the provided online services in order to satisfy new bandwidth consuming applications. This phenomenon implies a large effort by the internet network operators to guarantee the quality of the services they offer over broadband networks.

In conclusion, Telecom Italia considers that efficient traffic management practices constitute an appropriate tool to cope with the requests of the consumers in terms of bandwidth consumption. Any policy action under the term of "net neutrality" principle should be considered also with the objective of not hampering network investments.

<i>Other issues</i>

Level Playing Field

Telecom Italia considers that a comprehensive analysis of issues related to the principle of the Net Neutrality must take into consideration the radical changes intervened to the Internet value chain.

A recent survey made by AT Kearney has shown that with the launch of new generation networks, the growing demand for bandwidth consuming services and the consequent increase of data traffic have dramatically modified the economics of the Web.

The share of Internet value currently generated by connectivity layers is only 17% of the total while online services providers control 62% of the revenues. This remarkable decoupling of traffic volume and traffic revenues pushed on one hand connectivity layers to explore sustainable new business models in order to stop losing ground in the value chain. On the other hand internet service providers, especially search engines, have increasingly augmented their benefits from the growth of the web without providing any contribution to the development of New Generation Networks.

EU regulators have imposed a strict regulatory framework to internet network providers for what does concern accessibility to the networks and openness of the web as well as specific consumers' rights to mirror network providers' obligations in order to defend the principle of Net Neutrality.

However the main players on the search engines market are currently not complying with these obligations. Google, whose share represents 94% of the EU search market, especially takes advantage from its dominant position to sustain its model based on behavioural advertising also thanks to a *de facto* exemption to the application of EU privacy and data protection rules (Directive 95/46/EC and Directive 2002/58/EC).

This situation is penalizing European telecommunication companies, which have to comply with much more stringent privacy rules, because most of Over the Top (OTT) Players are not settled in the European Union and consequently a large share of the advertising revenues is driven overseas. The Commission should consider any solution which can establish a regulatory level playing field for all the different layers of the cloud.

Telecom Italia claims for a review of the EU privacy and data protection discipline imposed to internet network operators in order to allow a fairer competition with the overseas search giants.