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BEREC Guidelines on Net Neutrality and Transparency: Best practices and recommended approaches

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Executive summary

Net Neutrality is a subject that generates intense debate. In the European Union, the approach taken in the revised electronic communication Directives towards net neutrality consists primarily of promoting competition and setting net neutrality as a general policy objective. Transparency with regard to restrictions to the access to content and applications is one of the key elements used by the Directives in order to achieve net neutrality.

Taking into account this new regulatory context and building on its work from the previous year, BEREC explores in this paper the subject of transparency in relation to net neutrality.

We stress that transparency regarding net neutrality is a key pre-condition of the end users' ability to choose the quality of the service that best fits their needs and also should reduce the assymetry of information existing between providers and end users, fostering proactive behaviour by Internet Service Providers (ISPs). At the same time, we underline that transparency alone is probably not sufficient to achieve net neutrality, since other factors also have to be taken into account - the existence of competition in the market, the reduction of barriers to switching are, among others, important factors that, alongside transparency, can contribute to achieving the objective of net neutrality set out in the Framework Directive. (*We also provide an overview on the regulatory context, because transparency is a primary approach chosen by the revised European Directives with regard to net neutrality (although there is no direct reference to "net neutrality")).*

Therefore, taking into account the benefits of transparency with regard to net neutrality for the market in general and for end users in particular, BEREC considered what should be the major requirements of an effective transparency policy.

First of all, we believe that a fully effective transparency policy should fulfill all of the following characteristics: accessibility, understandabilty, meaningfulness, comparability and accuracy. These characteristics are mostly interlinked and will need to be fulfilled while observing the principle of proportionality.

We also set out that end users must be able to make informed choices throughout the different stages of a commercial relationship, i.e. before signing the contract, at the point of sale and after signing the contract. The information needed differs depending on these different stages and will need to be generic one time and individual at another stage.

Concerning the approaches that NRAs could take in order to achieve the goal of understandable information for end users, BEREC has identified two approaches - a direct and an indirect one. With a direct approach, ISPs make information transparent to end users directly, while in an indirect approach, third parties (such as comparison websites) play a crucial role in making the information understandable for end users. A direct approach is legally required by the Framework. An indirect approach, on the other hand, is not compulsory, but it complements a direct approach. How effectively an indirect approach is promoted will determine the efficiency and proportionality of a transparency policy. Taking into account the advantages and disadvantages of each approach, BEREC recommends that the two approaches are to be used in the combination and proportions considered optimum in each Member State, according to the characteristics of each national market.

BEREC also finds that it is particularly important to develop common frames of references about Internet access service and find agreement on which traffic management measures are non-problematic, as common terminology in these areas can help make information more comparable and easier to understand by end users. It is also vital to adapt

the information on net neutrality and traffic management so as to take into account different types of usages, networks and technologies, and different types of offers (access to Internet, specialized services, bundles), but also to distinguish between problematic and non-problematic traffic management measures depending on the effects the measure has on the end user.

The revised transparency requirements of the framework aim, *inter alia*, to enable the customer to make informed choices. Article 20(1)b of the revised universal service directive (later on USD, see footnote 3 for references) specifies which information should be provided in the contract. Article 21(3)c USD empowers NRAs to oblige operators to inform their customers about changes of condition which limit access to service or applications. The provisions do not provide an exhaustive list of the factors necessary to ensure transparency. In designing an effective transparency policy it is necessary to specify its various contents. There should therefore be a set of criteria and factors on which operators will have to provide certain information. The scope and content of an offer to a prospective customer should include information about which services are provided. In this context, a challenge to transparency could be the fact that providers tend to use different terminologies.

BEREC finds that offers could be made more meaningful and comparable if common terminology and frames of reference are used, though these might be difficult to define in practice. For example, recommended details regarding services with fixed connectivity should not be limited to a single “maximum speed” figure. The real values typically achieved at a certain time should be detailed at the point of sale: actual download but also upload speeds, the difficulties that may impact their provision, and the conditions to deliver minimum levels, when these are offered. Furthermore, information on other elements regarding Quality of Service, such as delay, jitter, packet loss or packet error, might be of interest, especially in order to support indirect transparency. Information about the limitations to the users’ connectivity of offers are also seen as necessary. BEREC highlights the importance of unrestricted offers, and that restricted offers should be clearly accompanied with information regarding limitations of usability.

BEREC finds that providers should clearly explain any general limitations, as well as any consequences of exceeding such limits. In this regards, explicit conditions such as data caps and download limits seem preferable to fair use policies. Information on traffic management techniques, applied either on types of traffic or content, should be provided to end users along with information on about how these techniques may affect the end users’ access service. Application *agnostic* and application *specific* traffic management techniques should be clearly distinguished. Regarding actual effects of traffic management on end users, tools provided by third parties appear useful. In terms of enabling end users to monitor the performance of their access service, both third parties and ISPs could play a significant role.

BEREC states that, the transparency objective for NRAs merely requires them to empower users, through highlighting and clarifying what can be considered as limitations to unrestricted offers to internet access. Appreciations regarding e.g. undue discriminations are outside of this scope.

BEREC finds it useful to distinguish between the different bodies that will provide the information. ISPs, NRAs and other third parties are all bodies that have the ability to provide information. ISPs have a legal obligation to provide certain information. NRAs primarily ensure that others are providing transparent information, but could also provide information themselves or by setting up an intermediary body, such as a one-stop shop.

BEREC is aware of the costs or risks that might be involved in an NRA playing such a role and takes into account that such an approach has to be considered carefully. One way to alleviate this concern would be to work with ISPs from a very early stage.

Third parties are sometimes well known to end users, with a range of third party services already existing to provide information. But some aspects of traffic management policies might prove to be too complex for some third parties (for instance those rather used to providing price comparison information), whereas some other may have a better understanding of specific usages or needs. Although these bodies are private and independent by nature, BEREC states that NRAs could have a role to help enhance end users' confidence in these intermediaries[1].

Regarding the methods and tools required for providing information in a transparent way, BEREC states that probably no single method will be sufficient; rather, a combination of complementary methods at different points of the relationship between the customer and the ISP may be necessary to be successful. Based on recent research, BEREC evaluates different methods that can be used to present information in order to maximize transparency: a tiered approach; visual representations of information; real-time information tools; and providing different levels of information to different types of user. Using the criteria laid out in Chapter II and the important principle of proportionality we evaluate and weigh their effectiveness with regard to gathering and presenting information.

The existence of common parameters and indicators are helpful for making the means of transmitting information more effective. NRAs could stipulate which quality of service indicators must be provided by ISPs[2], for example in their websites, at points of sale, and in the contracts concluded with end users. Alternatively NRAs could encourage industry to develop its own common approach.

Due to the fact that Internet services and technologies are fast moving and constantly evolving, BEREC sees great importance in regular monitoring to keep information as effective, updated and accurate as possible and thus sustaining transparency.

BEREC also notes that there are several actors who can play an active role in ensuring transparency in relation to net neutrality. NRAs have a legal responsibility to ensure that end users are provided with transparent information, with the precise level of involvement differing between Member States. But there are a number of other bodies which can play an important role in providing transparent information to end users regarding the quality of the internet access service they receive - the ISPs, the providers of applications and content, consumers organizations, technically-savvy users groups, experts groups from academic institutions, and third party comparison websites. BEREC particularly stresses the role of ISPs, not only in providing the information to end users necessary to comply with their transparency obligations, but also in developing industry-wide approaches to transparency in relation to net neutrality. The project also builds upon case studies and examples in other sectors, in order to discuss and infer what could be the role and next steps of regulatory (joint) action regarding transparency.

// Prospects to be completed after the public consultation //

[1] The UK NRA, Ofcom, for example established an accreditation scheme for this purpose.
[2] See the example of the Greek NRA, EETT.

Chapter I - Purpose and scope of the guidelines

Recent developments of online services have led to a demand for people to be able to share and obtain information increasingly quickly. In this context, the development of broadband and different Quality of Service (QoS) demands from Internet applications has brought a focus on the question of network and traffic management by ISPs, also in the light of recent technological developments. Following a debate initiated in the U.S., the net neutrality theme has also provoked discussion in Europe, leading to some important revisions of the EU Regulatory Framework for Electronic Communications[3], which provide the main basis for these guidelines.

As a result of these revisions, the European approach towards net neutrality consists first of all of promoting competition and improving the conditions for end users' to switch from service provider, while imposing on the providers an obligation of transparency regarding traffic management techniques and the quality of the Internet access service[4]. This approach should contribute to fulfilling the objective contained in the new Article 8(4)(g) of the revised framework directive, on promotion of the ability of end users to access and use content/applications/services of their choice (the "net freedoms" objective), an ability which is considered as one of the main drivers for innovation and freedom of expression.

In 2010, BEREC started to consider the regulatory aspects of net neutrality and responded to the European Commission's consultation on the open Internet and net neutrality in Europe. Building on those activities, this paper will explore the subject of transparency in relation to net neutrality. We note that the effects of a transparency policy[5] can be insufficient, notably when competition is not effective, and especially when there are barriers to switching. However, the main focus of this paper will be on transparency and how to achieve it, independently from other factors.

Three areas are investigated in this report:

- the type of information that different groups of end users and institutions need in order to promote their ability to make informed choices regarding the quality of the Internet access services;
- the best means of conveying this information to end users;
- possible ways to monitor the features of operators' services.

Those topics are relevant for various categories of users, including content and application providers, which may have specific concerns and even sometimes act as "third parties" (see Chap. 2 for this concept) in transparency processes. However, the guidelines primarily address transparency with regard to end users of electronic communication services, with focus particularly on the Internet access service. In relation to this, we discuss whether

[3] Directive 2009/136/EC of the European Parliament and of the Council of 25 November 2009 amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services, Directive 2002/58/EC concerning the processing of personal data and the protection of privacy in the electronic communications sector and Regulation (EC) No 2006/2004 on cooperation between national authorities responsible for the enforcement of consumer protection laws and Directive 2009/140/EC of the European Parliament and of the Council of 25 November 2009 amending Directives 2002/21/EC on a common regulatory framework for electronic communications networks and services, 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities, and 2002/20/EC on the authorisation of electronic communications networks and services.

[4] Detailed description of Internet Access Services to be found in the upcoming Quality of Service report.

[5] In this document, a " transparency policy" refers to the sum of all measures initiated (by operators, public institutions and other third parties), in order to support or realize the provision of information to users of ISPs' EC services related to Internet access services.

specific features of the Internet should be considered within transparency policies and, if so, how.

Other BEREC projects are closely linked to this work, namely projects on "Competition issues related to Net Neutrality" and "Net Neutrality and Quality of Service".

This paper will be structured in the following way:

Chapter I focuses on the role of transparency with regard to net neutrality, explaining why it is important, but is not sufficient on its own to address the "net freedoms" objective (nor other concerns expressed in the net neutrality debate). In addition, we give an overview of the legal context and touch on the situation within EU Member States.

Chapter II deals with requirements for a net neutrality transparency policy and states as a general principle, that the end users' perspective is paramount. We discuss how to best adapt a transparency policy to net neutrality-related issues, in particular by taking into account different types of end users and usages.

Chapter III talks about the contents of a net neutrality transparency policy, including the most appropriate data to be used, and provides practical examples and case studies.

Chapter IV explores different ways to ensure transparency, talking about the way information is transmitted and discusses mechanisms for monitoring transparency.

Chapter V details the possible roles of the various institutions involved, in particular through case studies, and draws some general conclusions of the report.

1. Role of transparency with regard to net neutrality

In terms of a definition, BEREC acknowledges that there is no absolute agreed definition of the concept of net neutrality. One of the most famous definitions is probably that provided by Tim Wu[6]: "*Network neutrality is best defined as a network design principle. The idea is that a maximally useful public information network aspires to treat all content, sites and platforms equally. This allows the network to carry every form of information and support every kind of application*".

The purpose of this report is not to define net neutrality, but rather to provide guidance about the information that needs to be brought to the attention of end users and the public in the context of the net neutrality debate. Therefore, in this document, for working purposes, we refer to the ***literal*** interpretation of net neutrality, as the principle that "*all electronic communication passing through a network is treated equally*." That means that all communication is treated independently of its content, application, service, device, sender and receiver address.

In this paper, transparency covers, *inter alia*, information about communication services, such as the minimum/average quality levels offered by the providers and any procedures put in place in order to measure and shape traffic. Transparency in these areas is required by the provisions of the revised EU Framework. The beneficiary of these transparency obligations is the legal entity or the natural person using or requesting a publicly available electronic communications service and who does not provide a public communication

[6] Tim Wu is an American researcher, considered to have coined the expression "Net neutrality". Tim Wu's website, "Network Neutrality FAQ": *http://timwu.org/network_neutrality.html*

network or a public available electronic communication service[7]. The focus of the guidelines is on end users as they are defined above, which also includes application/content providers, however no specific requirements are analysed with respect to this category[8].

In this chapter, we will see that transparency is important in order to enhance the end users' ability to choose and to enable end users to detect possible deviations from net neutrality.

We acknowledge that transparency alone might not be sufficient, notably when competition is not effective, and especially when there are barriers to switching. However, the main focus of this paper will be on transparency and how to achieve it, independent of other factors.

a. Why transparency is important in relation to net neutrality

Transparency is the primary approach chosen by the revised European Directives with regard to net neutrality (although there is no direct reference to "net neutrality"). The connection between transparency and net neutrality was particularly brought to the fore when the European legal framework was revised, as it was decided that the right to choose the service and the provider that best fits end users' needs and expectations is a right which should be fully protected - primarily through a competitive and transparent market. Therefore, transparency regarding the quality of the Internet access service and of any traffic management techniques is a key pre-condition of the end users' right and ability to choose between the different services existing in the market.

Also, ISPs know more about the quality and characteristics of their services than their customers, and practice has shown that an efficient transparency policy reduces the asymmetry of information existing between the providers and end users and fosters pro-active end user orientated behaviour on the part of ISPs. In this way, transparency with regard to net neutrality, as required by the revised EU Framework, is also an important tool that can be used by end users to help identify deviations from the net neutrality principle (as defined above) and to act upon that information.

In addition, the new provisions (article 20 of US Directive), which require providers to specify the "minimum service quality levels offered"[9] in the end users' contracts, could help to reduce the gap between the bandwidth offered in the contractual terms and the actual speeds experienced by the end user when connecting to the network and using the service.

b. Transparency is necessary, but not sufficient

However, in spite of these advantages of transparency in relation to net neutrality, BEREC acknowledges that transparency might not be sufficient, on its own, to ensure the desired outcomes.

As stated above, transparency is a tool that enhances the ability of end users to make informed choices and to choose the quality of service that best fits their needs. This will contribute to greater levels of competition on the market.

[7] Art. 2(n) and (h) from the Framework Directive.

[8] Service/content providers are not to be excluded from the definition of both ECN and ECS. The services being referred to (i.e. information society services and similar) do not consist wholly or mainly in the conveyance of signals. Therefore transparency for end users already also implies transparency for content and (e.g. IT) service providers, which are effectively end-users themselves, by definition.

[9] namely the time for the initial connection and, where appropriate, other quality of service parameters, as defined by the national regulatory authorities.

But at the same time, the existence of competition in a market is a prerequisite for transparency to have an effect. Therefore, two main instances can be envisaged where transparency may not be sufficient. First, transparency is not an absolute guarantee for effective competition, as we discuss below. Second, even if there is competition, there still remains a possibility that the levels of quality of service offered by the market are considered insufficient with regards to the demands and expectations of end users and the wider society.

The first instance refers to the fact that transparency without a sufficient degree of competition cannot bring the expected benefits to end users and to all market players in general. The existence of competition in a market is vital as it can offer end users the possibility to choose from a wide range of services or providers which best fits their needs. Service quality is an important characteristic of any service.

Therefore, the regulatory remedies to promote efficient competition, available to sector-specific regulators and competition authorities, are fundamental in the context of net neutrality. They are particularly helpful given that operators/ISPs may have an incentive to discriminate against competitors' equivalent services. Encouraging a multiplicity of offers by promoting competition also helps to increase the possibility that users will be able to find the services they want on the Internet.

Also, transparency alone might not be sufficient for achieving net neutrality because of the fact that, in order for end users to fully benefit from the choice offered by competition, they must also be able to switch between different providers and to have the confidence to do so, and confidence that they will derive benefit from doing so. This implies in particular that the market is not wholly restricted (i.e. all competing providers offer similarly restricted services). The various barriers to switching that exist in the electronic communications sector were analysed by BEREC in its 2010 report on "Best practices to facilitate switching"[10].

Even with transparency measures in place, it will be necessary to be particularly vigilant about the conduct of firms with significant market power (SMP) in a relevant market – i.e., in remote areas where there is little or no choice of broadband offers. BEREC also recognized[11] that, even in the absence of competition problems, the widespread use of certain types of traffic management techniques could lead to changes in the Internet economy over time. Furthermore, concerns have been expressed in relation to the effective exercise of fundamental rights and freedoms that could arise if operators were to block or throttle certain services or to give preferential treatment to some kinds of data flows that they consider more valuable, such as search traffic, which can bring them additional advertising revenue. Finally, if ISPs increasingly allocate most of their capacity to specialized services[12] rather than the Internet access service, this could have a serious effect on the scope for innovation in new content, applications and services, which currently benefit from the low barriers to entry and innovation afforded by the Internet.

It is important to be aware of this variety of concerns. However, they will not be directly tackled in this paper, as we will only focus on achieving transparency in the field of net neutrality and on setting out the best ways to ensure transparency and to monitor how information is being provided by ISPs.

[10] BoR (10) 342323 rev1, http://berec.europa.eu/doc/berec/bor_10_34_rev1.pdf....

[11] See BEREC response to European Commission Consultation on the open Internet and net neutrality in Europe.

[12] Detailed description of Specialized Services to be found in the upcoming Quality of Service project

Finding: consumer choice and information on the differences between offers help end users obtain the services that they want. Thus, transparency is a fundamental mean to achieve regulatory objectives. BEREC will also analyse, in different projects, other net neutrality aspects that need to be considered in complement to transparency.

2. Regulatory context: overview of the relevant provisions in the revised telecom framework

The new EU Regulatory Framework for Electronic Communications was required to be transposed by Member States by 25 May 2011. It brought important changes to the 2002 Regulatory Framework and also tackled the question of net neutrality by imposing on MS[13], NRAs[14] and ISPs several obligations related to traffic management techniques.

The broad outlines of the European approach in matters related to net neutrality include a strong presumption in favour of preserving the "open and neutral character of the Internet", stemming particularly from the provisions of Article 8(4)(g) of the revised Framework directive on the ability of end users to access and use all content, applications and services.

Traffic management measures are neither mandated nor prohibited, although any such measures must respect national and Community law.

The core provisions related to traffic management and net neutrality are the new transparency requirements set out by Articles 20(1)(b), 21(3)(c) and 21(3)(d) of the Universal Service Directive, which provide potentially stronger and more explicit transparency measures in relation to the information provided to end users to enable them to make informed choices. Article 22(2) USD can also be mentioned, as it provides for a transparency obligation regarding quality of service.

Article 20(1)(b) of the Universal Service Directive deals primarily with the content of contracts concluded between end users and ISPs, and includes the obligations for ISPs to specify in the contracts, *inter alia*:

- information on any other conditions limiting access to and/or use of services and applications;
- the minimum service quality levels offered by the ISPs;
- any procedures put in place by the ISPs to measure and shape traffic so as to avoid filling or overfilling a network link, and information on how these procedures could impact upon service quality;
- any restrictions imposed by the ISPs on the use of terminal equipment supplied.

Paragraph 2 of the same article grants subscribers the right to withdraw from their contract without penalty when the ISP notifies them of changes in the contractual conditions mentioned in Article 20 (1)(b).

Articles 21(3)(c) and (d) of the Universal Service Directive empower NRAs to impose a variety of information requirements on ISPs.

[13] For example, US Art 21(3)(c) and (d) regarding transparency on traffic measures target Member States in the first instance.

[14] For instance Fwk Art 8.4(g) applies if traffic management actions impact a user's ability to „access [...] choice". And Art 8(1) requires NRAs to „take all reasonable measures" to achieve the objectives in ... [Art 8] paragraphs 2, 3, 4.

According to the provision of Article 21(3)(c) USD, NRAs can oblige the providers of public electronic communications networks and/or publicly available electronic communications services to inform subscribers of any change to conditions limiting access to / and use of services and applications, where such conditions are permitted under national law in accordance with Community law.

Article 21(3)(d) empowers NRAs to impose on providers the obligation to provide information on any procedures put in place by the provider to measure and shape traffic so as to avoid filling or overfilling a network link, and on how those procedures can impact upon service quality.

There are also new provisions which provide governments with the ability to empower NRAs to set minimum quality of service requirements on public electronic communication network operators in Article 22(3) USD. Also, the provisions of Article 22(1) USD require the providers to publish comparable, adequate and up-to-date information for end users on the quality of their services and on the measures taken to ensure equivalence in access for disabled end users. These can be important in matters related to net neutrality as they can help end users identifying the deviations from the net neutrality principle which affect the quality of service, and they contribute to ensuring the end users' ability to choose the quality of service they wish.

Of particular importance for the application of these articles are the corresponding recitals: recitals 30 and 31 of the 2002/22/EC Directive, recitals 24, 28, 29, 31 and 34 of the 2009/136/EC Directive and recitals 4 and 23 of 2009/140/EC Directive.

Of all these recitals, we note that recital 28 (2009/136/EC – USD) is particularly important as it states several end users' rights related to net neutrality, such as the right to decide what to send and receive, and which services, content and applications, hardware and software they want to use for such purposes, without prejudice to the need to preserve the integrity and security of networks and services. Another important right reiterated by this recital is the end user's right to be **fully** informed of any limiting conditions imposed on the use of electronic communications services by the service and/or network provider. This recital also gives some indications as to the types of information to be made available to end users, i.e. the types of content, application or service impacted by the limitations, individual applications or services, or both.

Regarding wholesale relations between providers, of particular interest in terms of transparency is Directive 2009/140/EC ("Better Regulation"), which has, *inter alia,* rephrased Directive 2002/19/EC ("Access Directive"), Article 9 ("Obligation of Transparency"), subparagraph 1. The scope of Article 9 is transparency about the wholesale market, which is required of certain stakeholders in order for transparency to be implemented in the whole of the retail market; indeed, some alternative ISPs may not themselves have access to the data necessary to inform their own customers. However, this paper concentrates on the retail level, and does not cover transparency at the wholesale level.

Also, following the recent revision of the Access Directive, its Article 5(1) now explicitly mentions that NRAs shall encourage, and where appropriate ensure, in accordance with the provisions of this Directive, *adequate access and interconnection as well as interoperability of service*", in order to promote sustainable competition. However, given how new this provision is, it remains to be seen how it will be implemented in the various Member States, and therefore how helpful it will be in solving the issues that arise.

Net neutrality issues were also tackled in part A, point 19 of the Annex to the Directive 2002/20/EC ("Authorization Directive"), which focuses on the transparency obligation on net

neutrality issues and traffic management that NRAs can impose on the providers through the general authorization regime.

In addition to the EU Framework, *ex post* EU competition law powers may be applied in cases where discriminatory behaviour by providers has negative consequences for the level of competition and the interests of end users.

Furthermore, horizontal consumer law can also play a role in relation to traffic management and net neutrality. Of particular relevance are the two directives on Unfair Commercial Practices[15] and Unfair Terms in Consumer Contracts[16]. The UTCC Directive applies to all consumer contracts and includes provisions under which obscure or hidden terms, or changes in the contract without a valid reason, may be unfair. Traffic management techniques would raise consumer concerns if their use is not clear, or, even where explained, they may be technically complex and difficult for many end users to factor into their purchasing decisions.

While we have noted a variety of provisions that could apply to issues related to net neutrality, including consumer and competition law, the focus of these guidelines will be on the ways in which the revised EU Electronic Communications Directives apply to matters related to net neutrality and transparency and the role they can play in this field.

Finding: the transparency objective is backed up by strong and detailed requirements on ISPs in the revised electronic communications framework. Other legal provisions in consumer and competition law are also relevant, but are not the focus of this paper.

[15] Directive 2005/29/EC of the European Parliament and of the Council of 11 May 2005 concerning unfair business-to-consumer commercial practices in the internal market

[16] Council Directive 93/13/EEC of 5 April 1993 on unfair terms in consumer contracts

Chapter II - Major requirements for a net neutrality transparency policy

1. A general principle: the primacy of the end user perspective

The goal of a transparency policy is to achieve a situation where end users of all categories are able to make well-informed choices. Transparency related to net neutrality means transparency about the technical and economic conditions of the provision of Internet access services. In particular, transparency about how Internet access operators deal with traffic management measures.

a. Relevant characteristics on information to be transparent for end users

The most relevant provisions with regard to traffic management are the new transparency requirements in Articles 20 and 21 of the Universal Service Directive, which provide potentially stronger and more explicit transparency measures in relation to the information available to end users to enable them to make informed choices.

According to Article 20 of the Universal Service Directive, the relevant information (on traffic management etc.) shall be specified in the contracts in a clear, comprehensive and easily accessible form. In order to achieve this, BEREC has identified certain criteria that would need to be fulfilled.

A fully effective transparency policy (which can be composed of various approaches and measures) should aim at satisfying all of the following characteristics:

- Accessibility
- Understandability
- Meaningfulness
- Comparability
- Accuracy

As we will see later, there is more than one way to reach the goal of transparency. An effective transparency policy does not necessarily mean that every transmission of information from an ISP or a third party to the end user must fully meet all of these characteristics, but BEREC states that the overall combination of measures should. For instance, if operators include very detailed and technical data in their contractual documents, these may be very accurate but not very understandable. In such a case, it would be necessary to put some effort into complementary transparency measures (implemented by the same operator or other parties), in order to improve understanding of the offers. For regulators, this means that, without lowering their overall expectations, they can spread their requirements between different bodies or initiatives. Most of these characteristics are more or less interlinked: for example, information can only be meaningful when it is accurate.

Accessibility – Information about the Internet access service and in particular traffic management and other restrictions must be accessible for end users. Amongst other things, accessible information means that information can easily be found and identified for what it is. If information is inaccessible, end users simply cannot acquire the necessary information and will remain uninformed.

Understandability – Another important requirement for transparent information is that the information must be understandable for end users. Information that is too technical for end users to understand will not lead to well-informed choices. To be understandable, information must also be presented in a user-friendly form.

Meaningfulness – Effective transparency requires information to be meaningful to end users. Simply providing information will not enable end users to make informed choices if it is not the relevant information, is ambiguous or is not presented in a way that is useful.

Comparability – Information is sufficiently comparable for end users when the same relevant information is transparent and presented similarly enough, by different providers or for different packages, to be able to be compared in such a way that it can show differences and similarities.

Accuracy – Information needs to be correct and up-to-date. End users must be able to check the information related to their current situation, which implies regular updates. When end users or NRAs can check that the information is correct and up-to-date, then the information is likely to be accurate.

More generally, information should not create an incorrect perception of the service offered to the end user. In this respect, one should also refer to horizontal consumer law (for some references, see Chapter I, part 2).

b. Three different stages in the commercial relationship between end users and operators: before signing the contract, at the point of sale and after signing the contract

Informed choices are necessary at different stages in the commercial relationship between end users and operators - for instance, when initially purchasing a service from an operator and when considering whether to switch to another operator. Transparency policy should cover the whole sales cycle, from potential clients to existing customers.

Before signing a contract, information about traffic management policies will be one factor to help end users choose between different ISPs[17] or packages. For example, explaining whether any applications or services are blocked or restricted allows end users to make an informed choice about whether they are choosing a package that suits their needs.

At the point of signing a contract, a customer will need information about the service they will be able to receive (e.g. according to his geographic location or line conditions) as well as the contractual conditions that will apply to a certain combination of options in a package.

Once a customer has acquired a service, he should be informed on post-sale information from their ISP, such as changes to traffic management policies or information about their usage or reaching bandwidth caps, which may, in time, include real-time information. They may also be willing to use third-party tools to check the performance of their service.

All five criteria set out in (a) above should be pursued in all circumstances. However, some of them can be seen to have a specific importance in the contexts described here, such as *comparability* before signing the contract, *understandability* at the point of sale, and *accuracy* once the user is receiving the service.

c. A range of useful forms of information for end users: from general to individual/specific cases

There are different sorts of information that can be included in transparency measures. The individual items will be described in more details in Chapter II, but one way of categorizing them refers to their level of specificity to a particular type of situation.

[17] Both terms: “Internet Service Providers” (ISP) and “Internet access providers” are used in this document with the same meaning.

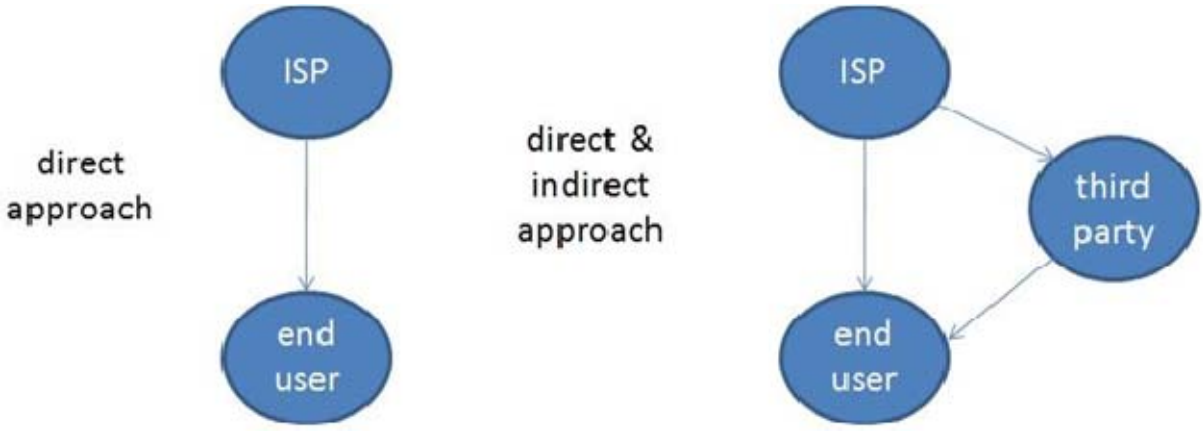
Some information is of a very general, sometimes “statistical” nature. A typical example would be a publication from an NRA of some average data regarding a market at the level of a region or an entire country. This does not refer to specific direct obligations from the new framework. However, if the end user can be provided with general information about the market as a whole, for instance on the average level of service offered by all providers in his area, this can probably help him to make an informed choice.

In most cases, the information to be provided will depend on the ISP concerned (e.g. how it delivers certain services across its customer base), or on ISPs packages selected - it may even be adjusted according to specific situations. Indeed, an individual end user may be interested in information that relates more precisely to their usage or situation. An example of this very individual type of data could consist in details about the maximum speed available at a specific location.

This distinction between general and individualized/specific information can provide interesting insights about the five criteria – for example, while integrating individualized data into a transparency policy could enhance its *meaningfulness*, the provision of general information can help increase *comparability*.

2. Two approaches to producing understandable information for end users: direct and indirect approaches

A key element of a transparency policy is to produce information for end users that is understandable. BEREC considers that there is no one-size-fits-all solution for achieving this. The definition, in accordance with the Directives, of the blend of measures that best suits each market, will depend in particular on the situation (existence, notoriety, credibility, etc.) of third parties. Indeed, a policy mix can be based on two complementary types of approaches: direct and indirect[18], according to whether the information is transmitted to end users directly by the provider, or indirectly via third parties.



[18] This model of a direct and an indirect approach is based on the analyses in the report “Network Neutrality and Transparency” by Tilec (Tilburg University) and the report “Transparantie over netneutraliteit” by TNO.

a. Direct approach

The direct approach focuses on how operators make information transparent to the end user *directly*. As stated above, there are five elements, which should be satisfied through any transparency policy. In this direct approach, NRAs (or policy makers, depending on the legislation in each member state) have a responsibility to ensure that operators make the information accessible, understandable, meaningful, comparable and accurate. NRAs can, within reasonable limits, choose how prescriptive the information should be, and the level of detail they deem necessary in this context. A very light-touch approach could be to make use of open statements, such as simply requiring ISPs to be transparent about the traffic management measures they use, without specifying how they should do so.

Because information must be understandable for end users, it would not be effective to simply require operators to make the technical information fully available. End users may feel over challenged by information that they (typically) cannot comprehend or do not need in order to choose the services they want. To make the information understandable, it might be that less information is better than more information. As a consequence, NRAs should decide which types of information are the most relevant for end users, and in what form such information must be provided. Alternatively, it may be the task of the NRA itself to make this data understandable, for instance through guidance on the information to be emphasised. In either case, the NRA may decide to take responsibility for verifying that ISPs have provided understandable information (which may require a common frame of references). So NRAs may need to manage both the quantity of the information (i.e. determining which information is relevant, and in how much detail) and the task of making it understandable.

Examples of questions for ISPs that could provide relevant information:

- Is the access service unrestricted or restricted?
- If it is restricted,
    - which applications receive special treatment from traffic management?
    - what is the effect of traffic management measures on the applications as they are experienced by end users?
    - when is this effect noticeable?

b. Indirect approach

In an indirect approach, third parties play a crucial role in making the information understandable for end users. Third parties can be, *inter alia*, technical experts in the Internet community, price comparison sites and content providers, as well as NRAs themselves.

Technical experts, in contrast to most end users, are able to handle and interpret technical information. They are capable of deciding which information is relevant for end users and translating it into a format that is understandable for their specific end user target audience.

In an indirect approach, it is the role of the third parties to work out precisely how operators should make the information understandable, meaningful and comparable. This indirect approach can only work when third parties are well informed, empowered with sufficient technical knowledge and access to all the technical and up-to-date information they need. It is also important that there is sufficient awareness among end users of the existence of the third parties and the role they play.

Transparency provisions imposed on ISPs, in this indirect approach, only have to focus on three of the five characteristics - accessibility, comparability and accuracy. Indeed, this approach implies that NRAs do not have to ensure that the information is understandable and meaningful, because this will be done by the third party (probably based on open norms). The challenge here is to provide experts with access to sufficient technical

information, while acknowledging that some of the information may contain sensitive data. The expertise of the third parties implies that the information made available to them need not be as understandable as in a direct approach, so, from this standpoint, too much information (available to third parties) is better than too little.

Examples of questions for ISPs that could provide information useful to third parties:

- Is the access service unrestricted or restricted?
- If it is restricted:
    - which traffic streams are subject to special treatment through traffic management measures?
    - which measures are applied to these traffic streams?
    - when are these measures applied?

Stakeholders in an indirect approach will be:

- ISP industry
- Consumer organizations
- Online community and technically-savvy user groups
- Expert groups from academic institutions and standardisation
- Providers of applications and content
- Third party comparison websites
- Independent information intermediaries

NRAs may also participate in indirect transparency measures themselves, as well as in the overall development of an indirect approach.

The roles that the various parties can play will be further examined in Chapters IV and V.

c. An indirect approach is complementary to a direct approach

According to the European Framework (particularly Articles 20, 21 and 22 of the Universal Service Directive), there is a legally binding requirement for operators to implement direct transparency. In this regard, policy makers and particularly NRAs must consider their possible role to ensure that information provided by operators complies with the regulatory expectations. This constitutes the “direct approach” part of the policy mix.

Although it is not legally required, a certain level of indirect transparency is probably necessary if a transparency policy is to fulfil the five criteria. Here, also, there is a possibility for public authorities, and particularly NRAs, to intervene to some extent in the development of an “indirect approach”. It should be noted that Article 21 of the Universal Service Directive also refers to third parties as an alternative way of making information transparent. Here, the key for a transparency policy to be successful will be how to ensure that end users benefit from an indirect approach.

In defining their involvement in the direct and indirect approaches, NRAs must also consider the impact in terms of public cost, constraints on the markets, etc. In this respect, an effective promotion of the indirect approach can lead to a more efficient transparency policy overall. This advantage must be considered along with the proportionality of requesting from operators a higher degree of disclosure of information. These aspects are further considered below under the notion of “proportionality”.

d. Proportionality

We have stated before that a fully effective transparency policy should eventually fulfil all of the following characteristics:

- Accessibility

- Understandability
- Meaningfulness
- Comparability
- Accuracy

In line with recital 41 of the Framework Directive and recital 51 of the Universal Service Directive, NRAs have an obligation when making provisions to do so in a proportionate way. In particular, NRAs must take into account the cost of implementing the provisions incurred by Internet access providers, as well as the cost of NRAs' initiatives. This means that, as well as being effective, a transparency policy should also be proportionate.

In other words, when implementing a transparency policy, NRAs should not only aim at fulfilling the five characteristics accessibility, understandability, meaningfulness, comparability and accuracy. NRAs also have to implement this transparency policy in a proportionate way. In this document, we will call this the "*proportionality*" criteria.

We have established before that a direct approach to a transparency policy is compulsory and that an indirect approach is complementary. A challenge for NRAs is to ensure that an indirect approach provides additional benefits. This must be considered thoroughly, since a successful indirect approach can save efforts in enforcement in the future. Indeed, the more success NRAs have in promoting an indirect approach, the less efforts parties may have to devote to the enforcement of direct transparency measures. This is interesting from the point of view of proportionality, as long as the costs related to NRAs' or ISPs' involvement in indirect approaches remain moderate. "Costs" should be understood in a wide sense here, including in particular the risks incurred by the parties (for instance in relation to sensitive data of operators, or to legal procedures imposed on the NRA, etc.)

The NRA's level of involvement in the various approaches should carefully be adapted over time, depending on the results of the on-going measures. For instance, an NRA could set guidelines and, after evaluating this approach, can decide whether to increase their efforts to secure the direct approach, through making the norms more detailed.

3. How to best adapt a transparency policy to net neutrality-related issues

Transparency needs to be achieved for all products and services – the EU Framework sets out that transparency should apply to all electronic communication services, which should in this respect be considered on a similar basis. However, in the context of net neutrality it may appear that Internet-related services are more complex than "traditional" electronic communications services, such as circuit switched communication. The following items are factors that should be taken into account when designing a transparency policy related to net neutrality:

- There is a difference between problematic traffic management measures and non-problematic traffic management measures, and in the effects they have;
- Services can be quite different from each other, as can the offers which combine them;
- Various types of technologies are used to provide those Internet-related services;
- Not all end users have the same ability to understand the characteristics of these services and the consequences of operators' practices on their quality of experience.

This section analyses the specificities of Internet-related services in order to be able to define an effective transparency policy and, which satisfies the general principle of transparency.

a. Problematic versus non-problematic traffic management measures - or what is the effect of the traffic management measure?

An effective transparency policy must result in the availability of understandable information. To aid understandability, it is important to distinguish between those traffic management measures that are problematic and those that are not problematic[19]. For end users to be well informed, it is problematic traffic management measures that they primarily need to know about and understand.

The blocking of an application is obviously a problematic traffic management measure for customers using this application. Conversely, security related measures, such as blocking of denial-of-service-attacks, can be considered as non-problematic traffic management measure.

Although these examples may seem rather obvious, it will not always be easy to distinguish between problematic and non-problematic traffic management measures, so how can this distinction best be made?

First, it is necessary to get consensus on which traffic management measures are problematic and in which cases. This can be done by proactive statements by NRAs or policy makers, or through stakeholders coming to an agreement.

To know whether a traffic management measure is problematic for an end user, it is important to know what the effects of the traffic management measures are[20]. If the effect is only little, then the measure is probably not problematic. If the effect is significant, then the measure is probably problematic.

Under an effective net neutrality transparency policy, any significant effect of traffic management measures must be made transparent.

b. Different types of offers (access to Internet, specialized services, bundles…)

From one EU country to the other, there is a diverse range of offers including access to the Internet, depending both on the strategies of operators and the consumption habits of end users. Two very common types of IP-based service offers are largely available across the EU: stand-alone Internet access on the one hand, and Internet access bundled with other IP-based service offers on the other hand.

A bundle can combine Internet access service and other IP-based services, such as IP TV and VoIP. Services such as IP TV and VoIP, for which operators normally ensure a certain level of quality, are referred to as “specialized services”[21]. Alternatively, a stand-alone Internet access service offer proposes transport capabilities within the ISP’s network and connectivity to the public Internet only.

Given the general rule that ensuring transparency is more challenging when products or services are more complex, this difference between stand-alone offers on the one hand, and

[19] Detailed methodologies (tools, indicators) to identify or measure such measures will be detailed in the upcoming QoS report.
[20] The QoS report will also discuss aspects linked to quality of experience.
[21] See the QoS report for a further description of specialized services. Another general definition of such services can be found in ARCEP Proposals of September 2010: “*services providing access to content/services/applications through electronic means, for which the network operator guarantees certain specific features end-to-end and/or over a given period of time, thanks to the techniques it uses, either directly on the network it owns and operates, or through agreements with the operators responsible for routing traffic.*”

bundles including specialized services on the other, may have an impact on transparency requirements. This points to a first set of specific difficulties.
In addition, there may be complications as a result of the fact that those bundles are composed of fundamentally different kind of services: an Internet access service and specialized services. Indeed, although "any electronic communication network needs certain functions to ensure that the network is capable of providing adequate transmission performance"[22], the basic tenet of an Internet access service is a neutral "best efforts" underlying principle which, by default, offers a non-differentiated treatment of IP packet transportation, irrespective of the application generating the IP packets. In other words, it would not include any particular application-specific performance, which would be seen as a deviation from the net neutrality principle as defined in Chapter I. Conversely, service-specific treatment of IP packets/network capacity is essential for operators to be able to ensure a certain quality of service for specialized services.

While best efforts Internet access is associated with a situation without "specific" traffic management measures (i.e. application-specific network capacity allocation measures), specialized services can only be supplied with the support of management measures that ensure the allocation of network capacity. With more transparency, users will be informed better and thus be able to choose the offer best suited to their needs. In the case of an Internet access service that applies a "best efforts" principle, end users may not expect their operators to engage in application-specific traffic management measures. If they do apply such techniques, and if these are considered legitimate[23], operators should make them fully transparent to end users.

The coexistence of Internet access service and specialized services and the way that network capacity (with consequences on users' connectivity) is shared between them should also be itself the subject of transparency. Different ISPs have different policies in this respect (e.g. freeing full capacity to IPTV when Internet access service is not active), for which end users may have different preferences, according to their usage (see below).

Finally it is important for transparency that there is a common understanding on what an Internet access service typically includes and what it does not include.

c. Different types of networks and technologies

Internet-related services are provided by several types of fixed or mobile networks. BEREC does not believe that there is strong evidence to support a view that the approach of transparency should be different for mobile and for fixed networks (or indeed between different fixed technologies – e.g. DSL or cable). Rather, "the principles governing traffic management should be the same for mobile and for fixed networks. Mobile network operators and fixed network operators are faced with the same technical problems when administering the operative network, they use the same IP based technology"[24] and they are expected to compete on equal terms with each other.

[22] BEREC's answer to question 5 of the EC net neutrality consultation.

[23] The question of legitimacy is beyond the scope of this report, and will be addressed in other BEREC projects. In practice, policy makers and NRAs may contribute to the forming of such an opinion on legitimacy, through more or less detailed and prescriptive indications. An example is provided in France, where ARCEP advocates a case-by-case but predictable approach, supported by four criteria. A "legitimate" deviation has to be relevant, proportioned, efficient, and should not discriminate between players. In this document, we are making an assumption of this framework of legitimacy being already established.

[24] BEREC's answer to question 6 of the EC net neutrality consultation.

Nevertheless, different types of networks may have different technical specificities, which need to be taken into account in order to define an effective transparency policy.

In particular, mobile network operators implement practices of traffic management or fair use policies more often than fixed operators. They justify measures against congestion because of several end users often sharing the local radio loop, and there being limited capacity due to spectrum constraints. In this context, the risk would be that a small minority of users deteriorates the experience of the majority of end users. However, shared bandwidth exists also for fixed access technologies like HFC and PON, and even DSL and (active) fibre networks use multiplexing in their aggregation networks. Fixed networks based on DSL have lower bandwidth than fibre networks, but it is most often argued that a natural response to limited capacity, and the resultant lowering of speeds, would be to increase the bandwidth. In the case of mobile operators, BEREC acknowledges the concerns regarding increasing data traffic volumes in operators' networks. They may address it in ways that are, with regards to individual applications, more intrusive (e.g. blocking or throttling) or less intrusive (e.g. smoothing consumption), or by increasing the bandwidth, which would certainly imply smaller cells and reuse of frequencies. Of course, this would probably result in higher prices, but does not seem to trigger particular transparency concerns. Transparency measures will need to reflect those choices, regardless of the technology.

A specificity of mobile networks that may be more relevant to consider in relation to transparency is the mobility of the users, and the resulting difficulty to provide exact information on the available bandwidth at a specific place in the network and at a particular point in time. This is rendered even more difficult by the uncertainty regarding the number of users and the activity of other users in the same cell. This may result in the need to undertake traffic management measures in order to provide some statistical information to customers on the expected quality. In this respect, the processes and contents of a transparency policy might not be the same for mobile and for fixed networks.

Also, specialized services are not exactly the same in a fixed offer as in a mobile offer. For instance, where available, IPTV is very popular among fixed end users, whereas mobile end users do not show the same appetite for mobile TV. Also, alternative mobile TV technologies like DVB-H and DMB may offload the need for IPTV services to be carried over mobile broadband.

Lastly, mobile offers display a large variety of dedicated applications, while handsets play a crucial role in the mobile context. This is another possible reason that a transparency policy may differ between fixed and mobile offers. One can underline in this context that some device manufacturers, or operating system designers, play a much more significant role in the experience of mobile Internet users than of fixed end users. This is particularly the case when they have a very high control on applications running on the device. This specificity of mobile offers should be considered when designing a transparency policy, in particular in the section aiming at ensuring transparency.

d. Different types of end users and usages

Transparency on the services' features is a key condition for ensuring that all end users gain an understanding of the quality of experience they will get from Internet related services.

However, the quality of experience is likely to depend on a variety of aspects, some of them rather complex, such as reliability rate, minimal latency, jitter, user expectation and context. Given the diversity of end users, it is likely that many of them would not be able to easily understand the different factors that determine their quality of experience.

In any case, end users do not have the same needs, so key characteristics of Internet offers vary from one type of end user - such as gamers, for whom latency is critical to their experience - to others, such as mobile surfers or application providers (at the retail level).

The diversity of end users - both in terms of their usages and their ability to identify the key elements to satisfy their needs - makes the definition of a transparency policy more challenging than transparency for areas such as traditional voice services (PSTN). It might be difficult for operators to identify a single set of information that is appropriate for all types of end users. If the operator does so, it risks providing too much for some end users and / or too little for others. There is also a need to avoid excessive complexity. Here, an indirect approach to transparency can play an important complementary role to the information directly transmitted by operators to end users, as specialized third parties could present information adapted to the needs of their target audience.

4. Implications on the relevant information and methods of transparency policies

A transparency policy is not an end in itself but rather a means to an end; to enable end users to make informed choices. Transparency is complementary to the existence of competition. Below we provide some preliminary indications of how a transparency policy can best adapt to what has been stated previously in this chapter, i.e. the particularities of the markets and offers that this document is looking at, and the objectives that a transparency policy aims at fulfilling.

a. General transparency and transparency on limitations

As we will see in Chapter III, information about the Internet access service can either concern the general scope of the offer (e.g. parameters of the connection like speed or availability of the service), the general limitations of the offer (e.g. fair use policies) or the specific limitations of the offer (e.g. the application of traffic management techniques).

Information focused on limitations is useful for choosing the right offer but it can lead to mixed results. Access to the Internet is a service that actually offers access to plenty of applications, and it might not be easy to determine a choice between an offer restricting certain applications and another that restricts other applications. End users will probably understand the limitations better when they are more aware of the general characteristics of their access service. Transparency only on the limitations of the offer can thus be less meaningful.

Therefore, to reach the goal of end users making informed choices, it is necessary to have transparency on both the general scope and content of the offer and on the various types of limitations of the offer (e.g. application-agnostic or -specific). Transparency on limitations (the “pure” net neutrality aspects) of the offer alone will probably not be enough to enable end-users to make informed choices. A transparency policy on net neutrality should cover both the general scope and contents of the offer, and also both the general and specific limitations, if any, of the offer.

Finding: for net neutrality transparency, information is needed on both the general scope of the offer and on the limitations (general and specific) of the offer.

b. Both a direct and indirect approach are necessary

We have seen that developing a direct approach is compulsory. But NRAs' efforts are not necessarily limited to ensuring that ISPs comply with a direct approach. Using the indirect approach also provides an important opportunity to achieve a more effective transparency policy, and a possible challenge for NRAs is thus to ensure that end users benefit from an indirect approach. If regulators succeed in promoting an indirect approach, while complying with the *proportionality* objective, then the transparency policy can be expected to be more efficient overall.

In Chapter IV, we will see how a transparency policy can be given effect. We will describe ways to transmit information, mechanisms to monitor transparency and different approaches to providing information about traffic management measures. The described ways will be evaluated against the characteristics of accessibility, understandability, meaningfulness, comparability and accuracy, as well the criteria of proportionality.

The indirect approach has specific merits with regards to providing understandable, meaningful and comparable information and these characteristics are more important in the phase before signing the contract (the "commercial" phase). To illustrate this, one can argue that isolated information from individual ISPs probably does not provide the same guarantees as third parties in terms of impartiality etc., which are important for comparability. When direct involvement of NRAs (or other public bodies) is considered, it should be acknowledged that there are some noticeable limitations (these will be looked at in Chapter V with some more details), in particular because they might not have access to all information.

On the other hand, a direct approach has specific merits regarding the accessibility and accuracy criteria, and takes on a particularly legally binding nature once a customer has signed a contract (the "contractual" phase). This view can be supported firstly by the fact that users most easily look for information in the websites (or shops or documentation) of the operators (who benefit from strong commercial visibility). Furthermore, ISPs have the most accurate knowledge about how their own services are delivered.

In reality, these preliminary assessments about transparency measures will be nuanced, since the approaches are often quite intricate. For instance, even without the close involvement of an NRA in indirect transparency, a direct approach can enable third parties to access more relevant information, in order to build their own comparisons. The "indirect approach" will thus follow to some extent as an effect of a direct approach, even if this wasn't at the forefront of an NRA's strategy. Ideally, NRAs should therefore consider direct and indirect approaches in combination and in the long term.

Finding: for net neutrality transparency, it is necessary to consider both direct and indirect actions. A direct approach is compulsory. An indirect approach has a complementary nature, but NRAs should definitely evaluate their role in promoting it. Indeed, how effectively an indirect approach is promoted will have impacts on the efficiency and proportionality of a transparency policy, with the potential for greater achievement on that market.

c. The role of common references

This last preliminary finding focuses on the criteria of "understandability" and "comparability". As we have seen, offers on Internet access can be very complex, and information on both the general scope of the offer and information on (general and specific) limitations are important. It is therefore important to find ways to make information simply understandable, at least the part of the information that is more readily accessible (cf. "tiered approach" in Chapter IV).

To make the information on Internet access services simpler, various solutions can be useful, in particular:

- using common terms of reference for the description of Internet access services, including the clarification on the difference between restricted and unrestricted offers, in order to clearly distinguish them;

- promoting the use of relevant standards (either existing and open, or agreed upon through consultation processes), in order to give meaning to otherwise complex metrics. Instead of more objective parameters, such as latency or jitter, this could help to provide indications or measurements closer to the users' experience, such as the downloading time of a web page[25];

- limiting the number of "exceptions" or limitations to be explained to the users, as a result of reaching a consensus on which traffic management practices are not problematic. In this case, the "first tier" of information would not need to include an exhaustive list of measures put in place by ISPs. This can be complemented with a more exhaustive set of data being made available to interested users or third parties.

Finding: Common terms of references about aspects of the Internet access service, including agreement on which traffic management measures are "non-problematic", can help to make the transparent information to end users simpler, and therefore can make a transparency policy more effective.

[25] The upcoming BEREC "Quality of Service" report will go further into those QoS or QoE related tools.

Chapter III - Contents of a net neutrality transparency policy

Today, end users typically have access to information about the price of the package and its headline speed.[26] This is probably because product packages are often marketed with a strong focus on these two parameters - price and headline speed. However, customer experience is affected by many other factors, and different services have different requirements with regard to certain parameters (e.g. jitter, delay etc.) and will consequently react differently to any impairment of the levels of these parameters.

The enhanced transparency requirements of the Framework aim, *inter alia*, to enable the customer to make informed choices. In order for transparency to become an effective instrument it is **necessary to specify the contents** of a net neutrality transparency policy. There should therefore be a set of **criteria and factors** on which operators will have to provide certain information. However, ensuring transparency does not (necessarily) stop at this point, because such criteria/factors may need further qualification/specification in order to be applicable in practice. And if a specific criterion is expressed in technical and/or quantitative terms it is important to inform the user about the (possible) implications for his end user experience.

More generally, BEREC believes that it is crucial that transparency is understood not as an end in itself but rather as a means to the end of enabling informed choices. This was already stated in Chapter I, particularly since transparency is complementary to the existence of competition.

The provisions of Article **20 (1) b) USD** set out some aspects which shall be specified in the contract "*in a clear, comprehensive and easily accessible form*". This comprises[27]:

- *information on any other conditions limiting access to and/or use of services and applications, where such conditions are permitted under national law in accordance with Community law* (Article 20 (1) b) USD, 2nd indent);

- *the minimum service quality levels offered, namely the time for the initial connection and, where appropriate, other quality of service parameters, as defined by the national regulatory authorities* (Article 20 (1) b) USD, 3rd indent) ;

- *information on any procedures put in place by the undertaking to measure and shape traffic so as to avoid filling or overfilling a network link, and information on how those procedures could impact on service quality* (Article 20 (1) b) USD, 4th indent)

- *any restrictions imposed by the provider on the use of terminal equipment supplied* (Article 20 (1) b) USD, 6th indent).

Article 20 (1) b) USD specifies information to be provided in the contract. This assists customers in choosing a suitable provider and package for their needs when they first sign up. This is complemented with the provision of Article **21 (3) c) USD,** which focuses on *changes* of conditions that may have an impact on the overall customer experience. According to Article 21 (3) USD, "*Member States shall ensure that national regulatory*

[26] The extent of information available today may differ depending on the respective ISP. There may also be differences between MS.

[27] Note: focus here is on those factors that are of relevance in the context of net neutrality.

authorities are able to oblige undertakings providing public electronic communications networks and/or publicly available electronic communications services to, inter alia,:"

- *inform subscribers of any change to conditions limiting access to and/or use of services and applications, where such conditions are permitted under national law in accordance with Community law* (Article 21 (3) c) USD)

- *provide information on any procedures put in place by the provider to measure and shape traffic so as to avoid filling or overfilling a network link, and on how those procedures could impact on service quality* (Article 21 (3) d) USD)

It should be noted that **neither Articles 20 (1) b) USD nor Article 21 (3) USD provide an exhaustive** list of factors about which there should be transparency.[28] This provides NRAs with some flexibility to choose parameters that are particularly relevant in the markets they regulate. Also, it allows some flexibility if, at a later stage of market development, there are new or additional aspects on which customers need transparency, which are not currently relevant. This flexibility is necessary to ensure that the concept of transparency remains future-proof. Thus, transparency should not be considered a static, but rather a dynamic concept which may need further refinement or adaption.

And finally, Article 22 (1) USD prescribes that NRAs are *"able to require undertakings that provide publicly available electronic communications networks and/or services to publish comparable, adequate and up-to-date information for end users on the quality of their services"*[29]. Article 22 (2) USD then enables NRAs to *"specify, inter alia, the quality of service parameters to be measured and the content, form and manner of the information to be published"*. Thus, Article 22 USD does not specify explicitly what is encompassed by the concept of quality of service but provides NRAs with some flexibility to specify that.

Starting from these elements of transparency mentioned in the USD, we now look to provide more detail about these items and discuss further the transparency issues that appear relevant in the context of net neutrality and/or are mentioned in the related debate. In this respect, the items set out below incorporate the non-exhaustive list of items mentioned in respectively Article 20 and 21 USD (plus Article 22 secondarily). However, as with the elements set out in the USD, the following list is neither exhaustive nor does it imply that transparency needs to be provided with regard to all of these criteria in *every* single case. In general, the various criteria describing the offers may differ with regards to, firstly, the characteristics, and also with regards to their comprehensibility for the end user, or their usefulness for third parties providing information to end users.[30]

To further set the context, the content directly presented to prospective or existing customers by operators is usually made available either in "contractual" documents, or *via* "marketing/advertising" information[31]. From the standpoint of NRAs, both types of information should of course comply with the Directive provisions. From the end user perspective, the first type is probably expected primarily to be *accurate*, whereas *meaningful and comparable* are key criteria for the second type.

[28] Article 20 (1) b) says "in particular", Article 21 (3): "inter alia".

[29] Furthermore, this provision foresees that NRAs are able to require these undertakings to provide information "on measures taken to ensure equivalence in access for disabled end-users".

[30] See Chapter II, where such information provision by third parties is addressed under the heading "indirect approach".

[31] This aspect is for instance included in the scope of studies undertaken in Sweden (cf. case studies in Annex A).

1. Scope and content of the offer

This refers to the main elements that operators highlight to describe the type of offer a prospective customer is about to purchase (e.g. “24/24 3G mobile websurfing”), and the services which would be accessible (e.g. IPTV availability depending on DSL line characteristic). Such information could be subsumed into the following categories:

a. Availability of services

In general, this is the information about the services effectively provided by the operator for each offer. This may also include the options that are available to the end user, and different fees or conditions that may apply in order to benefit from these options.

Depending on the description of services chosen, it may not be easy for the average end user to understand the differences and the implications for the quality of experience. If a *typical* end user expects that he may use a specific application within a package it is all the more important to explicitly inform the end user about the services that are not included, or are explicitly excluded, from the contract, *(see also below on limitations of the offer)*. The option of explicitly specifying *all* possible uses (e.g. availability / accessibility of services/applications) may turn out to be impractical as it would require an undertaking to adapt its terms if a new usage emerges which originally was not covered in the terms and conditions. Moreover, such an approach may even lead to more complex (and less comparable) information for end users.

In this scope, using a common frame of reference – for example, regarding what “Internet access” is supposed to encompass - may lead to a simpler range of information for customers, such as only listing the differences between the offer and the reference. However, the process of defining such common frames of reference might be difficult in practice, as discussed below under “terminology”.

b. Terminology

One major challenge to transparency can be where providers use different terminologies for their respective offers, or use the same terms but with different meanings. As a result, the end user may misunderstand certain terms or may not be aware of subtle differences in terminology. For example, when marketing their offer, providers often use terms such as “data access, Internet, surf or web” to describe their offers. A typical end user may not be aware that a term such as *data access* or *data flat rate* can be used by a provider to indicate that the product does not include the usage of VoIP (see “Availability of services” above). Therefore, in order to ensure that the offers are meaningful and comparable, it is important that there is some form of common understanding among customers, at least for the most commonly used concepts. This is particularly relevant because end users will often base their product decision on marketing information without studying (or even understanding) the details of the general terms and conditions.[32]

However, the understanding of certain terms may vary in different countries, according to habits and uses, and there are various ways to ensure a common understanding (stakeholders’ common statements, NRAs guidelines on their websites, cf. Chapter IV).

[32] It seems evident that a consistent and unambiguous use of terminology is also crucial for these contractual terms, particularly given their relevance in the case of legal disputes.

Among the terms, those related to consumption (e.g. “unlimited” or “24/24”) may also need some form of convergence, at least tacitly – see also below (on caps etc.) regarding this.

c. Advertised speed (headline speed)

Most mobile operators do not market their speeds for Internet access on phones (except for mobile broadband by dongle, which can advertised by speed), so this issue arises more often in debates on the information regarding the quality of the service offered through *fixed* connectivity (or the smaller market of mobile broadband by dongle).

In technical terms, the advertised speed is characterized by the fixed bandwidth of the access-line provided by the ISP. The advertised speed usually covers download speeds. Customers may also need to be informed about upload speeds. In practice, information on upload speeds may be “less obvious” (e.g. hidden in contract clauses) than information on download speeds.

d. Actual speed

In practice, the actual speeds (both down- and upload) are often significantly lower than the advertised speeds. Many customer complaints addressed to NRAs or consumer organisations relate to the difference between actual and advertised speeds. Providing transparency on this issue could involve different aspects: end users might be provided at the point of sale with information on the speed they can ***typically*** *(or on average)* expect. ISPs should also be more transparent on the conditions where the advertised speed may not be ensured (for example depending on the type of connection, the moment, or the level of use of the network and server to which the customer is connected).

Applying such a concept of typical (or average) speed probably requires further refinement enabling the end user to understand how an operator defines *typical or average speed*[33], and/or the contention ratio. Furthermore, it should be specified whether the transparency information relates, for example, to peak hours or the average speed delivered over a 24-hour period.

e. Transparency on minimum QoS offered and other service quality parameters

When providing transparency on minimum QoS (especially in contracts), end users may also need to be informed about whether this minimum QoS applies in general or whether different degrees of QoS are provided for certain services/applications. Such information on QoS may relate to the speed (minimum, average, etc.) provided, but also encompasses information on elements such as packet delay, jitter, packet loss or packet error. QoS may also vary according to location or the time of the day, for example, or even parameters to be adjusted by the user. Although this type of data may be important for third parties to build relevant comparisons, its importance is more questionable in the case of direct transparency.

Indeed, given that highly technical information on QoS parameters may be of limited value for the average customer (and even problematic with regards to understandability), it may be more desirable to inform customers about the implications for the service experience they may typically expect when subscribing to a package with specific QoS characteristics.

[33] One could even conceive of a defining these terms in order to assure that they are used in a consistent manner by all the ISPs. This would improve comparability between offers of different providers. Cf. „terminology” paragraph as well.

On the other hand, this type of data seems key to supporting indirect transparency, either for comparability between ISPs, or for the elaboration of average statistics.

2. General limitations of the offer

This relates to whether limitations are applied on the users' connectivity: is the bandwidth proposed as "unlimited"? If yes, are there still data caps in place? These kinds of limitations are (typically) independent of the specific applications[34] that an end user may adopt.

a. Transparency on fair use policies

ISPs may apply *fair use policies* in order prevent users from using their broadband access "excessively". BEREC has already recommended in the response to the European Commission's consultation on the open Internet and net neutrality in Europe, that transparency should be based on clearly specified parameters and not on vague "Fair Usage" terms. If such a fair use policy is applied, the customer should be given precise information about **what the operator considers fair usage** and the **criteria it applies to determine a breach** of this policy.

In addition, comprehensive transparency requires operators to provide information on the action they would take should the customers breach a fair use policy. For example, the operator might apply additional charges or speed restrictions. Transparency on fair use policies may be linked to Article 20 (1) b) 2nd indent.

b. Data caps / download limits

The issue of transparency on such data caps or download limits is similar to but more explicit than the issue of fair use policies. Customers should be aware of the **"size" of such a cap** (in quantitative terms) and the **consequences of exceeding** it (additional charges, speed restrictions etc.). Transparency on data caps and download limits is relevant to Article 20 (1) b) 2nd indent. These limitations depend on the usage of the customer, and can have an impact, for example on the bill. Therefore, information on these conditions should be accompanied with the means for, firstly, evaluating the usage, and secondly, measuring it over a relevant billing period.

Information about the first aspect - evaluation based on consumption profiles - is important to help end users choose or switch operator. In order to enable the customer to make informed choices, it is indeed important that they can assess which broadband package best suits their specific needs.

The second aspect enables users to track whether they reach a contractually fixed data cap or run the risk of breaching fair use policies. In this regard, tools for measuring the individual data consumption enable the customer not to unintentionally exceed data caps (or to breach fair use policies) and therefore to avoid charges that may otherwise apply. A "lighter" approach could foresee email or SMS notification when users approach or exceed a usage limit or breach a fair usage[35]. This may be combined with information the precise consequences of doing so, such as additional costs or information about speed restrictions imposed. This type of information is also useful for end users to adapt their behaviour (and can hence contribute to a more efficient use of networks).

Finding: BEREC finds it very important that definition, characteristics and consequences of fair use and data caps policies are fully explained to end users.

[34] This is also often referred to as „application-agnostic" approaches.

[35] The various means of providing information and measurement tools will be further discussed in Chapter IV.

3. Specific limitations of the offer

This relates to limitations that are applied more on "case by case" basis, depending, for example, on the type of protocol used by a customer.

a. Application of traffic management techniques

Providing transparency on traffic management techniques may encompass different types of information. Generally, traffic dependent management techniques may be applied either to specific *types of traffic* (protocols) or *content* (e.g. deep packet inspection of payload)[36]. The answers to the following questions will help to describe the offer purchased/used by the operator's customer:

- Which approach is used for **congestion management** by the ISP? Is it a pure "first come, first served" approach or is some more advanced technique used? Is the approach application-agnostic[37] or application-specific[38]?

- Does the ISP apply **bandwidth throttling**? If so, when does the operator apply this policy? Is it, for example, after a volume cap is reached? Is it applied generally, or only with regard to certain applications?

- Does the ISP apply **prioritization** of traffic? If so, which traffic is prioritized - traffic of certain customers or specific applications, protocols or content? When does the operator prioritize traffic - in general, or under certain circumstances, such as at peak hours?

- Does the ISP apply **blocking** of traffic? What is blocked (e.g. access to certain websites or selective blocking of certain applications), and when does the operator apply blocking?

- For all of these conceivable traffic management techniques, customers may – in line with Article 20 (1) b 4th indent (and Article 21 (3) d) USD) – need to be informed about how these policies **affect his end user experience** (in general respect, or with regard to certain applications he uses)?

- Transparency may also encompass information on why an operator applies a certain traffic management technique. This question "why" relates to Article 20 (1)b) 4th indent and Article 21 (3) d) USD which refers to *"procedures… so as to avoid filling or overfilling a network link"*.

In indirect transparency, some third parties will be willing to build upon categories of offers, based on the above questions. Indeed, in the broadest form of access, an operator may offer unrestricted access to the Internet without any limitations and not preventing access to any specific applications. Alternatively, there may be offers of a more limited nature, based on a set of data volume caps or other "application-agnostic" techniques that enable operators to

[36] In October 2009, the Canadian Radio-Television and Telecommunications Commission (CRTC) has determined that ISPs have to provide the following information about technical Internet traffic management practices: a) *why* such practices are being introduced; b) *who* is affected; c) *when* will it occur; d) what *type of traffic* is subject to management; e) how will it *affect the Internet experience*, including the impact on speed. http://www.crtc.gc.ca/eng/archive/2009/2009-657.htm

[37] For example IETF RFC 6057 Comcast's Protocol-Agnostic Congestion Management System or some newer approach being developed in the IETF Working Group Congestion Exposure (Conex), www.ietf.org

[38] Typically based on some kind of Deep Packet Inspection.

manage access or backhaul traffic. Finally, some restrictions may apply to specific sites or flows of data and are often (but not always) associated by ISPs with differentiated tariffs. Based on this, third parties may even consider comparing those various options.

One can easily foresee the complexity of such approach: what would be “minor” or “major” restrictions? Can a “cheap” package, based on application-specific restrictions, be compared to another inexpensive option based, for example, on limiting bandwidth? A key difference is probably the fact of pre-empting or leaving the choice to the user of which applications he wants to use on the open Internet, while the interest of this choice probably varies according to the preferences or expertise of individuals[39].

Finding: With regards to the regulatory remit of transparency, BEREC believes that NRAs should focus on the following objectives:

- **the highlighting and clarification of what can be considered as reasonable limitations to an unrestricted offer of access to the Internet;**
- **the empowerment of users, which in this regard includes monitoring tools that are described below.**

b. Provision of specific tools enabling the customers to monitor their access service

If there are some specific types of limitations to the offers, customers would need to assess which specific conditions would apply to their own usage. To this end, they may need refined tools that would enable them to identify in detail the traffic management policies applied by operators to manage their access to Internet.

Such measurement tools could be provided directly by the ISP at the request of the end user, or could be developed by third parties (including NRAs)[40].

The type of information provided will depend significantly on the methodology chosen and on a variety of parameters (e.g. fluctuations in time, technologies), some of which are not directly under an ISPs’ control (e.g. weather, user’s personal facilities and software environment)[41].

Even though these aspects require a careful approach to those tools, they are very interesting with regards to making transparency an effective instrument. In particular, it can help them to assess whether they have chosen the broadband package which best suits their specific needs.

Finding: BEREC finds it particularly helpful that appropriate tools are made available for the users to monitor their access service.

[39] Beyond this, it is the subject of other BEREC works to consider how application-specific restrictions may affect a user’s right to access applications and services of its choice (and the NRA’s corresponding obligations under Framework Articles 8(1) and 8(4)(g)), need to be considered.

[40] Cf. Chapters IV and V for examples of software tools available in the market, case studies, etc.

[41] These complexities will be further discussed in BEREC’s upcoming project on “„„„Quality of Service”.

4. Conclusion

Certain concepts/categories that have been previously in the document are very interesting to use with respect to the list of contents that has been described in this chapter.

In particular, the transparency factors identified above would need to be considered with regards to the concrete situation of the user:

a. Before a contract is signed: i.e. the customer is trying to make an informed choice in order to choose the product which best suits his needs

- Typical examples: headline download and upload speed, data caps (if any)

b. At the point of sale

- Typical examples: individual line speed, detailed contract termination conditions

c. After the contract: the terms of the contract or the performance of the product may change, and certain information could be particularly relevant in enabling the customer to respond (e.g. by switching)

- Typical examples: tools to detect traffic management measures, data consumption measurements

Another quite relevant concept to take into account, when defining the exact content of a transparency measure, is the following distinction developed in Chapter II, between:

a) "general information"

- Typical examples: average speed per region, availability of a service at various ISPs

b) "individual information"

- Typical examples: changes in the package's conditions (policies of traffic management, fair use…)

This chapter has listed an impressive array of information relevant to the purpose of these guidelines, and has demonstrated that all of them might prove really useful, depending on usage and circumstances. This is challenged by the need, stated in Chapter II, to ensure understandability of information, and may imply that various levels of complexity are implemented within a transparency policy.

Finding: BEREC considers that a transparency policy should encompass the whole range of information categories: generic/comparative/individual indicators; scope of the services and limitations…
Data may thus need to be organized through a multi-approach system of transparency, adapted to the main different situations.

Chapter IV - Ensuring transparency

As described in earlier chapters of this report, there are different approaches and a variety of methods that can be deployed to provide end users with transparency about the package they sign up to, and the service they receive.

This chapter will consider the main existing options to convey information. A first major differentiator is about who will be at the interface with the end user. We identify three main categories (a) ISPs, b) NRAs and c) other third parties) and describe how these different bodies can play a role in providing information. In a second part, we evaluate different methods that can be used to present that information, based on what we can learn about recent research. Four different types of tools or initiatives are considered: i) tiered approach, ii) visual representations, iii) real-time measurements, iv) various degrees of details. Finally, based on these various elements, the chapter considers important elements to be taken into account in order to maximise transparency.

1. Who transmits the information?

Three different types of bodies provide or have the ability to provide information to end users: ISPs, NRAs (or NRA-related bodies), and third parties.

In Chapter II, we underlined the legal obligations on ISPs with regard to providing information. We noted that the information provided by ISPs could be complemented by various types of initiatives in the market. Indeed, information could also be provided by an intermediary body, which would stand between one specific ISP and an end user in the chain of information. Information intermediaries can be a valuable source of help to end users to navigate their way through various aspects of operators' packages, such as traffic management policies, price and quality of service.

We distinguish between two types of information intermediaries. On the one hand, institutional intermediaries could be the NRA itself, or a dedicated body set up by the NRA with the purpose of providing end users with information, and established with the oversight and possibly funding of the NRA. Separately, there will be other types of intermediaries, such as third party comparison websites, or tools provided by companies or private organisations to measure the performance of the broadband service. Notably, this could include ISPs themselves, coming together in trade associations or through common initiatives.

a. Internet Service Providers

As already explained, ISPs are legally required to provide various types of information to all end users, both potential and actual customers, at different points in the relationship. ISPs will provide information to potential customers about the services and packages they offer in their marketing and on their website. At the point of sale, ISPs need to provide the new customer with specific information about the terms and conditions of the contract the end user is about to agree to. Finally, once a customer is signed up to an ISP, the provider will need to inform its customers of any material changes to their contract.

Where such modifications constitute changes to contractual conditions, Article 20(2) of the Universal Service Directive requires that the customer shall be given adequate notice of at least one month beforehand and be informed at the same time of their right to withdraw, without penalty, from their contract if they do not accept the new conditions. This ability is not only an important aspect of ensuring transparency but also significant for enabling them to switch provider. The same Article of the USD empowers NRAs to specify the format of such notifications to ensure that such information is transmitted in a clear and transparent way.

Beyond the information that ISPs are legally required to provide, it is also worth noting that ISPs are particularly well-placed to provide customers with specialized information about their specific service. For instance, an ISP is the only body that can inform the customer how much of their data allowance they have used (if applicable), and also has direct access to information about the performance of the service different customers are receiving. However, the provision of such information would be less meaningful if the quality parameters presented are affected by factors beyond the ISP's control, such as radio propagation for a mobile end user, or interference or poor wiring within a home.

b. NRAs

Apart from the potential role for the NRA to ensure that others are providing transparent information, there is also the possibility of NRAs themselves providing information. They could do this on their own website or by establishing a separate body, with the aim of compiling data about each ISP's broadband services, or related relevant information, so that end users only need to go to one place to make purchasing decisions for their broadband.

One way of doing this is to set up a one-stop shop - a central body with expertise in this area, which acts as an information intermediary holding all the basic information for each ISP on their broadband services. It would compile the information and publish it on its website, so that end users only need to go to one place to make purchasing decisions for these products. An example of this is the www.callcosts.ie website[42], run by ComReg, the Irish NRA.

A primary role of this approach would be to explicitly compare the different packages available. In order to succeed, this would require a standardisation of the information provided by ISPs. This would be an accessible and comparable approach, making it easy for end users to compare different packages from different providers. On the other hand, effective processes would be needed to ensure that the information is up-to-date and accurate, since the source data would not be immediately available as it is to ISPs. However, the formal NRA-related status of such a body would be an added incentive for ISPs to ensure that accurate information was provided. A separate body would also have a substantial interest in getting ISPs to provide information that is accurate and displayed in an easy to read and understandable format.

A second possible role relates to more generic information where ISPs are not directly compared. This includes compiling and presenting operators' data (e.g. on performance parameters, typical caps…), to provide end users with average figures related to key aspects of products, as well as informative illustrations, definitions or FAQs that would help users understand the packages proposed on the market (e.g. what does "headline speed" mean).

As a central body with a role of compiling and publishing the information, it would be an expensive approach to implement and there could be issues about finding funding, whether from NRAs or ISPs. There may also be difficulties agreeing to a methodology if different operators favour different methods of presenting their information. Even in the second case, where ISPs would not be directly compared, these issues are still important, since this type of information would be used in part for the same comparability purpose.

More generally, the role of the NRA must be considered carefully when directly interfering with information matters, particularly as regards marketing and communication. It could be quite dangerous to be placed in the situation of "censors" of offers - firstly, because NRAs are not necessarily the best placed to know how to speak clearly to an ISP's customers;

[42] http://www.callcosts.ie/

secondly, because the "extra legitimacy" of NRA publications lends extra significance to any error or mistake.

These various concerns could be alleviated, at least partly, by working hand in hand with ISPs at a very early stage, and/or with the support of third parties. An interesting example in this respect is the Norwegian guidelines on net neutrality[43], which the regulator NPT worked on together with volunteering ISPs.

c. Third parties

Independent information intermediaries can provide different kinds of information, which can add to transparency. Comparison websites similar to the one-stop shop website mentioned above can be valuable for helping end users compare the packages offered by ISPs when making purchasing or switching decisions. Other bodies can help end users measure the performance of their Internet service and understand the impact that traffic management techniques may have on their experience.

In terms of third-party comparison websites, these are increasingly well established and compare services of different providers, sometimes over a range of industries. Such an intermediary would hold all the basic information for each ISP around their broadband services. It would compile the information and publish it on its website, so that end users only need to go to one place to make purchasing decisions for their broadband.

The majority of end users are aware that these websites exist for a range of services across different industries, and Internet sites would seem a natural place to find out about Internet services. However, there will be some end users who will not be aware of the sites or not used to seeking information from the Internet in this way.

Third party websites are designed to make information useful and understandable for end users. However, the information required to cover some aspects of an Internet access service, such as traffic management policies, could prove to be complex for some independent information intermediaries, rather used to making price comparisons – they may find it difficult to correctly interpret the information and display it in an easy to read manner. These problems could be mitigated if ISPs provided information in a standardised way.

As with one-stop shop websites, the strength of being an independent body that pulls together information about all ISPs in one place is offset by the fact that, being one step removed from the ISP, it is in a weaker position than ISPs to ensure that the information is up-to-date and accurate.

Although these third party websites are by their nature private and independent of the NRA, there may be a role for the NRA to play in giving end users more confidence in the websites. In the UK, Ofcom established accreditation schemes for private websites to provide end users with quality assurance that the calculations of comparisons are accessible, accurate, up to date and transparent[44]. There may also be a role for the NRA to play in ensuring that ISPs provide sufficient and appropriate information for the intermediaries to use.

Finding: BEREC notes that all three types of bodies have strengths and weaknesses with regards to the provision of information. A successful transparency policy depends in part on the possibility to promote each party's participation where it is the most relevant.

[43] http://www.npt.no/ikbViewer/Content/109604/Guidelines%20for%20network%20neutrality.pdf

[44] http://stakeholders.ofcom.org.uk/consultations/ocp/statement/pricescheme/consumerfaq/

2. Methods and tools for providing information transparently

There are a variety of different methods and tools that can be used to provide relevant information about an ISPs' broadband service, its characteristics and its performance. No single method will be sufficient on its own to ensure transparency. Instead, a successful transparency policy will result from a combination of complementary methods being used at different points in the relationship between the customer and the ISP.

BEREC looks at four different methods and tools for gathering, organizing and presenting information and it evaluates how effective they could be in supporting the achievement of the five principles/criteria of transparency outlined in Chapter II - accessibility, understandability, meaningfulness, comparability and accuracy. It also considers them against the important factor of proportionality, i.e. the cost and ease of implementation. But first of all, this paper looks at a few studies, undertaken in this area, in order to better take into account the possible reactions of users with respect to various forms of information materials.

a. What we can learn from the latest research

BEREC is aware of three pieces of recent research, which can help efforts to make information in this area more transparent to end users.

c) An behavioural experiment undertaken by London Economics for the UK NRA, Ofcom[45], explored what type of detailed information would work best in ensuring that end users make the right choices, given their profile and preferences;

d) Research conducted by Tilburg University for the Dutch Ministry of Economic Affairs[46] explores how end users perform in situations where they either all have imperfect information or not all of them are fully informed;

e) Research carried out for Ofcom by Technologia[47] on quality of experience focuses on current restrictions and presentation of traffic management features. In particular, it considered how these are communicated to end users and puts forward a proposal on how information on traffic management could be presented to end users;

Looking at the pieces of research together, some helpful insights can be gained.

f) Currently, end users are provided with limited and non-comparable technical information (e.g. on traffic management) about ISPs' packages. Although the effect of the current situation has not been tested or assessed, it is very unlikely to be sufficient to ensure that end users are able and make the right package choices.

g) The London Economics experiment tells us that when information is presented technically, end users are more likely to making wrong choices. This seems to result from the complexity of balancing needs across a range of features (speed, prioritised services etc.). End users may end up relying on price as a guide instead of relevant information, leading them to select more expensive packages than they need.

[45] The full research report will be published shortly by Ofcom – a reference to it will be provided in the final version of this report

[46] Available at http://www.rijksoverheid.nl/onderwerpen/telecomwet-en-regelgeving/documenten-en-publicaties/rapporten/2010/09/01/network-neutrality-and-transparency.html.

[47] The full research report will be published shortly by Ofcom – a reference to it will be provided in the final version of this report

h) However, the results from the LE experiment do suggest that when end users benefit from relevant and clearly presented information, this enables them to focus on the elements of the service that are key to them. Another conclusion is that information provided in numerical form can benefit end users, as it allows for a clearer assessment between packages. Overall, appropriate presentation of information can have a positive impact, but presenting information effectively is a major challenge.

i) The Tilburg experiment suggests that not all end users need necessarily be perfectly informed in order to ensure that outcomes are good for end users. Even if information is complex for some individuals, it may well be that it can still serve a purpose by supporting experts who improve the knowledge of end users as a whole. Such experts may be knowledgeable individuals, or trusted third parties or infomediaries who provide reviews, who can then refine the information for less technically proficient end users.

j) The Technologia study report suggested that methods focusing on 'quality of experience' (QoE), in which end users are given information on the impact of an ISPs policies on the quality of their services, can assist in developing transparency for less technical end users. Technologia proposed that a visual representation of the services' features may make it easier for end users to assess the quality of the package in relation to the usages they are planning.

k) For example, it could use colour coding to inform end users whether the package is good for video, for HD video, home working etc. In Figure 1 below we reproduce from Technologia one possible application: for this sample package, excellent service and unlimited downloads for video, audio and social networks is highlighted. However, services for P2P and VoIP may be variable during peak times, whilst streaming video, VPN and video conferencing would not be possible in this example.

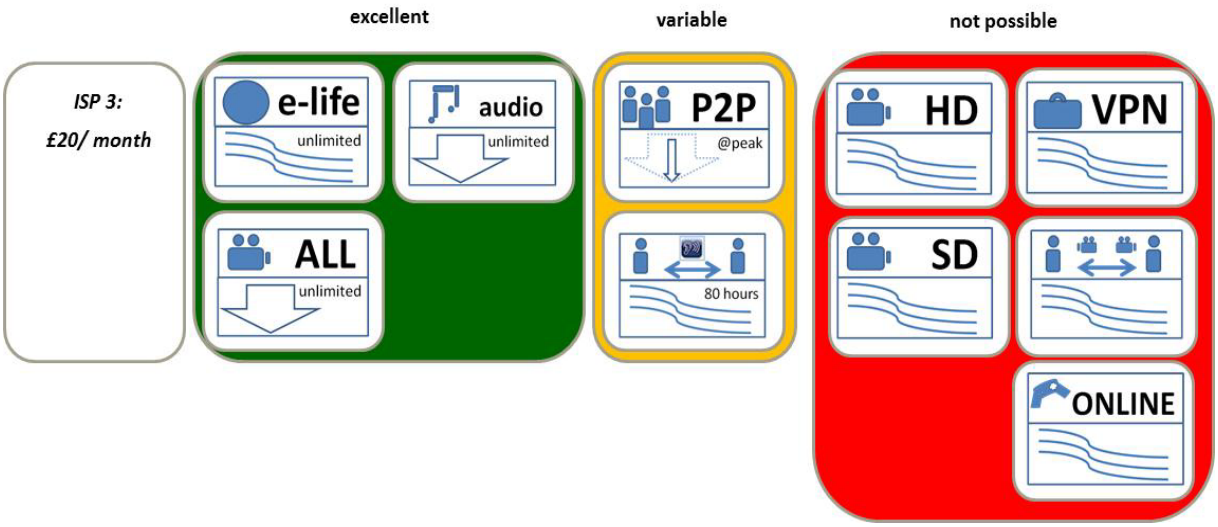


Figure 1: illustrative QoE Summary for a hypothetical ISP

Technologia provides initial ideas, knowing that the building of such a representation would need to be further explained in order to fully understand how it can be used. For instance, based on further works, this could illustrate the typical usage pattern of a package, perhaps

based on statistical studies, or it may simply be a way for the providers to indicate their intentions in terms of traffic management or restrictions on access to applications.

Learnings for BEREC

In the light of these academic insights, and building on the findings and recommendations set out in the previous chapters, BEREC draws certain conclusions to be taken into account in the later assessment of information tools.

a) In line with the of findings of Chapter II, the LE and Tilburg experiments highlight the complexities of making information understandable, and thus the interest of leveraging on the support of a variety of stakeholders in pursuit of this goal. Methods to consult and involve third parties will be further discussed in this chapter.

b) The LE experiment shows the importance of the form in which the information is presented, and Chapter II finds that, in the scope of net neutrality, information on both the general scope of the offer, as well as the limitations (general and specific) of the offer are needed. Methods of presenting information considered later in this chapter should apply these findings to the various elements to be covered, as described in Chapter III. As a basic example, it could be recommended that the "font size" of a text explaining a limitation should be the same as for the related conditions initially presented.

c) The Technologia study opens up interesting possibilities regarding visual representation of information related to the characteristics of an offer. For instance, with a view to rapidly introducing the general scope of an offer, a visual representation could be used to provide a simple snapshot of which packages are unrestricted, and which present significant limitations. For instance, as illustrated in Figure 2 below, a highlighted symbol could be placed up front of any offer, indicating e.g. :

- green light = un-restricted offer (which include application agnostic methods to handle congestion)
- yellow light = restricted offer with application specific throttling (e.g. p2p file sharing at peak hours)
- red light = restricted offer with some applications completely blocked.

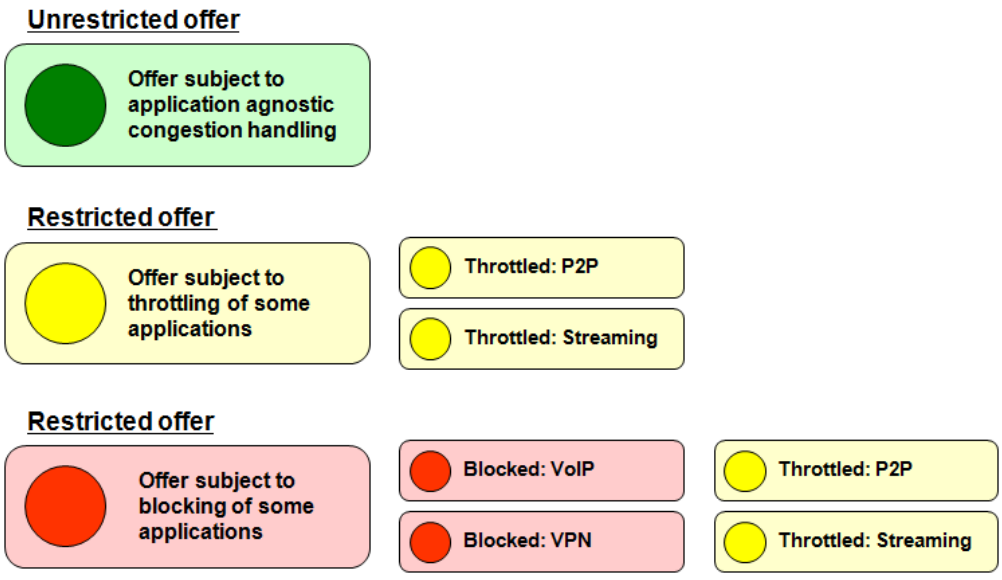


Figure 2: illustrative Summary of an offer's limitations

This kind of visual representation of key information can be seen as a way of providing a "first tier" of information (cf. tiered approach later in this chapter).

d) Furthermore, complex models as illustrated in Figure 1 could be used either by ISPs to present the QoE that could be expected from their range of packages, or by a third party as a way of assessing and comparing the performance of offers from different providers. To make such a model comparable, a set of standardised values would need to be used and agreed across ISPs.

b. A set of initiatives and available tools

i. A tiered approach to providing information

As covered earlier in this document, end users will have a broad range of technical literacy and this creates a challenge in getting the right balance between excessive simplicity and complexity. An effective way to address this challenge is for the information provider to take a tiered approach, with basic information provided to everyone, and more detailed information easily available to those who want to access it. It can be used both before sale (e.g. to help the end user make an informed choice) and after sale (e.g. to remind an end user of the various aspects of the package they have signed up to).

The first tier of information would clearly state the basic information (e.g. the general scope of the offer, whether the offer is unrestricted or restricted, and if applicable the most important limitations) in an easy-to-read format and prominently displayed, possibly in a one-page summary box, with links to more detailed information. One interesting approach to this is an "Internet Nutrition Label"[48], which would provide easy-to-understand information about service-limiting factors, giving details of network performance in terms of throughput, latency and other measurements.

The second tier would then be in a separate place on the website and would provide further technical information for experienced end users who would like to know more about the service they could receive and implications that aspects such as traffic management practices could have on their usage. By having all the additional information in one place, this would reduce the need for several click-throughs.

A tiered approach has the benefit of catering for different information needs and reducing the risk of end user overload. Many ISPs already publish basic information on other aspects of their services, such as broadband speeds, so this option does not seem burdensome. On the other hand, this approach may pose problems in terms of comparability, as ISPs will tend to display the information in different ways, and end users may have to visit several different sites in order to compare services offered.

Table 2: Value Analysis of Tiered Approach

Criteria	**Evaluation**	**Verdict**
Accessibility	An ISP's website is a natural and accessible place for Internet users to find information about the packages and services offered. (However, the information should be easily	Strong

[48] http://www.cc.gatech.edu/news/georgia-tech-proposes-internet-consumer-nutrition-label

	found there (i.e. linked in or close to home page))	
Understandability	The first tier of information can be presented in a format (e.g. a summary box) that is easy to understand.	Moderate
Meaningfulness	The possibility to access specific categories of data, can assist end users in finding what is relevant for them. But the information system must be well organized.	Moderate
Comparability	ISPs will likely display the information in different ways, making it difficult for end users to compare services offered. Ideally, the information should be based on common industry-wide parameters, but even then end users will still have to visit several different sites in order to compare information. A third party could also present its service comparisons in a tiered fashion, but simplification choices likely to be made might raise concerns about „fair comparisons".	Weak
Accuracy	This approach can be used directly by ISPs[49], who are best placed to update information quickly to ensure that it is correct and up-to-date.	Strong, if used by ISPs
Proportionality	ISPs are already required to provide much of this information, and this does not seem to be much more burdensome. Conversely, tasking a central body with providing the full range of tiered information can happen to be a costly and complex operation.	Strong, if used by ISPs.

ii. Visual representations of the services' features

Information about different packages could be provided in terms of the intended or estimated quality that the end user will experience for the total electronic communication service and for different types of Internet applications, such as video streaming, VoIP, web browsing, file downloading. This could be done both in an ISP's marketing, and as part of information provided by the ISPs (or information intermediaries) to existing customers - as information that can be accessed, should the users want to check and understand about the quality of the service they can expect to receive, or are experiencing.

Research mentioned above suggests that, instead of being presented with information about various technical parameters, end users may find it more meaningful to be provided with a visual representation of, for example, the scope of an offer proposed by an ISP, or the quality likely to be experienced as a result of the impact of an ISP's traffic management policies. Images could be designed to easily represent the usability of different applications (see Figure 1) or to compare them on a general basis (see figure 2).

The visual symbols will differ according to which concept is represented: network performance, quality of service (i.e. the user's interaction with the service at the man-machine interface), or quality of experience (i.e. the service as subjectively perceived by the

[49] or by NRAs using data entered directly by ISPs. In this case, an efficient method can be to facilitate ISPs to enter the data directly (or semi-directly) into their pages.

user, and which may be influenced by the user expectations and context)[50]. The translation of network performance into what that means for end users' experience would need to be done consistently across ISPs if the visual summary is to have value. It would also need to be updated regularly in line with technical developments and user trends. This could be an important issue, since features that are important to users may vary over time, and visual symbols may have to be adapted, which could be a significant burden. Industry bodies, possibly in consultation with consumer and user groups, could be in a position to agree such standards, whereas a monitoring role could be foreseen for the NRA.

Implementing this approach for direct comparisons should allow non-expert end users to identify easily whether a specific ISP's service/tariff is likely to meet their needs, and to compare at a glance between different offers. However, getting agreement from ISPs on a universal approach could be challenging. If complex information about quality of service was considered in this context, it may have to be caveated, in particular due to variations in time and external other factors, though this could be partly mitigated thanks to statistical methods.

Icons may thus only be useful for certain types of information, which is another limitation of this approach. Consequently, providing information in this manner would probably not be sufficient on its own, but could be useful as part of an overall approach.

Table 3: Value Analysis of Visual Representations

Criteria	**Evaluation**	**Verdict**
Accessibility	This model can be used in marketing and therefore as part of the information that potential customers will come across first. It would also be easy to incorporate this into a tiered approach, illustrating the basic features of each package.	Strong
Understandability	The main goal of this model is to find symbols and representations that translate of technical data into simpler concepts, thereby supporting understandability.	Strong
Meaningfulness	On one hand, highlighting certain popular features may help end users to grasp key useful facts about the offers. On the other hand, the rapidly evolving Internet environment makes it likely that symbols, especially sophisticated ones, will become outdated.	Moderate
Comparability	This model could only be effectively used to aid compare if it was followed consistently across ISPs, requiring a challenging agreement across the industry on common visual standards. Another solution, perhaps more efficient, would be to apply this approach for a comparison web site.	Weak (ISPs), strong (comp. site)
Accuracy	This would depend in fact on the type of features represented – either basic components of the offers, or complex quality parameters. .	Weak for complex features
Proportionality	There would be a first set of costs in defining and agreeing an approach. There would then be recurrent costs for	Moderate or Weak

[50] More details on QoS, QoE, etc. concepts will be provided in the BEREC QoS Report.

	updating information; these could be kept to a proportionate level only if the visual system is designed in a future-proof manner (thus based on basic concepts rather than complex ones).	

iii. Real-time information tools

Real-time information tools can be used to give information about the quality and speed of a user's connection. They can support high levels of transparency since they help users measure the performance of the access service and possibly detect if their connection is being impacted, and even whether this is due to congestion or rather by traffic shaping. These tools differ from the other methods described as they help monitoring ex post the given information on the contract, while the others rather provide ex ante the necessary information. Furthermore such monitoring tools not only rely on the end user's activity, but they may also be accompanied by effective legal tools against violations.

Information could be provided by the ISPs themselves, through NRAs or other third party online tools, which allow users to measure and compare technical performance, including their usage. Beyond simple line tests, it could be potentially expensive for ISPs to implement such measurements, as this will require special software and/or hardware, with the risk that a significant number of customers will not have, at least initially, a sufficient level of interest and understanding about how and why their behaviour or the technical performance of their service will affect their user experience. This is why it appears interesting, in terms of feasibility and proportionality, that indirect tool are offered by NRAs, content providers or other third parties.

When provided by third parties, such tools can be used, not only to check the individual performance of the user's service against the contract, but also to compare technical performance between providers.

An overview of such tools and their limitations, is being worked out by the BEREC project on "Net Neutrality and Quality of Service", together with examples of open platform measurement software (e.g. M-Lab), and online indication systems provided by content providers for their applications (e.g. BBC's *iPlayer*, Youtube, World of Warcraft). Beyond these aspects, the success of such tools relies on a sufficient level of understanding and activity by end users, but also on the possibility for them to use such data in the light of their own usage. Monitoring usage is thus an important complement to tracking performance, and will be the focus of the evaluation in separate BEREC work[51].

Real-time information can be provided by ISPs to enable their customers to measure and assess their usage. This notably allows users to ensure that they are still within the usage limits set by their ISP, (if applicable). In this case, it enables them to adapt their behaviour before becoming subject to speed restrictions or excess charges in relation to data caps.

Information could be provided as a statistical overview of performance of their access service, and, if usage limits apply, by email or SMS notification when users approach or exceed a usage limit or breach a fair usage. This could be combined with information on the precise consequences of doing so. It may also help users to assess whether they have chosen the broadband package which best suits their specific needs. Such information could be provided only by ISPs direct to their customers.

[51] Performance monitoring tools are very diverse and will be detailed in the QoS report, so they are not presented in a table as for the other tools in this Chapter.

Education initiatives of third parties may also provide a complementary benefit to end users. This may be helpful particularly because there is a risk that some end users will not understand how their usage translates into quantities of data, while this knowledge can be crucial for such a measure to be useful. Thus complementary initiatives to empower users are important in this scope. Furthermore, with their consumption figures at hand, users would be able to benefit from some third parties sites, which would offer comparisons based on specific usage profiles. This may enable them to check whether their current subscription is the most adapted, and empower them to switch provider if it is in their best interest. This of course puts a higher burden of responsibility on such third party services.

Table 4: Value Analysis of Real Time Tools

Criteria	**Evaluation**	**Verdict**
Accessibility	Such information would be transmitted directly to end users in a manner appropriate to their use of the service, and is therefore very accessible.	Strong
Understandability	It seems easy for ISPs to offer basic and understandable consumption data. For this data to be really helpful, however, extra education efforts may be required.	Moderate
Meaningfulness	The purpose of this tool is to tailor information to the individual receiving it, making it therefore meaningful.	Strong
Comparability	Helps end users to monitor the specific nature of the particular service they are signed up to. This might be used together with comparison sites for making informed choices.	Moderate (ISP) strong (comp. site)
Accuracy	The reason for providing such real-time information would be precisely to provide a precise and up-to-date picture of usage, so this model would lend itself well to accuracy.	Strong
Proportionality	This could be potentially expensive for ISPs to implement as it would require special software and / or hardware.	Weak (ISP) moderate (comp.side)

iv. Providing various levels of details to different sorts of users

Chapter II introduced the fact that there is a wide array of potential users of information about offers and services. Transparency measures could therefore be organized depending on the target of the information, i.e. whether the information is aimed at a general audience or at specific targets such as experts, users of certain applications, or third parties and institutions. The main difference between these various targets rest on their respective will and ability to access, understand and process (i.e., for instance, to compare) the information. In this respect, the information provided to a general audience is likely to require a certain amount of conditioning from the information provider, whereas experts may find raw information more efficient. The frequency at which the information should be transmitted may also be a variable parameter.

The “conditioning” (organizing, presenting the information) for the general audience was already pretty much discussed along the previous methods and tools. Previous chapters

have also emphasized the interest to build on common concepts, norms and terminology in order to best meet the transparency criteria. This is true for basic terms of information (e.g. “unlimited” access to Internet), but can also be developped for more specific usages – for example, common metrics and norms for informing on the “downloading time of a webpage”. These specific needs could be addressed either by ISPs, or by third parties, who may be keen on combining the available information to adapt it to a particular usage (for instance jitter, maximum bandwidth, etc. in order to advise on the best options to streamline a video).

However, some categories of users may prefer to rely on first-hand data. This is the case for some expert users (or others with specific requirements), but most importantly for third party intermediaries, including NRAs. The latest may need to collect some technical data on a regular basis, in order for instance to compile nationwide statistics, or to produce a range of indicators on the quality of services (to be published or not, or even partially). Other third parties (or at least a selected number of them) may also want to have access to technical values, for example to propose individualized online tests to end -users, determining the type of package most suited to their needs (e.g. a certain number of hours of online gaming, streaming, web surfing, etc.). Detailed data can also be very useful for the stakeholders that offer real-time monitoring tools, in order to improve their models. As we have already said, these tools provide an opportunity to compare technical performance between providers through an independent body. However, where the results are based on information volunteered by large groups of users, it may not be possible to take into account geographical or other factors that can affect performance – access to some operators’ data can help improve the tools.

There is therefore a case for requesting ISPs, on the one hand to provide information to the general audience, which should firstly aim at understandability, leveraging on widely used concepts. On the other hand, they could be asked to make accessible, maybe to a selected list of stakeholders, a larger array of technical data. Obligations may include the level of details to provide, and the frequency. As already introduced in Chapter II, this represents an extra burden for operators, notably in terms of processes and confidentiality. But at the same time, this can enable third parties to produce comparison and monitoring tools. However, these are potentially expensive to implement, as they require special software and/or hardware, with potentially only a few customers appreciating and using this functionality. In the end, there is probably no straightforward answer in terms of proportionality.

Table 5: Value Analysis of Providing Various Levels of Information

Criteria	**Evaluation**	**Verdict**
Accessibility	Certain types of information will probably be only available to specific users or institutions, perhaps on request or according to a specified (potentially auditable) process. The general audience will benefit less from this.	Strong (3rd parties) or Weak (general audience)
Understandability	The information displayed may be complex, but it enables third parties to build tools to enhance understanding (e.g. statistical average usage)	Moderate
Meaningfulness	The purpose of this approach is to tailor information to the individual receiving it, thereby making it meaningful.	Strong
Comparability	The information provided may not be directly comparable. However, it is an enabler for the development of	Moderate

	comparison tools.	
Accuracy	This approach can enhance the accuracy of online tools available from third parties, since detailed technical parameters are probably indicating accurate values.	Strong
Proportionality	There are extra costs to be considered for the ISPs. However, at the same time, it may alleviate them from having to offer certain complex tools.	Moderate

3. Considerations for ensuring transparency

We have looked at the different bodies that provide information to end users, and at various methods and tools that can be used to gather and present information. However, there are a other important issues that need to be taken into account when seeking to achieve a truly transparent outcome for end users. In particular, the specifics of the operational processes used to transmit information will be an important factor in enabling the fulfilment of the criteria we have set out.

a. Improving access to information through more effective means of transmission

Given the very nature of the service, using the Internet or SMS appears to be the most appropriate method for ISPs to provide end users with information. However, some end users may prefer an alternative method, such as paper versions of the documents. For information to be as effective as possible in the market, it should be transmitted to each end user *via* their preferred (free) medium.

For example, general information could be provided on an ISP's or a third party's website, and customers could have access to information about their particular service in a secured area of their ISP's website. In addition, ISPs could use email or SMS to inform customers of changes to the aspects such as their traffic management policies.

In terms of informing customers of changes to contractual terms, this could be done in the same manner that the contract was entered into – i.e. if the contract was agreed online, it would only be necessary to provide further contractual information via the same medium.

It also appears both more effective and efficient to integrate net neutrality related information into existing material provided to end users about their broadband services.

Indeed, while this paper considers transparency in relation to net neutrality, it is important to remember that this is only one aspect of information end users can expect to receive about the Internet services they receive. As such, the methods for transmitting information transparently considered here should not be designed in isolation. Rather, key facts about the scope and content of the offer (such as the speeds likely to be experienced) and the general and specific limitations of the offer should be presented together with other key facts about the package, such as the tariff and contract length.

Finally, there is a role for NRAs to play regarding the services offered by third parties, such as comparison sites, performance tools, assistance from consumers associations). Many end users will not be aware of what they can offer, or even that they exist. NRAs could thus help promote awareness of their existence. They could also sometimes bring together various stakeholders having complementary products or common interests.

Finding: BEREC considers that bringing together all key information (not only related to net neutrality) in one place, such as a one-page summary (as mentioned in the Tiered Approach example), would simplify matters for end users. This provides a great challenge, but could be favoured if NRAs advertise relevant third parties initiatives.

b. Improving comparability through building on common references

There are two distinct processes for deciding how information should be gathered, formatted and presented. On the one hand, this could be done by an ISP in complete isolation, with no constraint on the content of the information or the way it is presented. Different ISPs in the same market may have evolved different ways of measuring and describing information about the packages they offer. For example, some ISPs calculate cumulative volume of data used over a month, whereas others calculate volumes over periods of hours. The alternative process is to set of common parameters and indicators, which the ISPs can agree on and sign up to. This approach is more likely to ensure that the information is comparable.

As detailed in Chapter II, comparability of information is an important principle, and plays a role at multiple levels:

a) Regarding direct transparency, it enables end users to assess the different information made available by ISPs, and makes it easier to monitor the data with which they are being provided.

b) From the indirect transparency standpoint, comparability is crucial since independent information intermediaries would experience difficulties – e.g. in interpreting and displaying it in an easy to read manner - if ISPs would not provide information in a standardised way. Such a negative impact might be exacerbated if third parties also favour different methodologies.

As noted in Chapter II, net neutrality-related information is particularly complex, and this provides a great challenge in defining a framework for specifying the content and format of information to be provided. The establishment of industry-standard metrics may relate, *inter alia*, to units/parameters of measurement, and to the concepts and technologies referred to by different ISPs. It can also relate to the adoption of a common format for presenting the information provided, which includes the whole range of questions that have been raised earlier in this chapter: what should be prioritised in the first tier of information, what level of detail should be provided to the different categories of users, what are the relevant units or common concepts to inform the customers about their usage etc?

NRAs could play a helpful role in devising a common format with agreed metrics. Alternatively, this could be done by an assigned independent third party, or it could be drawn up by industry, preferably in consultation with consumer organisations and other interested bodies. We consider these two approaches below. In both cases, the information will be accessible to end users, and for third parties, such as price comparison websites, to be able to compile this information for end users. The impact of such approaches therefore also depends on the existence and effectiveness of third party initiatives.

Regulatory approach

The NRA could play a role in ensuring that ISPs provide sufficient and appropriate information, both for the end users and to be used by the intermediaries. For example, the Greek NRA, EETT, has specified the quality of service indicators that all providers must

publish on their websites, and EETT also publishes tables with the information from all providers on its website, so that they can be easily accessed by end users and third parties[52].

Self-regulatory/co-regulatory approach

Alternatively, the NRA could encourage industry to develop its own common approach to some or all aspects of a transparency policy.

For example, in the UK, all major ISPs have adopted a self-regulatory standardised model for presenting information, by signing up to use a common Key Facts Indicator (KFI) table[53], summarising the traffic management practices they use for each broadband product they currently market.

This example is particularly interesting from the viewpoint of making technical data available (cf. 2.iv), since it focuses on putting forward traffic management policies (including complex aspects), such as:

a) the usage and availability of content, applications and protocols, and whether any are blocked or prioritised;
b) the details of data caps and download limits, and whether and how traffic management practices are used to manage compliance with data caps and download limits;
c) if and when traffic management is used to optimise network utilisation, and what types of traffic are managed during these periods.

The initial version of the UK KFI table was developed by the industry in isolation, but this does not need to be the case for self- or co-regulatory approaches. The involvement of other stakeholders, such as consumer organisations, NRAs and user groups, can be foreseen at different stages of the design, agreement and monitoring of the model.

Early consultation of all parties to agree on concepts and references can help provide simpler information to the users, as called for in Chapter II. This can cover, in particular, the categorization of operators' policies – for example building on common concepts such as unrestricted offers, "non problematic" traffic management practices, and application-agnostic measures. Such a collaborative approach may therefore be more successful in building in the concerns and perspectives of the end user that it seeks to help, and therefore in achieving a balanced agreement. However, it may result in a longer process to find an agreement, both raising the costs of it, and delaying its adoption. However, consultation with other stakeholders appears to be a key enabler of effective comparability.

In terms of the regulatory and co-/self-regulatory approaches, there are pros and cons to both, and different countries will have different preferences. What is clear is that comparability is a very important element in promoting transparency. In this respect, BEREC considers that there is significant value in ensuring that industry uses a standardised approach based on common parameters and indicators, and that end users are able to access truly comparable information.

Finding: BEREC believes that the end of comparability is required, whatever the means of achieving it. It considers that NRAs have a role to play, either by directly devising a common

[52] www.eett.gr/opencms/export/sites/default/EETT_EN/Publications/Communications_in_High_Speed/part17/EN_TAXEI_17_11.pdf

[53] The KFI table was launched in March 2011, with first filled-out KFI tables to be published by ISPs in June 2011: see on page 8 of the code of practice at www.broadbanduk.org/component/option,com_docman/task,doc_download/gid,1335/Itemid,63/

framework of reference, based on industry-wide metrics, or by supporting self- or co-regulatory approaches.

c. Improving accuracy through monitoring services

The market for broadband services and the technologies that underpin them are fast-moving and constantly evolving. Given this, along with the technical nature of comparing traffic management policies and the fact that end users may not be able to detect actual traffic management, it is important that there is verification of the information provided.

It is important that transparency measures adopted are both effective and accurate and this requires some level of monitoring. Establishing a list of key facts on which ISPs must provide information regularly provides a framework against which transparency can be measured. This facilitates the task of verifying that end users are being provided with a consistent set of information.

In terms of accuracy, while all information should ideally be as accurate as possible, it is worth recognising that perfect accuracy is usually not possible. For instance, it is not possible for an ISP to predict with perfect accuracy how congested its network will be in the future, and therefore where and when traffic management triggered by congestion will be implemented according to the operator's policy. In this regard, a way to improve accuracy is to make available tools to dynamically follow and verify ISPs' practices. The BEREC project on "Net Neutrality and Quality of Service" is working on an overview of a toolbox for this purpose.

This would require the establishment of clearly stated principles governing operators' planned measures and future forecasting, and the setting of an effective (ideally auditable) process. Monitoring could be achieved in a combination of ways:

a) NRAs could set out expectations of how they expect information to be made verifiable and guidance on how best to achieve this. This would typically also include reference to quality evaluation tools provided by NRAs or third parties.

b) Market analysis and research, either by NRAs or third parties, is an important though resource-intensive component. For example, NRAs could carry out research into the actual broadband speeds experienced by end users in order to help end users make an informed choice about which broadband service is most suitable for them.

c) There is also a valuable role to be played by active end users in the online community, who may have better access to, and understanding of, free software tools to monitor and detect blocking and discrimination. While representing a small minority of actual users, the contributions of such groups and individuals to highlight practices can be very effective in disciplining the market.

These processes would need to be updated regularly, in order to reflect changes to conditions regarding net neutrality. Indeed, once a customer is receiving a broadband service, ISPs should inform them of any modifications to the conditions of the service they receive, whether these are general or specific limitations of the offer. As discussed in Chapter III, general limitations include fair use policies, data caps and download limits, while specific limitations deal with traffic management techniques to specific types of traffic or content, such as restricting access to certain applications).

Finding: BEREC considers fundamental to ensure that information is able to be verified on a regular basis. Monitoring processes should be based on clear, industry-

wide principles. Ideally, these should be auditable and designed to capture all aspects of the operators' policy evolutions (general and specific limitations, etc.)

Chapter V - Practical examples, outlooks and conclusions

1. Roles of institutions and stakeholders – case studies and learnings

NRAs have a strong responsibility to ensure that end users are provided with transparent information. However, there is no one answer to the precise level of engagement in specifying how to make information transparent and how to transmit it.

The benefits and drawbacks of NRA initiatives have been discussed in more detail in Chapter IV.

The **ISP industry** has a role to play, both in the responsibilities of the individual fixed and mobile ISPs to provide their customers with transparent information, and in cooperating with other ISPs, possibly through trade associations, to agree on industry-wide approaches to transparency.

Another relevant section of industry is those **providers of applications and content**, such as VoIP or video, whose services may be impacted by the traffic management policies of ISPs. The application and content providers may be able to provide information about how traffic to their application is managed. Additionally, they are very motivated to provide information on policies that directly affect their applications and content.

There are various types of end users and consumer groups, all of which can usefully contribute to ensuring transparency. **Consumer organisations** are well placed to carry out research, and also to contribute to the end user perspective when codes of practice are being developed. They are also well positioned to reach out and explain to end users what traffic management is and how it may impact them.

There are also **technically expert users groups**, as well as collections of individuals in the **online community**, which will be better able to determine when and how traffic is being managed and provide another source of information about market behaviour. We should also stress the role **of experts groups from academic institutions** in evaluating what sort of technical information is most important and needs to be made transparent, and in what form.

Third party comparison websites have an important role in helping end users compare information to choose between different ISPs and packages. Some models of ensuring transparency may also provide a role for **independent information intermediaries**, to provide verification mechanisms.

BEREC has gathered case studies from existing regulatory initiatives in the electronic communications sector, but also from other domains. They are described in more details in Annex A and B. Below we provide a small overview of what BEREC has found, and what learning can be extracted from these examples.

Case studies

Annex A provides details of some net neutrality-related transparency measures put in place at the national level across the EU. These vary from high-level guidelines set out by NRAs to more specific requirements about the information ISPs provide, as well as self-regulatory initiatives.

In France and Norway, the NRAs have set out high-level guidelines for improving the information provided by operators about Internet access services, particularly including

common concepts to convey information transparently and requirements on ISPs to propose and develop the provision of information on the quality and availability of services. In Denmark, it is the telecoms industry association that has proposed – and is consulting on - a set of principles for net neutrality.

In order to facilitate comparability, the NRAs in Greece and Latvia have both stipulated the quality of service indicators to be used by providers in the information they provide to end users. A separate code of practice adopted by the Greek NRA ensures that end users are provided with information about the speed of their connection, and any restrictions to the access of specific services. In Slovenia, rules on broadband speeds information includes a requirement for ISP to provide end users with clear and transparent information on any traffic management practices they apply.

Initiatives in Finland and Sweden are also mentioned in this Annex.

Examples in other sectors

As set out in more detail in Annex B, it is recognized across multiple sectors that a prerequisite for a market to function properly is to have all the relevant information available to all market participants, including potential and prospective market entrants, as well as end users.

In the financial services sector, the Comity of European Banking Supervisors published guidelines, which defined a common format for publication of disclosures, designed to facilitate access to published information and make it more comparable. Parallel work by the main financial services standards bodies (IASB and FASB) underlined the need to build common frames of reference to aid comparability, and the need for providers to be clear if they choose to depart from the agreed common format.

The European Regulators Group for Electricity and Gas (ERGEG) is currently finalising guidelines on data transparency in the electricity sector. The Guidelines will underline the importance of having clear, understandable, transparent and common definitions for each piece of data, and will establish a minimum common level of fundamental data transparency for the sector. They will also provide the basis for a central information platform, which will collect and publish all data, and will be freely accessible to the public.

A set of open data principles has been adopted and promoted by open government advocacy bodies in order to enhance the transparency of data about public services. The principles call for all government data to be assumed to be public unless there is a specific, legitimate and public interest reason to restrict its disclosure. The principles define data as being open if it is, *inter alia,* complete, timely, accessible, machine-readable and provided in an open and non-proprietary format.

Learnings for BEREC

Obviously, there are significant differences between the sectors and initiatives described above, and the issue of net neutrality transparency examined by BEREC, including the types of market relations, target audience, etc. One should also note that some of these processes have been initiated several years ago, which has allowed actors to converge perhaps to a greater extent.

It is nevertheless interesting to draw upon those previous experiences, which give some indications of useful tasks that may be undertaken by NRAs:

- **Promote mature, win-win, relationships between operators and their customers.** Transparency should be integrated in the companies' objectives. For instance, any justification required by their marketing should be readily available, with a particular focus on technical explanations. In general, they should be ready and prepared to answer users' requests, and the processing of complaints should be highly efficient. In return, end users should become aware of the fact that the performance of electronic communication services is always subject to uncertainties, which have to be handled by ISPs through best-in-class statistical methodologies. NRAs have a role in promoting this eventuality.

- **Play the role of a trust-enhancer.** It is very important that all parties have faith in the level of transparency in the market, and the associated processes. Regulators can help, for instance by mediating conflicts in cases where commercial and industrial interests are difficult to reconcile with requirements to provide exhaustive information.

- **Empower the end user**. This starts from simply improving the users' knowledge of the available possibilities to access to information. Beyond that, NRAs can promote the availability of more exhaustive and personalised information as it contributes to enriching the decision factors of an end user, and thus his ability to make informed choices.

- **Actively promote comparability, in particular through well-designed standards.** It seems important that significant progress is made towards the establishment of a high-level common set of information norms at the European or even international level. This common set of high-level standards (of norms, references...) should now start to develop in Europe. In that respect, NRAs could, for instance, request or support operators' own harmonization initiatives, and later on supervise their implementation.

2. Conclusions and Prospects

a. Recommendations for developing an optimal transparency policy

Wrapping up on the various findings brought forward in these guidelines, BEREC considers the following recommendations as being central to the achievement of an effective transparency policy, which in turn is appreciated as a fundamental mean to achieve regulatory objectives.

Enabling end users to make informed choices

The complexity related to transparency with regards to net neutrality, as underlined in previous chapters, implies that this remit is not just about providing information; it is about ensuring the best approaches (and preferably common approaches) so as to enable informed choice by end users. Informing on the differences between offers will indeed allow end users to choose the best service for them, ideally complementing competition in the market.

In this context, BEREC considers first of all that comparability and understandability are key criteria for NRAs to look after. It acknowledges the complexity of conciliating them, and thus recommends:

- to support multiple approaches (in particular direct and indirect approaches, provided that the overall burden on NRAs and ISPs remains proportionate);
- to leverage on end users by putting them at the heart of the process.

Also for the purpose of enabling choice, BEREC finds it important that all categories of information are covered by a transparency policy, in particular:

- generic, comparative and individual indicators;
- scope of the services and (general and specific) limitations.

Understandability needs effective processes to be put in place

This is a critical criterion, particularly given, on the one hand, the significant list of requirements included in the revised electronic communications framework, and on the other hand, the number of specificities to be taken into account in the scope of net neutrality (variety of technologies and usages, diverse level of understanding of the transparency targets, etc.)

BEREC has identified various tools and approaches to support a well-organized transparency system, capable of providing various levels of information, adapted to a diversity of situations (for instance pre- or post-contractual needs, individual management of fair use policies, etc.) Useful initiatives could include, inter alia:

- the development of common terms of references about aspects of Internet access service, highlighting unrestricted offers and including (when possible) agreements on which traffic management measures are “non problematic”;
- the availability of appropriate real-time tools for the users to monitor their access service (both its performance and their own consumption patterns);
- the use, when relevant, of methods that simplify the communication with end users, such as industry-wide concepts, visual representations and bringing together all key information (tiered approach example).

Third parties can also play an active role in improving understandability, thus BEREC considers useful that NRAs advertise the most relevant initiatives (such as online test tools).

Comparability needs involvement of all stakeholders

As stated before, BEREC believes that the end of comparability is required, although there are various means of achieving it, depending on the national situation. In any case, the following elements seem central to achieve this criterion:

- end users should be both the central subjects, and active participants, of the transparency design process; this implies early consultation and empowerment initiatives (education, provision of tools that gather users' feedback, facilitate complaints, etc.); and this in turn favours mature relationships and a climate of trust;
- the supervision of direct transparency should be planned on a regular basis, to ensure that information is checked according to clear and widely agreed principles, ideally *via* exhaustive and auditable processes;
- complementary sources of information, mainly by ISPs and third parties, are valuable but are less confusing if they are based on common language; in this respect, NRAs can play a positive role in promoting or securing industry-wide agreements on form and contents of transparency measures;

With regards to most of these aspects, NRAs may step in directly, for example by specifying some requirements on tools or processes in details, or by providing themselves a set of generic data, which can be used as a reference. Even if they don't take such initiatives, they still have an important role to play, as we will discuss now.

b. Role of NRAs and possible future initiatives for BEREC

NRAs' approaches

BEREC has identified various ways for NRAs to participate in transparency matters. They are described hereunder following and order that corresponds to an increasing engagement of the regulator.

a) NRAs may leave the design of transparency solutions to the ISPs (with or without the involvement of consumer stakeholders) and only step in if the self-regulatory approach is not delivering transparency;

b) NRAs could provide guidance to industry as to what good looks like in terms of transparency, and let industry (maybe in consultation with consumer stakeholders) work out the details; in parallel, they may also support means for the development of indirect transparency;

c) NRAs could set out how information is to be made transparent and transmitted, in consultation with industry and consumer groups. They could also include expectations on comparability and verifiability of information provided and guidance on how best to achieve this;

d) NRAs (or an entrusted central body) could directly specify, and even provide, a set of information about the different package available in the market; this would need to be supported by agreed processes and metrics for the gathering of data.

BEREC has noted that all types of bodies (including NRAs) present strengths and weaknesses with regards to the provision of information. The level of involvement corresponding to step (a), as described above, may not be sufficient considering the importance of the regulatory objectives at stake, particularly in relation to concerns such as those introduced in Chapter I regarding the effective exercise of fundamental rights and freedoms, which could arise as a consequence of traffic management or other restrictions.

On the other hand, a policy mix mostly based on steps (b) and (c) is a promising perspective in a number of countries.
In any case, NRAs should monitor the results of the transparency policy in place, in order to adapt it if deemed necessary.

Role of BEREC

BEREC considers that there are relevant initiatives to be undertaken at European level, either by BEREC (directly or *via* sub-contract), or by the Commission, because:

- that may help to minimise the extent of different approaches by NRAs – which is part of BEREC's role;
- it might avoid having the same work done repeatedly (and with different outcomes?) by multiple NRAs.

Where it's relevant, BEREC could thus directly develop some guidance, notably in relation to the following ideas:

- specify the contents of "nutrition labels" (the basic information to be provided so as to describe offers), or in other terms define what should the "first tier" of information;
- define and quantify the principal concepts and usages (for instance: downloading a webpage, streamlining a video, etc.), based on common norms and categorisations;

Illustration: for methods such as "visual representations" (cf. II.2.ii), different approaches by NRAs could detract from understanding, so there might be a role at European level to put forward (non-binding) recommendations on a common approach to such symbology and to the values they should be deemed to represent.

- going even beyond information and guidance, provide or promote trusted centralised tools (for testing, comparisons, etc.), in cases where those would be helpful.

Such practical guidelines and initiatives could be supported by BEREC, *via* dedicated projects in its 2012 working program. This might also involve future follow-on study and/or work by European standardization bodies.

Any of these detailed works will need anyhow to be undertaken in collaboration with all stakeholders (operators' and users' associations…), particularly to agree on expected outputs of such initiatives.

All participants to the public consultation are particularly welcome to give your views about the most useful actions that BEREC could develop in the future.

Annex A – Case studies in electronic communications

DENMARK

In Denmark there have not been any specific instances of net neutrality problems. A self-regulatory approach has been taken, where NITA have been encouraging the industry to take active part to ensure network neutrality. The Telecommunications Industry Association in Denmark has published a set of principles for network neutrality. These guidelines are being further discussed in a Forum for net neutrality, formed by industry in cooperation with consumer representatives and NITA as an observer, in order to have a broad support for the principles. In Denmark a new Telecommunications Act came into force on May 25, 2011, which implements the revised regulatory framework of the European Union. The Act empowers The National IT and Telecom Agency to undertake new regulatory measures with respect to network neutrality if the industry does not ensure net neutrality itself.

FINLAND

There is no specifically decided or defined network neutrality policy or strategy. From the standpoint of transparency, there are several relevant provisions in legislation.

The basic requirements for communications service agreements are enacted in *Communications Market Act (CMA) 393/2003,* most recently amended in 363/2011[54]. This Act includes a requirement for such agreements to include information about the data transfer rate variation, the detail of which is being looked into in 2011 by the Finnish NRA.

From the standpoint of traffic and capacity/performance management, the NRA, Ficora, has issued *regulation 58/2009 On the quality and universal service of communications networks and services*[55]. Section 3 sets the basic obligations on network and service management to all kind of communications networks and services and section 5 specifies the obligations concerning internet access service.

There are also some provisions on the operators obligation to provide users with information on changes to their conditions of their Internet service access, which relate to Article 3 of the Universal Services Directive (as discussed in Chapter I). These are enacted in section 81 of the CMA CMA section 81[56].

FRANCE

In February 2011, ARCEP published its proposals for improving the information that Internet access providers, wireline and wireless electronic communications operators and postal operators deliver to end users about their offers. The aim of these proposals is to ensure that end users are able to make an informed choice when subscribing to a service, as much in terms of the nature and quality of the services on offer as their price. These proposals are the fruit of a wide-reaching examination process that ARCEP has been engaged in since the start of 2010, in tandem with stakeholders, including two rounds of public consultation. ARCEP's proposals for electronic communications services concern in particular the transparency of the offers (proposals no. 1 through 6), and the quality and availability of the services (proposals no. 13 through 15). Proposals on transparency include requirements regarding information (accessible, correct, understandable, objective in its presentation and

[54] http://www.finlex.fi/en/laki/kaannokset/2003/en20030393.pdf (cf. clauses 2, 15, 16 and 21)
[55] All the regulations and the explanatory notes http://www.ficora.fi/en/index/saadokset/maaraykset.html
[56] http://www.finlex.fi/en/laki/kaannokset/2003/en20030393.pdf

complete), the formal ways to convey this information (e.g. secured sections on the operators' websites), the use of the terms "Internet" and "unlimited",and the provision of tools to assess the availability of services (e.g. line eligibility to IPTV).

GREECE

Regarding the provision of information to end users, two regulations apply:

EETT Decision 488/82/5-7-2008 (Official Gazette 1505/B/30-7-2008) "*Code of practice for the provision of electronic communication services to the end users*". According to this Decision the service provider should ensure that the end user is informed of the following:

a) whether the activation of the service is required before determining if the connection speed on the contract can be achieved for the specific end user connection; and

b) whether the connection speed on the contract is ensured continuously and without interruption throughout the provision of the service, since the actual speed may depend on the use or the quality of the network or the quality of the equipment of the provider.

Furthermore, the service provider should also ensure that the end user is informed of possible restrictions to the access of a certain service.

According to the EETT Decision 480/017/2008 (Official Gazette 1153/B/24-6-2008) "*Designation of quality indicators for the electronic communication services provided to the public and definition of the content and the form of the information to be published and the time and means of its publication by the electronic communications service providers*", the EETT has designated specific quality indicators of the electronic communication services provided to the public so that:

a) end users are able to compare the quality of services provided by different operators and have information on the quality of the services already provided to them; and

b) a clear framework of obligations of the service and network providers to the end users is imposed.

Among the services concerned are broadband and VoIP services, for which quality indicators and measurement methods are defined by the above regulation.

LATVIA

The Latvian NRA, SPRK, adopted a Regulation on Quality of Services in December 2009, which classified all Internet access services into 12 groups depending on speed (download/upload). Before 1st February every year, each ISP must send the NRA a Quality Declaration in which the following parameters have to be shown for every speed group:

- Average speed
- Average jitter
- Average latency
- Average packet loss ratio
- Average fault repair time
- Average service availability

After one year every ISP has to send the NRA a Report to compare measurement results with their previous Declaration. All ISP Declarations and Reports are published on SPRK's website. Measurements are provided by ISPs. Speed, jitter, latency and packet loss ratio have to be measured between network termination points and the Latvian Internet Exchange

Point. As a result, end users are informed about Quality of Services parameters and have the opportunity to compare different ISPs.
According to General Authorization Rules adopted by SPRK in December 2007, ISPs are obliged to include in the end user's contract specific customer protection requirements related to, quality of service parameters:

- Guaranteed speed (download/upload) from the network termination point to the Latvian Internet Exchange Point
- Service availability
- Fault repair time

More details, notably on SPRK Measurement System, will be included in the QoS project.

NORWAY

In February 2009, the Norwegian Post and Telecommunications Authority published non-binding Guidelines for Net Neutrality.[57] The NPT has taken a soft law approach opting for Guidelines that have been created in collaboration with industry. They will be updated as needed.

The Guidelines set out three principles for network neutrality. The first of these is a transparency principle requiring that Internet users be given information about the capacity and quality of the Internet connection; and if other specialized services are provided to the user as well as the Internet, how the use of the specialized services will affect the Internet access capacity.

Principles 2 and 3 of the guidelines, which concern non-blocking and non-discrimination of services, applications and content, also provide specific guidance on reasonable traffic management. Exceptions from these principles include blocking of child pornography, security measures (e.g. blocking of denial-of-service attacks) and handling of special situations of temporary network overload.

SLOVENIA

There is no formal regulation regarding transparency in relation to net neutrality in place in Slovenia, although APEK issued a Recommendation on actual speeds of broadband access services in December 2009, which addresses end user transparency in regard to traffic management practices. Article 22 of this Recommendation states that if any traffic management practices are used by the ISP, it should provide end users with clear and transparent information on such practices. Since APEK issued the Recommendation, it has not received any complaints from end users and there have been no incidents in regard to net neutrality/traffic management (or transparency in relation to traffic management policies). Consequently, APEK does not currently plan any further activities in this area.

SWEDEN

As a result of the government assignment[58]it received last year, the Swedish NRA, PTS, is about to review whether the information provided to end users in contracts/ads/marketing is sufficiently clear with regard to the usability of the offered Internet access and the existence of restrictions. PTS will do this review in consultation with relevant authorities such as the Consumer Protection Authority, and will publish a report by 31 December 2011.

[57] http://www.npt.no/ikbViewer/Content/109604/Guidelines%20for%20network%20neutrality.pdf
[58] The assignment follows from what PTS was suggesting in another report from 2009 (page 111 and 113), on "Open Networks and Services" (www.pts.se/en-gb/Documents/Reports/Internet/2009/Oppna-nat-och-tjanster---PTS-ER-2009/).

Annex B – Case studies in other sectors

a. Financial sector

Transparency is a key factor of an effective supervision of banking, an importance which has been underlined regularly at international level, for instance by the Bâle Committee (cf. its "fundamental principles for an effective control" published in 1997 and updated in 2006). It is all the more important at European level in order to ensure that Community provisions are implemented in a harmonised fashion and that practices from supervisors converge (cf. the Capital Requirement Directive, especially Article 144).

Given the need for a better clarity and comparability of procedures, at a time when prudential rules are getting increasingly complex, the Comity of European Banking Supervisors (CEBS) has published "guidelines on Supervisory Disclosure". These recommendations define **a common format of publication, designed to facilitate the access to information published and to enable their comparison**. In applying these recommendations, the information transmitted should be coherent in form and content, and available in English. For supervisors, a two-stage architecture is implemented: at the European level, summary tables are elaborated and published on the CEBS website. These tables retain essential information and enable comparison between countries. They are linked to the websites of the different members of CEBS (the national supervisors), which include all the information listed by the Directive (e.g. methodologies, statistical data on national risk evaluations, etc.), consistent with an organisation and a presentation similar to the CEBS site.

In parallel, in order to improve the available financial models, the main standards bodies (IASB and FASB) held consultations with the aim of integrating information on estimations-related risk into the normative referential. The high level group chaired by Hans Hoogevorst (President of the Dutch Authority) published its report in July 2009[59]. It included the main following conclusions:

- Financial information plays an important role in the financial system, and trust of users in the transparency and integrity of financial relations is fundamental to the worldwide financial stability and a sustainable economic growth;
- Analysts, investors, regulators and other users should not trust accounting information alone, whatever its quality, and acknowledge the limitations inherent to accounting: that it can only provide a punctual snapshot of the economic performance, not a perfect vision of the effects of macroeconomic evolutions;
- Given the globalization of financial markets, it is extremely important to reach, at a worldwide level, a single body of high level accounting rules;
- In order to produce such high quality and unbiased rules, experts in charge of standards must be protected from pressure by lobbying groups or politicians; they should in return show a great sense of responsibility, notably by thoroughly consulting the parties concerned, and by being accountable to authorities entrusted with public interest.

The report on the related public consultation further noted that most of the responding experts agreed on the following recommendation: "*Conformity with each of the* [future] *guidelines should be on a comply or explain basis. Where an explanation is given for "non-compliance", this should be posted alongside other related relevant disclosures called for under the guidelines, on the website of the private equity firm or portfolio company*". This

[59] http://www.iasb.org/News/Press+Releases/Financial+Crisis+Advisory+Group+publishes+wide-ranging+review+of+standard-setting+activities+followi.htm

underlines not only the need to build common references, but also that a stakeholder deciding to depart from them should clearly make this known to its counterparts and users.

Harvey Goldschmid, Co-Chairman of the FCAG said:
"As our report emphasizes, improved financial reporting will help restore the confidence of financial market participants and thereby serve as a catalyst for increased financial stability and sound economic growth. The independence and integrity of the standard-setting process, including wide consultation, is critical to developing high quality, broadly accepted accounting standards responsive to the issues highlighted by the crisis."

b. Electricity sector

In September 2010, the European Regulators' Group for Electricity and Gaz (ERGEG) proposed a draft recommendations[60] on *Comitology Guidelines on Fundamental Electricity Data Transparency* for public consultation. The final recommendations on the Comitology Guidelines is currently being finalized and will be submitted to the European Commission, which may proceed to make them legally binding through comitology procedure.

To support this process, ERGEG and the European Commission have noted that insufficient transparency can have adverse effects on market competition and price formation because not all the market actors have access to the same information, leading to the creation of an uneven playing field. In addition, a lack of harmonisation in both the type of information that is available and the format in which it is published can make it impossible for market participants to develop a coherent and accurate view of electricity market fundamentals. According to the ERGEG, fundamental data transparency refers to the availability of information on the relevant aspects, which affect the electricity market through its impact on the behaviour of market actors (TSOs, generators, users and traders) and thus on price formation and the trade of electricity taking place. **Publication of fundamental data is seen as a first step and pre-condition to the creation of a competitive and efficient European electricity market**.

The text states in particular that the Guidelines aim to:
- establish a minimum common level of fundamental data transparency that is a precondition for the efficient functioning of wholesale electricity markets;
- define a minimum common level of publication of the defined data on a fair and non-discriminatory basis across all Member States; and
- develop a central information platform to enable all market participants to establish a coherent and consistent view of the European wholesale electricity market.

To ensure that the data to be disclosed are consistent and comparable across the various data providers, the recommendations underline **that it is necessary to have clear, understandable, transparent and common definitions for each data item that is to be delivered and displayed on the central information platform.** The party responsible for running the central information platform shall develop the detailed definitions for each data item specified in these guidelines. These definitions are to be prepared in a transparent manner and to be consulted on publicly before their application. The Agency for the Cooperation of Energy Regulators (ACER) should provide an opinion on these detailed definitions. The detailed definitions of the data items should be published on the same information platform where the information required by these guidelines is published.

Notably, ERGEG recommends the following requirements for the central website:

[60] Ref: E10-ENM-02-07

- it should be easily accessible to the public, free of charge for the information specified in the guidelines and without any need to register or otherwise sign up;
- an update should be planned on a regular/rolling basis; the frequency of the update shall be determined by the changes that take place and the duration of the service;
- information shall be stored for 3 years by the central information platform;
    - o in a user-friendly manner, in a downloadable format that allows for quantitative analyses;
    - o on a non-discriminatory basis;
    - o in consistent units as required by the guidelines; and
    - o in English.

Operators shall be responsible for collecting and sending all relevant data to the central information platform. In addition to disclosing the information on the central information platform, the same information, or parts of it, can also be provided on the websites of […] operators and other parties, as long as the definitions/standards from the guidelines are used.

c. Public services

In recent years, many parties have called for enhanced transparency in the public sector, in areas such as methods, internal procedures, and on the data available to government administrations. Amongst other initiatives, “Open data” guidelines are supported by organizations such as the Sunlight Foundation, Access-Info Europe, OpenGovData.org, Transparency International, and others. Public data is considered to be date that is not restricted from disclosure due to privacy, security, or other valid concerns.

According to the authors, these open data principles[61] are designed as a guide to help create open data websites. However, it is not meant to cover all situations —“data” is a broad term, and some data may require specific disclosure methods. In addition, there are other issues, such as accessibility for disabled people, which are not discussed, but which are key components of any good website. These guidelines do not address in details which information should be considered public, but in general, government data should be assumed to be public unless there is a specific reason to restrict its disclosure that is legitimate under international law, and the decision to withhold is based on the public interest. If data must be legitimately withheld, it should be redacted, the redaction labelled clearly, and the remainder of the data set released along with an explanation of the reasons for any redactions.

As a short summary, the guidelines define open data as being:

1. Complete
   All data comprising a particular public data set should be published, including non-digital archival data and data used to generate aggregate or derived figures. Aggregate and derived figures should be distributed along with the source data used to create them and explanations of the methods used to do so. For instance, an inflation figure should include the prices of the basket of goods used to measure inflation.

2. Primary
   Data should be collected at the source, and should be published with the level of granularity with which it was collected.

[61] http://sunlightfoundation.com/policy/documents/ten-open-data-principles/

3. Timely
   Data is made available as rapidly as possible in order to maximize its value to the public. There is no time period that is appropriate for all types of data, but in many cases, a well-designed system will enable data to be published nearly inreal-time. Updates should be easy to locate from within the larger data set, through mechanisms such as RSS feeds, search functions that can filter by date, etc.

4. Accessible and Discoverable
   Data is available to as many users as possible, for the widest range of purposes possible. The data should be easy to share digitally, in a human-friendly format, avoiding Web development techniques that might obscure the location of data or make it difficult to share direct links. Full access to data should never require registration or payment.

   Data must be able to be found by those who are looking for it; it must be included in appropriate data catalogues, and data websites should be accessible to search engines. Ideally, all government agencies should adopt a unified means for displaying their data online, so that users can rapidly locate the data produced by any agency from its website.

5. Machine-readable
   Data is stored using a format and structure that allow automated processing (but not jeopardizing human readability). In all cases, the meaning of each field in the data should be well-documented and this documentation included along with the data.

6. Non-proprietary and License-free
   Data is available in an open format over which no entity has exclusive control, to ensure that computer programs capable of processing the data will always be available. Data is not subject to any intellectual property protections, such as copyright or trademark, and this status is easily verifiable. Data should be made free for all types of use, including commercial use, without restriction.

7. Reviewable
   Every public or private body releasing data should designate a person to respond to questions and complaints about the data, and this person's contact information should be included with the data.

8. Permanent
   As data ages, it should be archived in ways that satisfy the above criteria.