

BITKOM

**RESPONSE
TO THE PUBLIC CONSULTATION ON THE OPEN INTERNET
AND NET NEUTRALITY IN EUROPE**

30 September 2010

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The Federal Association for Information Technology, Telecommunications and New Media (BITKOM) represents over 1,300 companies in Germany. Its more than 950 direct members generate a sales volume of 135 billion Euros annually and employ 700,000 people. They include providers of software, IT and telecommunication services, manufacturers of hardware and consumer electronics as well as digital media enterprises. BITKOM is committed in particular to an improved regulatory framework, a modernized education system and an innovation oriented economic policy.

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BITKOM welcomes the Commission's consultation on net neutrality. This topic is important not only because we need to ensure that European citizens continue to enjoy everything the internet has to offer but because we also need to understand the sort of new commercial relationships that will be required as the internet continues to expand and evolve. In Europe, we increasingly face two particular challenges. The first is the continued rapid growth in internet traffic, the demands this is placing on existing network infrastructure, and the need for ongoing investment to meet European citizens' and businesses' demands and assure the EU's competitiveness in a globalized marketplace. The second is the emergence of powerful, vertically integrated internet players who, whilst they do not control network access, are in a position to determine how European citizens will be able to use the internet.

President

Prof. Dr. Dr. h. c. mult. August-
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To overcome these challenges we will need to make sure that we safeguard the 'net freedoms' of European citizens whilst continuing to allow the same restless innovation – in technology, services and in business models – that has been driving the internet forward for the past twenty years.

The internet transcends national boundaries and Europe can take a lead in the global net neutrality debate. If we can provide clarity and certainty for investment then we can gain some degree of competitive advantage for Europe's internet players. If Europe can find a sensible, practical way forward then other nations might be encouraged to follow. The Commission's consultation paper gives us some confidence that we can do this.

Question 1: Is 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?

BITKOM does not believe there is currently a 'problem' with the openness of the internet in Europe. We agree with the Commission that access to the internet for European users has been 'more or less unrestricted' and that 'the multi-sided nature of the market means that they [ISPs] still have strong incentives to make available a wide

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array of content'¹. In the mobile internet the early days of 'walled gardens' have been replaced by the open internet model we see today. No mobile operator has been able to maintain a 'closed' internet platform in the face of user expectations and competition between providers. In the past the market has not provided access to all services (e.g. VoIP in the mobile internet). Today these services are accessible, sometimes only for an extra fee for the users.

It is, however, important to be clear about what we are expecting from an 'open internet'. BITKOM believes an 'open internet' is one in which users can obtain access to any legal services. But it is also one in which users are then free to determine for themselves what services they actually buy and use. Specifically, this means:

- The different needs of different users are likely to mean that companies will offer a range of different internet services or packages.
- An 'open internet' is not one in which all users get exactly the same internet service (unless they chose to).
- Some packages might restrict the use of certain services if there are users who do not want to use them. Other packages that will meet the needs of users wanting to use those services must then be available in the market.
- Users must be able to easily understand which packages offer which services and to switch easily between packages and between operators to get the service that best meets their needs.

BITKOM's view of the 'open internet' suggests that the Commission and other policy-makers should concern themselves primarily with what the market as a whole is delivering and concern themselves less with the conduct of any individual company. Of course, if competition were to be harmed, the conduct of individual companies would have come under closer scrutiny. But with sufficient competition, users should be able to obtain what they want from the market².

Question 2: How might problems arise in future? Could these emerge in other parts of the internet value chain? What would the causes be?

Threats to the open internet may arise if a company enjoys a significant degree of market power and is in a position to use this to frustrate consumer choice and/or use this power to restrict competition in a related market. But it is very likely that competition on the access level will be as strong in the future as it is today. In the European fixed markets it is the result of far reaching ex-ante regulation in form of unbundled local loop and bitstream access, whereas the mobile market is characterised by strong infrastructure based competition between mobile networks. Beyond that, general competition law provides effective safeguards against potential abuse of dominant positions in the market and is complemented by the instruments of the EU telecoms regulatory framework.

¹ European Commission 'Questionnaire for the Public Consultation on the Open Internet and Net Neutrality in Europe', 30 June 2010, p.5

² This might suggest that the Commission or national regulator should investigate further if access to certain services is restricted in some Member States when it is available in others. There may be good reasons for this (e.g. no demand), but BITKOM would generally expect European citizens to be able to access the same range of internet services throughout the Union.

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In BITKOM's view, some of the most significant threats to the open internet may lie not in network access markets at all but in other parts of the value chain. Recent studies of the global internet value chain showed that several other internet services markets are at least as concentrated as the network access market, and that the participants in these other markets can be much more extensively integrated along the internet value chain. This confirms our view that any legal implementation of 'net neutrality' principles would have to refer to 'internet neutrality' rather than the more narrowly defined 'network neutrality'.

The current discussion of network neutrality mixes up two different and separable issues, namely discrimination of other players and quality of service.

The first term relates to the possibility that network operators might use their control over the infrastructure to slow down or block certain data packages to hinder competing services. This would reduce competition and hence economic welfare. Under strong competition as in Europe, network operators do not have an economic incentive for discrimination: any such behavior will be detected and provoke an immediate market reaction punishing the operator which adopts such measures with "churn".

Openness, plurality of choices, and the unrestricted access to any lawful content, services, and applications have always been and will remain basic characteristics of internet access offers in Europe. A plethora of network operators and service providers offers a wide range of differentiated access products and services. Customers decide which content, services and applications they want to access³. Network operators are committed to providing choice and quality for all customers. Non discriminating and transparent offers of differentiated products and services to all players in the internet value chain increases variety and strengthens competition. Therefore it would be unwise to limit the net neutrality debate to access networks exclusively, as such an approach risks to ignore the dynamics of the internet economy. It is not an unlikely future scenario that new dominant positions could arise in other parts of the internet value chain, for example in the search engine or social networking platform markets.

The second issue at hand is the introduction of quality of service (QoS) differentiation. Internet traffic is increasing dramatically not only due to additional users but due to high-data-rate applications such as online video streaming, peer-to-peer file sharing etc. Despite network operators constantly increasing their network capacity, congestion is an everyday phenomenon especially during peak hours and affects all users negatively by reducing their Internet experience. The extent to which quality suffers due to congestion differs dramatically with respect to data rate, quality sensitivity and economic value. Certain services use an extraordinary large part of the available bandwidth and therefore have large external effects, whereas other services involve a comparatively small bandwidth usage. Certain services are not affected by congestion, whereas the quality of other services is severely reduced. Finally, the individual users' willingness to pay for certain sort of services differs, which in sum results in different economic values for specific services.

Evidence has shown a tendency for high-value quality-sensitive services being crowded out by services which have a low economic value (e.g. file sharing) and are less sensitive to the quality of the transport service. This results in economic inefficiency due to decreased user experience as well as limited business revenues in

³ In this context the consultation document correctly refers to the fact that a number of mobile providers do not allow using VoIP services from third-party providers. This measure cannot be considered as blocking in the sense of anti-competitive discrimination because the customers always have the option to choose a specific tariff plan which allows using VoIP services or to change their network operator.

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these markets. Innovative services requiring high quality levels may not be developed at all even if they would meet a high willingness to pay in the marketplace. This in turn has a negative impact on economic growth and employment. Theoretically, it is possible to avoid a majority of congestion problems by building up large reserve capacities in order to assure that all network traffic can be forwarded immediately even in the situation of extremely short-run peak loads. In the long run this strategy of over-provisioning capacity is not only economically inefficient and a waste of resources but also burdens unbearably high costs on the network operators. They cannot justify their investments while being confronted with a situation of ever decreasing price levels in the retail markets and traffic volumes that grow exponentially. As a consequence, over-provisioning is no longer a sustainable business model for network operators.

One efficient method to solve situations of congestion when not all incoming traffic can be conveyed instantly is to assign rights to specific services to be transported with a certain priority. Some providers of quality sensitive services may want to assure a certain priority, if the users of these services (or indirectly the advertisers) are willing to pay for a certain quality of these services. Quality-insensitive services will be adequately served with a best effort quality. Competitive network markets will bring forth a specific quality of service system (QoS) with differentiated quality classes and differentiated prices in order to adequately deal with heterogeneous services regarding quality sensitivity and economic value. All users with the same willingness to pay would be treated equally. That way, a market driven QoS concept results in an economically efficient rationing of scarce network resources and avoid crowding-out problems.

A strict network neutrality regulation would not permit differentiation between services in case of congestion. Rationing would be done by chance and not by economic value, which is clearly inefficient from an economic point of view.

Question 3: Is the regulatory framework capable of dealing with the issues identified, including in relation to monitoring/assessment and subsequent enforcement?

As stated in the consultation document itself, net neutrality has not emerged as a problem in Europe. This indicates that the regulatory framework is capable and sufficient to deal with this issue.

Moreover, general competition law complemented by the instruments of the EU telecoms regulatory framework provides effective instruments and remedies to deal with anti-competitive behaviour, should it occur nonetheless. The newly added instruments of the revised EU regulatory framework against service degradation and the transparency requirements further extend the regulatory toolset to avoid problems in the context of net neutrality and provide a sound basis to safeguard competition and the openness of the Internet.

The recurring review of the EU framework assures a permanent monitoring of the markets and implicates an unceasing opportunity for intervention in case of market failure. Thus, no further legislative prescriptions or regulatory intervention are needed.

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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?

Most importantly traffic management is needed in order to mitigate network congestion which is a daily phenomenon during peak hours. Traffic estimates⁴ project an exponential increase in volumes. The ever increasing consumption of video streaming services has been identified as the main driver.

In order to keep the networks functioning and to assure connectivity to the Internet for the customers network operators need to implement traffic management measures. The traditional over-provisioning approach is no longer economically sustainable, i.e. investment in capacity extension cannot be justified when faced with exponentially growing traffic volumes and ever decreasing price levels at the same time.

Traffic management also serves a wide variety of security related functions by allowing the network operators to block spam, malware, denial of service attacks and other security threats to the network or to user devices.

It is an essential mechanism to enable the differentiation of products and services as well. Different services have specific quality requirements. Some new services even depend on guaranteed levels of quality. Specialised applications such as voice over IP, multi-player gaming or medical services will not function well, or at all, on a 'best efforts' basis. Traffic management ensures that these applications can be delivered to the users in a way which optimizes the performance.

The needs of users themselves are also becoming richer and more varied. Traffic management allows the operators to match their services and allocate their network resources to the needs of different groups of customers. It allows them to allocate more bandwidth and deliver faster speeds to users who are willing to pay for this.

In an environment where network resources are shared amongst users – as is the case with radio access networks as well as the aggregated segments of fixed networks – network management tools perform a critical function in allocating resources to the right users and the right services at the right time. The underlying technologies of network management are evolving quickly, as are the applications to which they are then applied. In this respect, traffic management is an enabler for increased variety in products and services as well as for further innovation on the Internet.

Two principal network management techniques are currently employed by the network operators: 'load management' in the Radio Access Network and core network and 'traffic management' in the core network. The former allows the operator to dynamically allocate access network capacity between different users using a given cell. The latter allows the operator to prioritise particular classes or types of application, whether legitimate services or malicious applications which pose a threat to the security of the network or devices attached to it. These techniques should be seen as being complementary and require the use of hardware and software capabilities at various points in the network⁵.

⁴ Cisco Visual Networking Index (VNI),
http://www.cisco.com/en/US/netsol/ns827/networking_solutions_sub_solution.html

⁵ At the interface with the public internet (to block spam, viruses or other application and to allocate capacity), at a multi-service platform within the core network (to optimise encoding), at the Gateway GPRS Sup-

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The overriding aim is to ensure that no (or only minimal) spare capacity remains unused in any given circumstances, thereby using the limited network resources to deliver an optimal experience to the users as a whole.

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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 efforts' basis, on the other?

Transparency can address most of the concerns about openness and competition in the internet and will empower consumers and businesses to make rational choices reflecting their individual preferences. The users should have a wide variety of choices, some of which are 'best efforts' and some of which are better than that. Transparency (and low barriers to switching) is then the essential means by which customers can navigate the market to obtain the services which best meet their need. BITKOM believes that operators have strong incentives to address transparency issues because without effective communication of the benefits of different services it will be difficult for operators to persuade customers to pay a price premium for them. Transparency and 'willingness to pay' go hand in hand.

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But transparency is not about writing lengthy legal contracts, it is about providing users with the relevant information which allow them to really understand the characteristics of the service they can expect to receive and the terms on which they can do so. Many of the characteristics which engineers use to define services – data rates in MB/s or concepts such as latency or jitter- are not well understood by users today. This is an even greater challenge in wireless environments where it is impossible to 'guarantee' or even predict a particular level of network performance when this will depend on variables such as the location of the user and the nature of the device they are using, the behavior of other users on the cell, or the local climate.

BITKOM is well aware of the concerns of some policymakers about an inappropriate use of traffic management techniques. Therefore the use of these techniques has to be accompanied by a high level of transparency and the application of consistent, objective engineering criteria to the treatment of applications or customers. This means, for example, that all applications with similar technical characteristics must be managed in the same way, irrespective of the identity of the individual application provider.

Low switching costs are also an important part of the open internet. The Commission has already taken extensive measures to reduce the costs of switching between network access providers.

As far as the question distinguishes between information regarding managed services and regarding the 'best effort' internet BITKOM believes that managed services, defined as the services for which a network operator guarantees a specific level of quality, are not in conflict with the provisioning of best effort access to the public internet since managed services will be offered on top of best effort internet.

port Node between the data network (to allocate network resources to users according to defined rules) and the radio access network, or within the radio access network itself (to allocate radio resources to users or applications in real time).

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When managed services are offered in a bundle with internet access, as is the case with IPTV offers, it is the providers' obligation to adequately inform their customers about the specific conditions and traffic management policies. If for example a fixed bandwidth is being reserved for the IPTV service the informed customer is in the position to make an informed decision about his bandwidth consumption. In this respect transparent information is capable of allaying possible net neutrality concerns as the final decision about bandwidth allocation resides with the end user.

Question 6: Should the principles governing traffic management be the same for fixed and mobile networks?

The EU regulatory framework for electronic communications and the general competition law do not explicitly distinguish between fixed and mobile networks. BITKOM believes that the existing set of rules and principles should apply to all networks.

Of course, there are clear practical distinctions in the process of applying the framework provisions, starting at the stage of market definition. Mobile and fixed networks do have very distinctive characteristics because mobile network operators face greater constraints on the provision of capacity (due to spectrum supply and the high costs of additional access infrastructure investment) and because that capacity is shared amongst users in the access network rather than being dedicated to them. Mobile network operators also face greater challenges in terms of transparency to customers for the reasons already outlined in our response to question 5.

While BITKOM supports the technologically neutral approach in principle it advises the competent authorities to apply the existing rules in a proportionate manner, taking into account the relevant technical and economical specifics of the network concerned. Any 'principles' governing traffic management should be precisely that and should not seek to prescribe exactly how they will be met.

At this stage BITKOM remains rather skeptical about any attempts to define in any kind of detail what constitutes 'reasonable network management', as the Commission suggests may be needed and as others have been attempting to do. This is for several reasons.

First, for regulators to attempt to define how networks should be operated on a day to day basis would involve a degree of regulatory oversight which would be unprecedented. European regulators have typically defined the outputs they seek from the market (and the companies who participate in it), leaving the companies themselves free to determine how they best manage their affairs so as to deliver these outputs.

Second, BITKOM thinks it is a mistake to characterise network management as a technical issue for which technical rules can be formulated or technical consensus can necessarily be found. Whilst there are some aspects of network management that are purely technical in nature⁶, the most controversial aspects of traffic management relate to its use in developing tariffs and services which are designed to uncover different user preferences and willingness to pay. In other words, network management is required to support price differentiation which allows users to determine themselves how network resources are to be allocated amongst them.

In October last year the FCC proposed to define 'reasonable network management' in order to define the circumstances in which what was otherwise a blanket prohibition

⁶ Such as measures to prevent malware or spam

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on discrimination could be relaxed. Our view is that the question of when discrimination enhances welfare and when it reduces welfare cannot be solved through technical guidelines like this⁷. The latest attempt by Verizon and Google to define 'reasonable network management' is an improvement on the FCC's efforts, as far as it recognises the role of network management in 'provide [ing] services or capabilities consistent with a consumer's choices' as well as for narrowly technical purposes.

As BITKOM explains below, differentiated pricing is a common practice in the internet which greatly enhances the welfare of those using the internet and contributes towards its economic sustainability. There is no reason to prohibit these practices or to then try to define exceptions through references to 'reasonable network management'.

The Commission also draws a distinction between 'managed services' and 'the public internet' in its consultation. This was proposed by the FCC last year to define those services to which 'reasonable network management' rules would apply and those to which they wouldn't. The FCC was uncertain about these distinctions in its Notice and the comments it received subsequently recognised the difficulties in attempting to make these distinctions. The internet itself is a constantly evolving system with uncertain boundaries between what is 'public' and what is 'private', whilst 'managed services' embody a wide range of services with few common characteristics. Although the FCC was not explicit about this, the way in which it used the terms seemed to imply that the 'internet' requires transit or indirect access to third party sites across the 'public internet', whilst 'managed services' require a direct form of interconnection to the content or service provider or delivery confined to the 'private network' of the network operator themselves⁸. BITKOM does not find this a very satisfactory distinction because there is no reason to exclude the possibility that services which are transited over the 'public internet' will not benefit from prioritisation in the future, nor that content delivered directly over the local network might not sometimes be delivered on a best efforts basis.

There is also a significant risk that regulatory boundaries between 'managed services' and the 'public internet' could distort the behaviour of the regulated companies. For example, if pricing innovation is prohibited in the 'public internet' but allowed for 'managed services' then innovation could be pushed outside the traditional internet, to the detriment of those who continue to use it. An example of this is that ARCEP are proposing that only certain types of services should be capable of being advertised as being 'internet' services⁹. Rules of this kind are likely to distort the way in which companies develop their services and are not likely to be helpful for users who will neither be able, nor have reason, to distinguish between services which are defined by regulators as being 'managed' and those which are not. We think a better approach is to

⁷ The FCC's proposed definition was 'Reasonable network management consists of: (a) reasonable practices employed by a provider of broadband Internet access service to (i) reduce or mitigate the effects of congestion on its network or to address quality-of-service concerns; (ii) address traffic that is unwanted by users or harmful; (iii) prevent the transfer of unlawful content; or (iv) prevent the unlawful transfer of content; and (b) other reasonable network management practices.' Since many network practices to uncover user willingness to pay will not fall into (a)(i)-(iv), they would remain undefined as 'other reasonable network management practices' or be prohibited. http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-09-93A1.pdf p.50

⁸ See para 148 et seq, at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-09-93A1.pdf

⁹ See p.33 at http://www.arcep.fr/uploads/tx_gspublication/consult-net-neutralite-200510-ENG.pdf

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simply require operators to be explicit about exactly what they are offering to their customers, whatever label is attached to it.

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 prioritization affect other players in the value chain?

Prioritisation is a common practice across the internet value chain. For example ads (in the form of banners and/or links) are placed corresponding to the willingness to pay of the advertisers. The functionalities of networking platforms are differentiated in free basic services and paid for premium services. Others have built up worldwide networks in order to speed up – or prioritize – the paid for delivery of content. The often cited “fast lanes” across the internet exist already. Without them the business models of online delivery for music, video, games and applications would not have been successful in the market place and software updates could not be distributed as efficiently as they are today.

All those differentiations and prioritizations have not harmed the players on other levels of the internet value chain or slowed down innovation. To the contrary, they have increased variety and customer choice, both of which are characteristics of competitive markets. Therefore it is not evident why the introduction of non exclusive, non discriminating and transparent QoS-levels on the transport layer should harm competition or innovation.

Problems might arise if net neutrality regulations were to allow prioritisation by some players in the value chain but not by others. This would distort competition. Discrimination could be problematic if the company engaging in it also held a dominant position and was seeking to exclude rivals or otherwise exploit users. This requires careful analysis of the facts of a particular case rather than general prohibitions.

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?

In general, quality and price differentiation increases the benefit of customers and businesses alike and therefore the economic welfare. There is no reason why a particular quality of service or other feature should not be available to anyone who is willing to pay for it and who is prepared to meet other relevant technical criteria. Operators should make available a menu of options, from which all wholesale customers would then be free to choose. Just as content providers have differentiated offerings for different prices (e.g. standard and premium content and services) network operators need to be allowed to offer differentiated QoS to accommodate heterogeneous customer needs. There is no reason for a *per se* banning of differentiated offers by access providers as long as the differentiated products and services are being offered non-exclusively and non-discriminating to all players in the internet value chain.

For example operators should be able to distinguish between traffic on the basis of the type of application being used, but not on the basis of who provides the application or to distinguish between different users on the basis of their willingness to pay, but not on the basis of who they are.

All content/application/online service providers should be treated equal in case of QoS differentiated IP-transport, i.e. the same QoS conditions and parameters should be

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available in terms of non-exclusive and non-discriminating commercial offers to all interested parties, subject to technical feasibility and capacity constraints. Any practices by a dominant undertaking that could harm competition, whether on the network layer or on other layers of the internet value chain, should be addressed by the competent authorities based on competition law rules. Any statutory provisions regarding the provision of managed services by network operators going beyond the competition law rules will only be justified in case of a permanent market failure.

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?

As already stated above, the strong competition in the access markets most likely prevents network operators from discriminating competing services in terms of quality of service, because such measures would have a negative effect on the competitiveness of the undertaking, i.e. it would drive itself out of the market.

If the objective of 'non discrimination' is to be pursued as proposed in question 8 then we think it should be framed as a presumption that wholesale offers will be offered to all, with exceptions being considered on a case by case basis. It will be sufficient at this stage for the competent authorities to monitor market developments in this respect.

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?

In today's internet ecosystem commercial interconnection arrangements among network operators as well as between network operators and application, service and content providers are governing the transport of IP-traffic. At the same time the provision of access lines is subject to a strict regulatory regime which enforces cost-orientation and non-discrimination.

The internet has the characteristics of a two-sided market -- with end users on one side and the providers of content, applications and services on the other side making use of the net as a 'platform' to enter into transactions. Currently, network operators bear the entire burden of network upgrades and modernisation in the face of exponentially increasing traffic flows. They recoup network costs mostly from one side, namely end users with a price structure mainly based on flat rates.

BITKOM believes that current prices in the internet do not send the right economic signals to users: as shown by users who are indifferent to the amount of 'unlimited' bandwidth they are consuming, content creators who lack incentives improve the efficiency of their services, by the quantity of spam and other negative externalities we see on the internet today.

Considering these circumstances and the above mentioned inability to keep rolling out capacity proportionally to the increase in traffic volume the need for a new sustainable business model becomes evident. It is too early to predict which business models will strike a fair balance between the different actors in the internet value chain. However, to allow for efficient outcomes, policy makers and regulators should promote market solutions and establish a level playing for all actors in the internet value chain. Players on all layers of the value chain should be subject to comparable standards of data protection, consumer protection and transparency, and policy makers should act

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where this is not the case. A level playing field also implies that potentially anti-competitive behaviour of undertakings with market power on any layer of the value chain is adequately addressed.

In an ecosystem as dynamic and competitive as the internet market solutions will always produce superior results compared to regulatory interventions, especially when measured in total economic welfare.

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?

Best effort service provision is characterized by frequent but often extremely short delays, jitter and packet loss due to congestion, which may significantly reduce the quality of *certain* applications. The revised EU regulatory framework introduces a competence for NRAs to apply minimum quality of service requirements in order to prevent the degradation of service and the hindering or slowing down of traffic over networks, see Art. 22 paragraph 3 of the Universal Service Directive.

BITKOM is familiar with the concerns of some net neutrality advocates that the introduction of 'prioritised' services will create incentives to deliberately degrade the 'best efforts' internet and so force users to migrate to more expensive alternatives. In practice, such concerns are misplaced given the robust competition between network operators in Europe today. Any network operator which intentionally degrades the best effort internet provision in order to promote managed QoS-based services would lose customers to alternative operators or providers: As a majority of customers is expected to subscribe to a best effort based basic broadband access package any degradation would seriously damage the reputation of a provider. Hence, network operators have the incentive to compete not only in price but also in quality when offering internet access. Under these circumstances regulatory intervention could actually be counterproductive.

This said BITKOM does see merit in a consistent approach to establish international QoS standards. A proven and efficient way would be to delegate this competence to an international technical standardization body where all stakeholders are represented and the technical knowledge is assured, e.g. the International Telecommunication Union (ITU).

In any network where finite capacity is to be allocated between users, it is inevitable that prioritisation for one user will come at the expense of other users. Therefore the competent authorities should not deny that this trade off exists, but – in the case that the market fails permanently – prevent that some users find their service falling below a certain minimum level as a result. The aim can only be to ensure that all users experience a certain 'minimum service level', not that this never deviates.

To justify such an intervention by the NRAs, BITKOM takes the view that

- the degradation of service or the hindering or slowing down of traffic over networks would have to be significant and not only temporary,
- the NRAs have to attest that the market itself is not able to provide services in a sufficient quality, i.e. as a result of insufficient competition, and
- the NRAs have to prove that that less distortive instruments such as transparency are not sufficient to solve the problem.

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In this context it is very important that this 'minimum service level' is not confused with the targets for broadband deployment and performance contained in the Commission's Europe 2020 communication or in national Broadband Plans. BITKOM sees a significant danger that some regulators could seek to use the provisions to drive maximum targets and to force operators to pursue broader public objectives. This would be wholly inappropriate and it is important that any proposals in this area contain adequate safeguards for operators as well as for users.

Question 12: How should quality of service requirements be determined, and how could they be monitored?

Consumer surveys consistently show that 'quality of service' can be reduced to three essential features:

- the reliability of the connection, being the ability to connect and to stay connected to the network. There are then a large number of potential parameters to measure this¹⁰
- the actual upload and download speeds for data services
- the actual download speed for rendering web pages¹¹

Additional metrics will increase the complexity of monitoring and measurement and are unlikely to provide much additional benefit to users or policymakers at this stage. Concerning the monitoring of quality of service it is important to note, that this would require to develop, implement and finance a highly sophisticated system capable of precisely determining which elements in a complex system are performing in accordance to the expectation and – even more importantly – which elements are causing delays.

There are essentially three ways in which the performance of networks can be measured:

- specific tests undertaken by third parties (particularly relevant for 'drive around' tests to measure mobile network performance but more problematic in the fixed line environment)
- network performance data generated by operators themselves
- data generated by users of the network which is then collated by a third party or by the operators.

It is important to note that the purpose of the exercise cannot be to simply provide an overall measure of network performance for users as a whole, but to provide assurance that the experience of those users who retain a 'best efforts' internet service is acceptable regardless of the services chosen by other users. This means that data would have to be generated in a way which allows the operators to isolate results for

¹⁰ PDP context activation failure and cut-off ratio, FTP (up & download) IP-services access failure ratio, FTP data transfer cut-off ratio, FTP session failure ratio, HTTP IP-service access failure ratio, HTTP data transfer cut-off ratio, HTTP session failure ratio. These parameters can be combined in a "session success ratio" giving an indication of the quality of the user experience

¹¹ <http://www.acision.com/News-and-Events/Press-Releases/United-Kingdom/2010/YouGov-Research-Mobile-Broadband.aspx> and http://w3.nokiasiemensnetworks.com/NR/rdonlyres/031B5D51-54E0-479B-8854-649FD258CBC6/0/What_customers_want.pdf

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this group of users. In turn this would require to identify users contributing data and to then match them to the type of tariff or service package which they are using – or to require the user to disclose this themselves. For the time being BITKOM is skeptical that such a system would be operational in a reasonable timeframe and could be operated efficiently, i.e. without creating avoidable overhead.

..... At the same time it is important to note that most players are already subject to close “monitoring” today, be it through consumer protection organizations and agencies or the specialized press/media.

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?

— Due to the robust competition between network operators in Europe a future necessity of regulatory interventions or regulatory obliged setting of minimum QoS requirements are very unlikely. As noted above, BITKOM does see merit in attempting to establish international QoS standards in order and define quality of service in this context but due to the fact that the interconnection between networks has an international dimension, this issue is beyond the scope of a single NRA. The market participants themselves should agree on the relevant parameters to specify QoS requirements, preferably within an international technical standardization body like the ITU.

Question 14: What should transparency for consumers consist of? Should the standards currently applied be further improved?

A high standard of transparency involves giving consumers tools which provide them with information in a form that they understand and when it is relevant to them. But this presents considerable challenges for the industry, particularly in the mobile environment.

Transparency is also required at all points in the value chain, and not only in relation to the provision of network access services. It is important that transparency initiatives undertaken by operators align closely with any measurement or any monitoring activities possible undertaken by regulators and addressed by questions 11-13. Consumers must not be confused or presented with apparently inconsistent or contradictory information from different sources.

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?

BITKOM is not aware of significant concerns in relation to these issues in Europe today. Network management measures deal with keeping the network and the services that are provided over the network up and running smoothly. They are implemented in order to mitigate congestion and enable QoS-differentiation. Furthermore traffic management measures enable new and innovative services that depend on specific quality requirements, such as eHealth, eMobility, Smart Grids or ePayment solutions.

Network management measures are by no means equivalent to screening or filtering the content which is being transported over the networks or used to monitor individual peoples' internet usage. Thus, they do neither affect internet users' rights regarding

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freedom of expression nor do they restrict media pluralism and cultural diversity. Their purpose is to provide a reliable network connection in case of congestion. Hence, network management measures are positively contributing to the exercise of citizen's fundamental rights, because operators will be able to safeguard the continued access for citizens to basic forms of expression in the internet age.

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