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Part 1: Methodology for identification of parameters relevant to the Users

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Foreword

This ETSI Guide (EG) has been produced by ETSI User Group (USER), and is now submitted for the ETSI standards Membership Approval Procedure.

The present document is part 1 of a multi-part deliverable covering the quality of telecom services, as identified below:

Part 1: "Methodology for identification of parameters relevant to the users";

Part 2: "User related parameters on a service specific basis";

Part 3: "Template for Service Level Agreements (SLA)".

Introduction

Quality in the service area can be evaluated from different perspectives and therefore using different measurement methods:

a) a first level of quality is related to the reliability of the equipment and can be measured accurately via technical means, although these measurements might be expensive because of both the dispersion of the test and the size of the sample to be tested;

b) a second level is related to the service provision and is closely linked to the kind of use of the service. Therefore appropriate parameters have to be defined according to this kind of use between the customer and the supplier;

c) the last one is intended to measure the subjective satisfaction of the customer and there is often no other means than a survey or an audit to get it.

In the two first categories, technical means can be used to perform the measurements and in such cases, standards are often useful to achieve a common approach; such standards are given as references where appropriate. They include a precise definition of what is meant as a failure: total failure, poor performance, backup situation, etc.

Assessing these different aspects is of paramount importance to the provider who endeavours to improve the offered QoS. From a user viewpoint, the end-to-end QoS is the most relevant, even if objective and subjective measurements may be usefully combined for a better assessment of the QoS.

Measurements of every potentially interesting parameter all the time might be very expensive and can even jeopardize the service performances. It is often cheaper to get them via a poll. In addition, it may be convenient to rely on a third party to carry out these measurements in order to avoid any criticism from one of the involved parties.

The present document is dedicated to the methodology to analyse the users needs which is the first step in a Total Quality Management (TQM) process.

1 Scope

In the current competitive world, Quality of Service (QoS) is becoming, jointly with cost, a key parameter in selling and buying telecommunications services. At the same time, technology and liberalization trends are raising new types of concerns unknown with the Plain Old Telephony Services (POTS) using switched connections provided by a single monopoly supplier.

Nowadays, there are several standards describing QoS measurements but the questions of which indicators are to be monitored and which values they should meet are still open. The present document proposes a methodology for the identification of parameters relevant to the users that can be used either to monitor the QoS of Telecom services used by the private customers or for a Service Level Agreement (SLA) between a customer and a supplier of Telecommunications services such as that proposed in EG 202 009-3 [8]. It gives guidelines on how to obtain user's QoS requirements, prioritize the parameters, establish a preferred value for each of these parameters, while EG 202 009-2 [7] proposes service specific QoS parameters.

This document was written to made available to the providers and users a common basis for mutual understanding about quality of service. This aims to assist users in identifying rationally their QoS requirements, hence making the providers better able to meet them for their mutual benefit.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

[1] ITU-T Recommendation E.800: "Telephone network and ISDN quality of service, network management and traffic engineering: Terms and definitions related to quality of service and network performance including dependability".

[2] ITU-T Recommendation G.1000: "Communications quality of service: A framework and definitions"

[3] ITU-T Recommendation I.350: "General aspects of quality of service and network performance in digital networks, including ISDNs"

[4] ITU-T Recommendation M 60: " Maintenance terminology and definitions".

[5] ETSI ETR 003: "Network Aspects (NA); General aspects of Quality of Service (QoS) and Network Performance (NP)".

[6] ETSI EG 201 219: "User Group (USER); User requirements; Guidelines on the consideration of user requirements when managing the standardization process".

[7] ETSI EG 202 009-2: "User Group (USER); Quality of Telecom Services; Part 2: Identification of Parameters relevant to the Users".

[8] ETSI EG 202 009-3: "User Group (USER); Quality of Telecom Services; Part 3: Service Level Agreements Template".

[9] ETSI EG 202 057-1: " Speech Processing, Transmission and Quality Aspects (STQ); User related QoS parameter definitions and measurements; Part 1: General

[10] ETSI EG 202 057-4: "Speech Processing, Transmission and Quality Aspects (STQ); User related QoS parameter definitions and measurements; Part 4: Internet Access".

[11] ETSI TR 101 287: "Services and Protocols for Advanced Networks (SPAN); Terms and definitions"

[12] DIRECTIVE 2002/21/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive) - (article 17).

[13] DIRECTIVE 2002/22/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive) - (article 11, 22 et annexe III).

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

accuracy: the faithfulness and completeness in carrying out the communication function with respect to a reference level. The reference level may be specified or may be an independent function or a function of an input, ETSI ETR 003 [5].

assurance: knowledge and courtesy of employees and their ability to convey trust and confidence

availability: the likelihood with which the relevant components of the service function can be accessed as required by the specified conditions (temporal and spatial).

NOTE: space covers the geographic coverage and resource size aspects.

cessation: all activities associated with the cessation of a telecommunication service from the time it was requested by a customer, to the time it was completed to the satisfaction of the customer.

charging/billing: all relevant activities associated with the charging and billing for a telecommunication service to a customer.

empathy in the supplier-customer interface: degree of caring and individual attention provided to customers

fidelity: faithfulness and completeness in carrying out the service facility with respect to a reference level. The reference level may be specified or may be an independent function or a function of an input (see **accuracy**).

flexibility: options required by the customer and offered by the provider in order to accommodate special requirements, ETSI EG 202 057-4 [10].

network/service management by the user/customer: all activities associated with the customer's control of predefined changes to telecommunication services or network configurations, ETSI ETR 003 [5].

provision: all activities associated with the provision of a telecommunication service, from the time of effective contract to the time the customer is able to use the service.

Quality of Service (QoS): collective effect of service performance which determines the degree of satisfaction of a user of the service (see ITU-T Recommendation E.800)

NOTE 1: The quality of service is characterized by the combined aspects of service support performance, service operability performance, serve ability performance, service security performance and other factors specific to each service.

NOTE 2: The term "quality of service" is not used to express a degree of excellence in a comparative sense nor is it used in a quantitative sense for technical evaluations. In these cases a qualifying adjective (modifier) should be used.

QoS achieved by service provider: QoS achieved by the service provider is a statement of the level of quality achieved by the service provider

NOTE: This is expressed by values assigned to parameters, which are, as far as possible, same as those for the QoS offered. These performance figures are summarized for specified periods of time, e.g. for the previous 3 months.

EXAMPLE: The service provider may state that the achieved availability for a given duration (e.g. one year) was 99,95 % or unavailable for 262,8 minutes over a 365 days year.

QoS offered by service provider: statement of the level of quality expected to be offered to the user/customer by the service provider

NOTE: The level of quality is expressed by values assigned to QoS parameters. These parameters are usually designed to be understandable to the user/customer. Each service would have its own set of QoS parameters (see ETR 003 [5]).

EXAMPLE: A service provider may state that the availability of basic telephony service is 99,9 % in a year with not more than a 15 minutes break on any one occasion.

QoS perceived by the user/customer: statement expressing the level of quality experienced by user/customers

NOTE: The QoS perceived is expressed, usually in terms of degrees of satisfaction and not in technical terms. Technical terms may be expressed where the user/customer is able to understand and use these. QoS perceived is assessed by customer surveys and from user's/customer's own comments on levels of service.

EXAMPLE: An user/customer may state that on unacceptable number of occasions there was difficulty in getting through the network to make a call; a satisfaction rating of 2 may be given on a 4 point scale.

QoS requirements of the user/customer: requirements of QoS as expressed in non-technical language by the user/customer may be gathered for representative groupings of users/customers

NOTE: For their own use, the service provider may translate them into technical indicators easier to manage, if needed to better fulfil the requirements.

reliability: ability of an item to perform a required function under stated conditions for a given time period, ITU-T Recommendation E.800 [1], M 60 [4].

NOTE 1: it is generally assumed that the item is in a state to perform this required function at the beginning of the time interval.

NOTE 2: In French, the term *fiabilité* is also used to denote the performance quantified by this *probability*.

reliability in the supplier-customer interface: ability to provide what was promised, dependably and accurately

repair: see trouble-shooting.

responsiveness in the supplier-customer interface: willingness to help customers and provide prompt services

sales: all relevant activities from the time communications are established between the provider and the customer to the time the contract is signed for the provision of a service by the provider.

security: ability of a service to ensure the confidentiality of the pieces of information worked out, exchanged or stored, the communication privacy, the authenticity and integrity of the information exchanged or stored as well as the protection of the user and his communication means against any type of threat (virus, spam, etc.).

service alteration: all activities associated with the alteration of a telecommunication service, from the time alteration to a service is requested by the customer to the time these alterations are carried to the satisfaction of the customer, ETSI ETR 003 [5].

service provider (SP): Actor who provides services to its service subscribers on a contractual basis and who is responsible for the services offered. The same organization may act as a network operator and a service provider, ETSI TR 101 287 [11].

service support: all activities associated with the support of a telecommunication service to enable the customer's use of the service, ETSI ETR 003 [5]. This includes, documentation, technical support, commercial support and customers' complaint management.

speed: speed is the performance criterion that describes the time interval required to perform a function or the rate at which the function is performed. (The function may or may not be performed with the desired accuracy.), ITU-T Recommendation I.350 [3]

technical upgrade: all activities associated with the technical evolution of any component of the service at the provider initiative.

trafficability: the ability of an item to meet a traffic demand with a given size and other characteristics, under given internal conditions, ITU-T Recommendation E.800 [1].

NOTE: Internal conditions refer for example to any combination of faulty and not faulty sub-items.

trouble-shooting: all activities associated with the restoration of a telecommunication service to the customer after a fault resulting in partial or complete loss of service or service features.

user: individuals, including consumers, or organizations using or requesting telecommunications services available on public or private networks. The user may or may not be the person who has subscribed to the provision of the service. Without any specific addition this word is used to identify the telecommunication user community in general, e.g. end-users and IT&T managers who use products and services possibly conforming to standards, ETSI EG 201 219 [6].

NOTE: Taking into account the current developing automation, a machine has to be considered as a disembodied "user".

user-friendliness: ease in the application of the service function. Similar to simplicity (see ETR 003 [5]) but includes conformance to design for all, accessibility and ergonomic aspects.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

POTS	Plain Old Telephony Service
QoS	Quality of Service
SLA	Service Level Agreement
SME	Small and Medium Enterprise
SOHO	Small Office – Home Office
SP	Service Provider
TQM	Total Quality Management

4 About telecommunication service QoS

Dealing with QoS of telecommunication services, assumes that, first of all, the QoS requirements are carefully identified from the user viewpoint so that a set of indicators and related reference values can be defined, Then these indicators can be measured and monitored with respect to these reference values to check whether the requirements are fulfilled. Such reference values are crucial to the QoS mastering and should be defined either by European standards, by governments, by the provider as a voluntary commitment or by mutual agreement between the customer and the provider and, in any case, included in the contract between the provider and the customer.

To achieve such a QoS assessment, the following tasks have to be completed:

- Analysis of the specific user QoS requirements;
- Choice of the most appropriate indicators;
- Definition of the most suitable method of measurement and monitoring;
- Definition of the adequate indicator reference values.

When doing that, it should be kept in mind that a key aspect of the Telecommunication services is that two ends are needed to perform the service. Therefore both ends may influence the QoS, including the terminal used, and have to be taken into account to assess the QoS.

In addition, since Telecommunication services belong to the High Tech area and are mainly seen by the users from an end-to-end viewpoint, the psychological aspects are crucial in the QoS assessment. Hence, the user satisfaction is the outcome of the Perceived QoS, resulting from the difference between the expected QoS and the achieved QoS.

Also, since different telecommunication technologies are used to provide the various services, appropriate measurement methods have to be selected for each of these services.

The purpose of the present document is to provide guidance on how to identify the indicators and parameters actually relevant to the Users.

5 Content of Telecommunications Services

Telecommunications Services include several provisions:

a) The delivery of the service itself (connection to a telecommunication system)

- With generic and specific aspects.

b) Several additional provisions that are more and more key parameters of the QoS:

- Information on the service;
- Implementation and setting up;
- Backup in case of problem;
- Processing of service failures (repair and setting back to working order);
- Helpdesk to take the users' problems into account and report on the progress of restoring;
- Billing and accounting media and methods;
- Statistics on operation and traffic;
- Possible hardware and software up-dates;
- Documentation;
- etc.

In short, this means that QoS requirements embrace all the steps of the service life from the preliminary information to cessation.

On the first aspect, every service may differ considerably from one to another and therefore, it is clear that before setting the QoS requirements, the needed performance parameters have to be defined carefully. Of course, the specific QoS parameters should be defined on a service-by-service basis.

Therefore to avoid any misunderstanding, the service functions and specifications have to be detailed in the contract between the provider and the customer, as well as the provider commitments along the service life.

In addition, it should be reminded that, as usual in business, the human interface to the customer is a key aspect of the QoS, in particular reliability, empathy and responsiveness.

The table 1 details the steps along the service life.

Table 1: Steps along the service life

	Service life	User Interface
Service management	**Sales**	Preliminary information, advertisement
		Subscription
	Service provisioning	Installation
		Activation and acceptance
	Service alteration / Technical upgrade	Customer initiative
		Provider initiative
	Service support	Documentation for service activation and set-up Documentation for service use
		Technical support
		Commercial support
		Complaint management
	Repair/Troubleshooting	
	Charging/Billing	
	Network/service management by the customer	
	Cessation	
Technical quality	**Use of Service**	Transport technical performance
		Service technical performance
		User interface performance

NOTE : A description of the various aspects of the service life and user interface is given in chapter 6.1.

6 Methodology to identify the customer's QoS requirements

Different users may be happy with different levels of QoS as well as levels of performance. Users in this aspect might be end-users or operators or service providers as well. This is why defining the user requirements is crucial to ensure an optimal quality/cost ratio.

ETR 003 [5] and ITU-T Recommendation G.1000 [2] provide a useful methodology to capture the users'/customers' quality requirements. Nevertheless, since these documents were delivered, there have been some improvements in the QoS methodology. For example, [2] and [5] use a set of 7 criteria: Speed, Accuracy, Availability, Reliability, Security, Simplicity, Flexibility. In order to allow for a better understanding between the users and the providers, it is useful to use **trafficability** as an additional criterion even if the users are not always able to directly perceive this criterion but rather via its consequences on speed or availability. Also **userfriendliness** is more explanatory than **simplicity,** has a broader meaning and can more easily include "design for all" aspects. Finally, using the word **fidelity** instead of **accuracy** seems more appropriate in users' mind to express that there is little change in the information content and that such criterion apply at any service facility as well and not only to communication functions.

In addition, it's often difficult to define indicators for security and instead it would be better to rely on a provider certification on the relevant security aspect. Therefore, this criterion was kept not as a parameter but rather as an flag to identifier of the key aspects of each service where such certification is required. These criteria are defined hereafter:

availability: likelihood with which the relevant components of the service function can be accessed as required by the specified conditions (temporal and spatial).

NOTE: space covers the geographic coverage and resource size aspects.

fidelity: faithfulness and completeness in carrying out the service facility with respect to a reference level. The reference level may be specified or may be an independent function or a function of an input.

flexibility: options required by the customer and offered by the provider in order to accommodate special requirements.

reliability: ability of an item to perform a required function under stated conditions for a given time period.

security: ability of a service to ensure the confidentiality of the pieces of information worked out, exchanged or stored, the communication privacy, the authenticity and integrity of the information exchanged or stored as well as the protection of the user and his communication means against any type of threat (virus, spam, etc.).

speed: performance criterion that describes the time interval required to perform a function or the rate at which the function is performed. (The function may or may not be performed with the desired accuracy.).

trafficability: ability of an item to meet a traffic demand with a given size and other characteristics, under given internal conditions.

user-friendliness: ease in the application of the service function but includes conformance to design for all, accessibility and ergonomic aspects.

6.1 Matrix for the determination of communications QoS criteria

The matrix in the table below is an extrapolation of that of ETR 003 [5]. If explored cell by cell, it enables to consider every QoS parameters and hence to capture a comprehensive range of QoS requirements for each specific service, the purpose being to choose for each of these cells one or several measurable parameters allowing for an overall QoS evaluation.

In the definitions given above or hereafter for each cell, the words "specified conditions" refer to the contract between the customer and the provider that can be based on the European standards, a governments directive or a mutual agreement while "stated conditions" refer to sales conditions made publicly available by the provider. Obviously, as highlighted above, it's crucial that the contract details the QoS specifications.

Table 2: Matrix to facilitate the capture of customer's QoS requirements

Service life		User interface		Availability	Fidelity (Accuracy)	Flexibility	Reliability	Security	Speed	Trafficability	User-friendliness
			Cell ref.	X1	X2	X3	X4	X5	X6	X7	X8
Service management	1-Sales	Preliminary information, advertisement	Y1.1								
		Subscription	Y1.2								
	2-Service provisioning	Installation, Activation and Acceptance	Y2								
	3-Service alteration / Technical upgrade	Change at the customer initiative	Y3-1								
		Change at the provider initiative	Y3-2								
	4-Service support	Documentation	Y4.1								
		Technical support	Y4.2								
		Commercial support	Y4.3								
		Complaint management	Y4.4								
	5-Repair/Trouble-shooting		Y5								
	6-Charging/Billing		Y6								
	7-Network/service management by the customer		Y7								
	8-Cessation		Y8								
Technical quality	9-Use of Service	Transport	Y9.1								
		Service	Y9.2								
		User interface	Y9.3								

Header of lines and columns of this table are derived from [5]. These headers are described hereafter.

The Service aspects are a set of uniquely identifiable or definable elements, which, collectively cover, all tasks associated with or those forming part, of a telecommunications service. They are detailed in 6.1.1 to 6.1:9.

The Service quality criteria which collectively cover all quality aspects of a telecommunication service are defined below (see also clause 3.1):

X-1 Availability: likelihood with which the relevant components of the service function can be accessed as required by the specified conditions (temporal and spatial).

NOTE: space covers the geographic coverage and resource size aspects.

X-2 Fidelity (Accuracy): faithfulness and completeness in carrying out a service facility with respect to a reference level. The reference level may be specified or may be an independent function or a function of an input.

X-3 Flexibility: options required by the customer and offered by the provider in order to accommodate special requirements.

X-4 Reliability: ability of an item to perform a required function under specified conditions for a given time period.

X-5 Security: ability of a service to ensure the confidentiality of the pieces of information worked out, exchanged or stored, the communication privacy, the authenticity and integrity of the information exchanged or stored as well as the protection of the user and his communication means against any type of threat (virus, spam, etc.).

X-6 Speed: performance criterion that describes the time interval required to perform a function or the rate at which the function is performed. (The function may or may not be performed with the desired accuracy.).

X-7 Trafficability: ability of an item to meet a traffic demand with a given size and other characteristics, under given internal conditions.

X-8 User-friendliness: ease in the application of the service function.

The content of each cell is detailed hereafter.

6.1.1 Sales

Y-1 Sales: all relevant activities from the time communications are established between the provider and the customer to the time the contract is signed for the provision of a service by the provider. The term Telco is also intended to cover the service provider or a network provider.

Examples of relevant activities are:

- supply of information on the service;
- technical enquiries;
- feasibility; and
- study of options available.

Y1.1 Preliminary information/Advertisement

Information on the service provided on request of the prospect or in newspapers, magazines, booklets, etc. to help him choosing the service and provider most appropriate to his needs.

Cell reference Y1.1-X1: Preliminary information - Availability

Description: availability requirements regarding access to the appropriate information. This includes not only the public availability of such an information but also its legibility, size of the print font, ease of reading, use of words from the common language, etc.

Cell reference Y1.1-X2: Preliminary information – Fidelity

Description: requirements regarding the correctness and completeness of all relevant information on the service, normally expected by the customer before effective contract, e.g. service features, performance, charges and service support. This includes any advertising material supplied to the customer.

Cell reference Y1.1-X3: Preliminary information –Flexibility

Description: required by the customers in the provision of the preliminary information.

EXAMPLE: Provision of sales information in person, by the telephone, advertising, electronic transfer.

Cell reference Y1.1-X4: Preliminary information - Reliability

Description: reliability requirements regarding the provision of the preliminary information over a given time period.

Cell reference Y1.1-X5: Preliminary information - Security

Not applicable.

Cell reference Y1.1-X6: Preliminary information - Speed

Description: requirement regarding the time taken from the initial contact between the customer and the provider to the instant the pertinent information is supplied to the customer.

Cell reference Y1.1-X7 : Preliminary information - Trafficability

Description: requirement about the number of customers expected to simultaneously accessing this service, density of sales offices, hours staff can be accessed, etc.

Cell reference Y1.1-X8 : Preliminary information – User-friendliness

Description: requirement regarding the ease to carry out all activities associated with the preliminary information provision.

EXAMPLE 1: Ease of identification of the point of contact for sales.

EXAMPLE 2: Ease with which information supplied is understandable.

Y1.2 Subscription

All relevant activities from the customer decision to contract with the provider to the time of effective contract. Subscription is meant here for agreeing to the contractual conditions, conditions of use, customer and provider commitments whether or not there is a formal signature of the contract.

Cell reference Y1.2-X1: Subscription - Availability

Description: requirement regarding availability of access to the appropriate sales facilities. Availability includes also the legibility of the text of the contract, size of the print font, ease of reading, use of words from the common language, etc.

Cell reference Y1.2-X2: Subscription – Fidelity

Description: requirement regarding conformance of the information contained in the contract to the information provided to the customer at the preliminary information stage as well as the exhaustiveness and clarity of the description of the conditions of the service use.

Cell reference Y1.2-X3: Subscription–Flexibility

Description: options required for the subscription.

EXAMPLE: Provision of sales information in person, by the telephone, advertising, electronic transfer.

EXAMPLE: Facility to place contract by the customer may be by fax, electronic mail, post or telephone.

Cell reference Y1.2-X4: Subscription - Reliability

Description: requirement regarding the reliability of the subscription facilities. .

Cell reference Y1.2-X5: Subscription – Security

Description: identification of the aspects of subscription where the customer security, privacy or confidentiality requirements should be met by the provider.

Cell reference Y1.2-X6: Subscription - Speed

Description: requirement regarding the time taken from the initial contact between the customer and the provider to the instant the service contract is placed. This has to take into account the ease with which all activities associated with the subscription may be carried out with the provider.

Cell reference Y1.2-X7: Subscription - Trafficability

Description: requirement regarding the number of customers expected to simultaneously accessing the sales facilities,. density of sales offices, hours staff can be accessed.

Cell reference Y1.2-X8 : Subscription – User-friendliness

Description: requirement regarding the ease with which all activities associated with subscription should be carried out with the provider.

EXAMPLE 1: Ease of identification of the point of contact for sales.

EXAMPLE 2: Ease with which information supplied is understandable.

EXAMPLE 3: The ease with which forms can be filled and ease with which orders can be placed.

6.1.2 Service provisioning

All activities associated with the provision of a telecommunication service, from the time of effective contract to the time the customer is able to use the service.

Installation: all activities associated with the installation of the equipment and the related software needed to use a telecommunication service.

Activation and acceptance: all activities associated with the activation and acceptance of the provision, e.g. test, certificate, etc.

Cell reference Y2-X1: Service provisioning - Availability

Description: requirement regarding the availability of resources for provision: installation and acceptance.

Cell reference Y2-X2: Service provisioning - Fidelity

Description: requirement regarding the correctness and completeness of the provision, installation and acceptance facilities.

Cell reference Y2-X2: Service provisioning - Flexibility

Description: options required by customer to accommodate special requirements on the provision, installation and acceptance facilities.

EXAMPLE: Timing of the provision of the service to suit the customer.

EXAMPLE: Provision of terminal equipment to match customer preferences where possible.

Cell reference Y2-X4: Service provisioning - Reliability

Description: requirement regarding the reliability of the provision: installation and acceptance facilities.

Cell reference Y2-X5: Service provisioning – Security

Description: identification of the aspects of the provision: installation and acceptance where the customer security, privacy or confidentiality requirements should be met by the provider.

Cell reference Y2-X6: Service provisioning - Speed

Description: requirement regarding the time taken from the effective contract to the instant the service is available for use. This time has to be defined for the main aspects of the provision: installation and acceptance.

Cell reference Y2-X7: Service provisioning - Trafficability

Description: requirement regarding the number of customers expected to require simultaneously the provision: installation and acceptance facilities.

Cell reference Y2-X8: Service provisioning – User-friendliness

Description: requirement regarding the ease and convenience with which a service should be provided after effective contract.

6.1.3 Service alteration / Technical upgrade

This activity has been split into two lines one for modification to the service conditions at the customer initiative and the other one for technical upgrade of any service component at the provider initiative.

Y-3.1 Service alteration

All activities associated with the alteration of a telecommunication service, from the time alteration to a service is requested by the customer to the time this alteration is carried to the satisfaction of the customer.

Cell reference Y3.1-X1: Alteration (Change at customer initiative) - Availability

Description: equirement regarding the availability of resources at the provider to carry out alteration to the service as requested by the customer.

Cell reference Y3.1-X2: Alteration (Change at customer initiative) – Fidelity

Description: requirement regarding the correctness and completeness with which requests for alteration to service should be carried out.

Cell reference Y3.1-X3: Alteration (Change at customer initiative) – Flexibility

Description: options required to accommodate special requirements relating to alteration of a service.

EXAMPLE 1: Accommodating the customer's request for reading meter at a requested time when moving to a new address.

EXAMPLE 2: Capability to accommodate a customer's request to carry his telephone number to a new address.

Cell reference Y3.1-X4 : Alteration (Change at customer initiative) - Reliability

Description: requirement regarding the reliability to carry out the alteration request.

Cell reference Y3.1-X5: Alteration (Change at customer initiative) – Security

Description: identification of the aspects of service provisioning where the customer security, privacy or confidentiality requirements should be met by the provider.

Cell reference Y3.1-X6: Alteration (Change at customer initiative) - Speed

Description: requirement regarding the time taken from request to the provider for an alteration to a service to the instant the altered service is available for use.

Cell reference Y3.1-X7: Alteration (Change at customer initiative) – Trafficability

Description: requirement regarding the number of alteration requests expected simultaneously.

Cell reference Y3.1-X8: Alteration (Change at customer initiative) – User-friendliness

Description: requirement regarding the ease and convenience with which alteration to a service should be carried out for the customer by the provider.

Y-3.2 Technical upgrade

All activities associated with the technical evolution of any component of the service at the provider initiative.

Cell reference Y3.2-X1: Technical upgrade (Change at provider initiative) - Availability

Description: requirement regarding the availability of the upgrade facility.

Cell reference Y3.2-X2: Technical upgrade (Change at provider initiative) - Fidelity

Description: requirement regarding the correctness and completeness with which the technical upgrade to service should be carried out.

Cell reference Y3.2-X3: Technical upgrade (Change at provider initiative) - Flexibility

Description: options required to accommodate special requirements relating to the technical upgrade of the service.

Cell reference Y3.2-X4: Technical upgrade (Change at provider initiative) - Reliability

Description: requirement regarding any upgrade activity to be carried out without any performance lessening of the service.

Cell reference Y3.2-X5: Technical upgrade (Change at provider initiative) – Security

Description: identification of the aspects of service provisioning where the customer security, privacy or confidentiality requirements should be met by the provider.

Cell reference Y3.2-X6: Technical upgrade (Change at provider initiative) - Speed

Description: requirement regarding the time taken to perform all activities associated with the technical evolution of any component (hardware or software) of the service from the time the decision is taken to the time the upgrade is achieved.

Cell reference Y3.2-X7: Technical upgrade (Change at provider initiative) - Trafficability

Description: requirement regarding the number of simultaneous technical upgrade to be carried out.

Cell reference Y3.2-X8: Technical upgrade (Change at provider initiative) – User-friendliness

Description: requirement regarding the ease and convenience with which the technical upgrade to a service should be carried out.

6.1.4 Service support

All activities associated with the support of a telecommunication service to enable the customer's use of the service. This includes, documentation, technical support, commercial support and customers' complaint management.

Y4.1 Documentation:

Hereafter the word "documentation" is meant for the documentation provided to install, set-up and use the various features of the service as well as to identify and fix possible troubles.

Cell reference Y4.1-X1: Documentation - Availability

Description: requirement regarding the availability of the documentation to install and use the various features of the service with respect to the level of user knowledge.

Cell reference Y4.1-X2: Documentation – Fidelity

Description: requirement regarding the correctness and completeness in the provision of the documentation.

Cell reference Y4.1-X3: Documentation – Flexibility

Description: customer's requirements to get a documentation suited to the user knowledge and experience on specific issues with the appropriate detail level.

Cell reference Y4.1-X4: Documentation - Reliability

Description: requirement regarding the reliability of the documentation provision.

Cell reference Y4.1-X4: Documentation – Security

Not applicable.

Cell reference Y4.1-X6: Documentation - Speed

Description: requirement regarding the speed with which the documentation should be supplied.

Cell reference Y4.1-X7: Documentation - Trafficability

Description: not applicable.

Cell reference Y4.1-X8: Documentation – User-friendliness

Description:. requirement regarding the ease to use the documentation provided.

Y4.2 Technical support

All activities associated with the technical support of a telecommunication service

Cell reference Y4.2-X1: Technical support - Availability

Description: requirement regarding the availability of the technical support facilities, including the hours of access as well as methods of access.

Cell reference Y4.2-X2: Technical support - Fidelity

Description: requirement regarding the correctness and completeness in the provision of the technical support.

Cell reference Y4.2-X3: Technical support - Flexibility

Description: options required by the customer to satisfy special requirements with regard to the technical support.

Cell reference Y4.2-X4: Technical support - Reliability

Description: requirement regarding the reliability of the technical support.

Cell reference Y4.2-X5: Technical support - Security

Description: identification of the aspects of technical support where the customer security, privacy or confidentiality requirements should be met by the provider.

Cell reference Y4.2-X6: Technical support - Speed

Description: requirement regarding the time taken from a request made to the provider for service support to the instant this has been provided to the satisfaction of the customer.

Cell reference Y4.2-X7: Technical support - Trafficability

Description: requirement regarding the number of customers expected to require simultaneously the technical support.

Cell reference Y4.2-X7: Technical support – User-friendliness

Description: requirement regarding the ease and convenience with which service technical support is requested and provided. For example, varying levels of service support may be required by different segments of the customer population.

Y4.3 Commercial support

All activities associated with the commercial support of a telecommunication service.

Cell reference Y4.3-X1: Commercial support - Availability

Description: requirement regarding availability of the commercial support facilities, including the hours of access as well as methods of access.

Cell reference Y4.3-X4: Commercial support - Fidelity

Description: requirement regarding the correctness and completeness of the commercial support facility.

Cell reference Y4.3-X4: Commercial support - Flexibility

Description: options required by the customer to satisfy special requirements with regard to commercial support.

Cell reference Y4.3-X4: Commercial support - Reliability

Description: requirement regarding the reliability of the commercial support.

Cell reference Y4.3-X4: Commercial support– Security

Description: identification of the aspects of commercial support where the customer security, privacy or confidentiality requirements should be met by the provider..

Cell reference Y4.3-X6: Commercial support - Speed

Description: requirement regarding the time taken from a request made to the provider for commercial support to the instant this has been provided to the satisfaction of the customer.

Cell reference Y4.3-X7: Commercial support – Trafficability

Description: requirement regarding the number of customers expected to require simultaneously the commercial support.

Cell reference Y4.3-X8: Commercial support – User-friendliness

Description: requirement regarding the ease and convenience with which the commercial support should be requested and provided.

Y4.4 Complaint management

All activities associated with the customer's complaints about the service provided.

Cell reference Y4.4-X1: Complaint management - Availability

Description: requirement regarding the availability of the complaint facility.

Cell reference Y4.4-X2: Complaint management - Fidelity

Description: requirement regarding the correctness and completeness the complaints are dealt with.

Cell reference Y4.4-X3: Complaint management - Flexibility

Description: options required to satisfy special requirements with regard to complaint address.

Cell reference Y4.4-X4: Complaint management - Reliability

Description: requirement regarding the reliability of the complaint facility .

Cell reference Y4.4-X4: Complaint management– Security

Description: identification of the aspects of complaint management where the customer security, privacy or confidentiality requirements should be met by the provider.

Cell reference Y4.4-X6: Complaint management - Speed

Description: requirement regarding the time taken from a complaint made to the provider to the instant this complaint has been processed to the satisfaction of the customer.

Cell reference Y4.4-X7: Complaint management - Trafficability

Description: requirement regarding the number of customers expected to require simultaneously the complaint management facility.

Cell reference Y4.4-X8: Complaint management – User-friendliness

Description: requirement regarding the ease and convenience complaints may be addressed to the provider.

6.1.5 Repair-Troubleshooting

All activities associated with the restoration of a telecommunication service to the customer after a fault resulting in partial or complete loss of service or service features.

Cell reference Y5-X1: Troubleshooting - Availability

Description: requirement regarding the availability of the troubleshooting facilities by the user,including hours of access as well as methods of access.

NOTE: space covers the geographic coverage and resource size aspects.

Cell reference Y5-X2: Troubleshooting - Fidelity

Description: requirement regarding the correctness and completeness of the troubleshooting facilities .

Cell reference Y5-X3: Troubleshooting - Flexibility

Description: options available in carrying out repairs.

EXAMPLE: Repairs may be carried out, where possible, in the first instance, without access to customer premises. Repairs may also be carried out at customer's convenience should entry to premises be required. Alternative service may be requested if service is unusable.

Cell reference Y5-X4: Troubleshooting - Reliability

Description: requirement regarding the reliability of the troubleshooting facility.

Cell reference Y5-X5: Troubleshooting - Security

Description: identification of the aspects of troubleshooting where the customer security, privacy or confidentiality requirements should be met by the provider.

Cell reference Y5-X6: Troubleshooting - Speed

Description: the customer's requirement for the time taken from the report of fault to the provider to the time this fault is fixed.

Cell reference Y5-X7: Troubleshooting – Trafficability

Description: requirement, if any, regarding the number of customers expected to require simultaneously the troubleshooting facilities, for example in emergency situation.

Cell reference Y5-X8: Troubleshooting – User-friendliness

Description: requirement regarding the ease and convenience with which a fault can be reported to the provider and repair carried out.

6.1.6 Charging/Billing

All relevant activities associated with the charging and billing for a telecommunication service to a customer.

This could be for one call, for a specified period or for a given billing amount, depending whether its about a bill or any other type of expense information, e.g. ebill, expense signal, real time expense information on the provider website, AoC-S supplementary service, etc.

Cell reference Y6-X1: Charging/Billing - Availability

Description: requirement regarding the availability of any type of expense information at the customer request.

Cell reference Y6-X2: Charging/Billing - Fidelity

Description: requirement regarding the completeness and the accuracy of any type of expense information in reflecting actual use of the service according to the conditions of the contract in particular every tariff parameter including day time and day of the week.

Cell reference Y6-X3: Charging/Billing - Flexibility

Description: options required for:

a) the format of the billing information made available;

b) the time when billing information may be available;

c) any other type of expense information.

Cell reference Y6-X4: Charging/Billing - Reliability

Description: requirement regarding the reliability of any type of expense information. This particular aspect is expected to be better assessed by a commitment of the provider to conform to a code of best practices or still better by the certification of the provider charging/billing process on this particular aspect.

Cell reference Y6-X5: Charging/Billing - Security

Description: identification of the aspects of any type of expense information where the customer security, privacy or confidentiality requirements should be met by the provider.

Cell reference Y6-X6: Charging/Billing - Speed

Description: requirement regarding the time taken from the end of a communication to the time the expense information is provided to the customer.

Cell reference Y6-X7: Charging/Billing – Trafficability

Description: requirement regarding the number of customers expected to require simultaneously access to the various types of expense information .

Cell reference Y6-X8: Charging/Billing– User-friendliness

Description: requirement regarding the ease and convenience with which the various types of expense information are provided.

6.1.7 Network/service management by the customer

All activities associated with the customer's control of predefined changes to telecommunication services or network configurations.

Cell reference Y7-X1: Network/service management by customer - Availability

Description: requirement regarding the availability of the networks/service management facilities.

Cell reference Y7-X2: Network/service management by customer - Fidelity

Description: requirement regarding the correctness and completeness of the network or service management facilties.

Cell reference Y7-X3: Network/service management by customer - Flexibility

Description: options required for customisations in the network/s service management facilities.

Cell reference Y7-X4: Network/service management by customer - Reliability

Description: requirement regarding the reliability of the network/service management facilities.

Cell reference Y7-X6: Network/service management by customer - Security

Description: identification of the aspects of network/service management process where the customer security, privacy or confidentiality requirements should be met by the provider.

Cell reference Y7-X6: Network/service management by customer - Speed

Description: customers requirement for the time taken for access and responses to a request to the network/service management facilities.

Cell reference Y7-X7: Network/service management by customer – Trafficability

Description: requirement regarding the number of customers expected to require simultaneously the network/service management facilities.

Cell reference Y7-X8: Network/service management by customer – User-friendliness

Description: requirement regarding the ease and convenience to access the network/service management facilities.

6.1.8 Cessation

All activities associated with the cessation of a telecommunication service from the time it was requested by a customer, to the time it was completed to the satisfaction of the customer.

Cell reference Y8-X1: Cessation - Availability

Description: requirement regarding the availability of the facilities offered to the customers for cessation of service.

Cell reference Y8-X2: Cessation - Fidelity

Description: requirement regarding the correctness and completeness in carrying out the cessation of a service and the associated activities irrespective of whether the cessation was initiated by the customer or the provider.

Comments: cessation of a service may include the removal of associated equipment from customer premises; cessation of a service may include closing of all records and associated transactions between the customer and the provider.

Cell reference Y8-X3: Cessation - Flexibility

Description: requirement related to minimising inconvenience during the process of cessation of a service.

Cell reference Y8-X4: Cessation - Reliability

Description: requirement regarding the reliability of the facility for the cessation of a service and the associated activities.

Cell reference Y8-X5: Cessation - Security

Description: identification of the aspects of the cessation process where the customer security, privacy or confidentiality requirements should be met by the provider.

Cell reference Y8-X6: Cessation - Speed

Description: customer's requirements for the time taken from request for cessation of service to the instant cessation is carried out by the provider.

Cell reference Y8-X7: Cessation – Trafficability

Description: requirement regarding the number of customers expected to require simultaneously the cessations facilities.

Cell reference Y8-X8: Cessation – User-friendliness

Description: requirement regarding the ease and convenience of activities connected with cessation of a service subscription.

6.1.9 Use of the service: Technical performance

All activities associated with the use of a telecommunication service. The use of the service includes all the aspects of the technical performance at the transport level as well as at the service level, taking into account whether the access to the service is switched or not. All these aspects of the technical performance will be detailed for each service in part 2 of the document.

NOTE: the information given in the following cells should be tailored to the features of each service and of its specific functions. This has to take into account whether the access to the service use a switched or a always on connection. In any case every details can be found in ETSI EG 202 009-2 [7]. Therefore, if the identification of the users' QoS requirements has to take into account various service with multiple functions, this set of cells have to be fulfilled for all of these services and functions.

Y-9.1 Transport technical performance: the various aspects of the technical performance at the transport level.

Cell reference Y9.1-X1: Transport technical performance - Availability

Description: Availability requirement including temporal and spatial conditions for the transport function.

NOTE: space covers the geographic coverage and resource size aspects.

Cell reference Y9.1-X2: Transport technical performance - Fidelity

Description: Reference levels required for the faithfulness and completeness in carrying out the transport function.

Cell reference Y9.1-X3: Transport technical performance - Flexibility

Description: options required in using the transport function.

Cell reference Y9.1-X4: Transport technical performance - Reliability

Description: requirements regarding the reliability of the transport function over a given time period.

Cell reference Y9.1-X6: Transport technical performance - Security

Description: identification of the aspects of the transport function where the customer security, privacy or confidentiality requirements should be met by the provider.

Cell reference Y9.1-X6: Transport technical performance - Speed

Description: required speed conditions for the transport function.

Cell reference Y9.1-X7: Transport technical performance - Trafficability

Description: trafficability conditions required for the components of the transport function if any.

Cell reference Y9.1-X8: Transport technical performance - User-friendliness

Description: requirement for the ease in the application of the transport function.

Y-9.2 Service technical performance: the various aspects of the technical performance of the service depending on the specific features of each service. This includes the technical performance of the possible various built-in functions of the service comprising connection set-up, information transfer and connection release when service access is not connectionless.

Cell reference Y9.2-X1: Service technical performance - Availability

Description: Availability requirement including temporal and spatial conditions for the core service function.

NOTE: space covers the geographic coverage and resource size aspects.

Cell reference Y9.2-X2: Service technical performance - Fidelity

Description: Reference levels required for the faithfulness and completeness in carrying out the core service function.

Cell reference Y9.2-X3: Service technical performance - Flexibility

Description: options required for the use of the service.

Cell reference Y9.2-X4: Service technical performance - Reliability

Description: requirements regarding the reliability of the service function over a given time period..

Cell reference Y9.2-X6: Service technical performance - Security

Description: identification of the aspects of the service where the customer security, privacy or confidentiality requirements should be met by the provider.

Cell reference Y9.2-X6: Service technical performance - Speed

Description: required speed conditions for the core service function.

Cell reference Y9.2-X7: Service technical performance - Trafficability

Description: trafficability conditions required for the components of the service if any.

Cell reference Y9.2-X8: Service technical performance - User-friendliness

Description: requirements for the ease in the application of the service function.

Y-9.3 User Interface performance: the various aspects of the performance of the depending on the specific features of each service. This includes the interface performance with the possible various built-in functions of the service.

Cell reference Y9.3-X1: User Interface performance - Availability

Description: Availability requirement for the user interface.

Cell reference Y9.3-X2: User Interface performance - Fidelity

Description: Reference levels required for the faithfulness and completeness in carrying out the user interface.

Cell reference Y9.3-X3: User Interface performance - Flexibility

Description: options required for the user interface.

Cell reference Y9.3-X4: User Interface performance - Reliability

Description: required conditions for the reliability of the user interface over a given time period..

Cell reference Y9.3-X6: User Interface performance - Security

Description: identification of the aspects of the user interface where the customer security, privacy or confidentiality requirements should be met by the provider.

Cell reference Y9.3-X6: User Interface performance - Speed

Description: required speed conditions for the user interface.

Cell reference Y9.3-X7: User Interface performance - Trafficability

Description: trafficability conditions required for the user interface if any.

Cell reference Y9.3-X8: User Interface performance - User-friendliness

Description: requirement for the ease in using the user interface.

While roaming from one cell to another cell, the answers may be provided by various means like questionnaire, face-to-face interviews, telephone interviews, analysis of complaints or case studies.

Questionnaires are most suited for public enquiries as well as telephone interviews. Face-to-face interviews are more appropriate for surveys in business areas or to get confirmation on some specific issues.

Depending on which area the QoS in question is to be evaluated, appropriate samples have to be defined since different categories of users have often differing requirements even for the same service (some examples of such categories are

available in chapter 0.10 of EOTIP V2 (see Bibliography). Of course, the composition and the size of the sample should fit the area covered whether it is the private customer at large, a corporation, a SME or SOHO.

At this stage of the process, the purpose is to identify for each cell the user requirements, their relative priority with respect to the requirements in the other cells and, as far as possible an indication of the preferred reference values.

While doing that, it should be kept in mind that users have not the same knowledge of the technology as the providers and therefore appropriate language should be used. This is still more difficult when the issue is about a new technology not implemented yet. In such case, analogy with existing services has to be found in order to refer to current usage. In any case, users are expecting their QoS requirements be seen in an end-to-end perspective not from a narrow technical viewpoint.

Finally, it is important to remember that not every parameter will be relevant to every user.

6.2 Importance of deriving service specific QoS parameters

The next step is to define parameters that can be used to measure quantitatively the QoS of each aspect of the telecommunications services. For the operation service aspect, these parameters can be in the example of switch telephony :

a) Unsuccessful call ratio;

b) Call set up time;

c) Speech connection quality;

d) Dropped call ratio.

For failures and service breakout:

a) Performances in back-up situation;

b) Frequency of failures and service breakout, time to repair, cumulated time of failures (in particular total failure).

Of course, different parameters have to be chosen to match the service provided, fixed, mobile communications or Internet access and email services. Part 2 of this deliverable aims to help to choose the most appropriate ones.

It is also obvious that the same service may be used for different applications with different requirements. Therefore, parameters to monitor have to be chosen in order to take into account any particular aspect of the application using the service considered.

Other aspects of the service are more generic and should fit almost all the services.

For delivery:

a) Time to deliver;

b) Conformance to the delivery time;

c) Conformance to the specification;

d) Conformance of the documentation to the specification;

e) Etc.

For the help desk:

a) Response time;

b) Relevance of the answer.

For the billing:

a) Timely supply;

b) Clarity;

c) Transparency;

d) Compliance of the provider metering and billing system to an approval or best practices scheme.

For the supplier-customer interface (commercial or technical support):

a) Reliability. The ability to provide what was promised, dependably and accurately;

b) Assurance. The knowledge and courtesy of employees and their ability to convey trust and confidence;

c) Empathy. The degree of caring and individual attention provided to the customers;

d) Responsiveness. The willingness to help customers and provide prompt services.

6.3 Segmentation of the user sample.

When QoS parameters are defined or measured, it has to be done according to the target study area. Therefore, it is of paramount importance that the user sample used to carry out the user requirement analysis is chosen carefully in accordance with the aim of the study and usage of the service and the results weighted according to the type of user.

Alternatively enough information should be collected on the users' features to enable the breakdown of the results with respect to these features, otherwise it would be difficult to use them effectively. This is in principle the case for a survey among the general public.

6.4 Prioritization

Another purpose of the matrix in table 1 is to get an indication of the relative priority of parameters in each cell. The issue is to come to a reasonable number of parameters in order to achieve the best possible compromise between the number of parameters and the accuracy of the QoS evaluation. Too many parameters will bring a useless management cost while a too little number may lead to overlook some key aspects.

Again depending on the application considered, different parameters may be chosen as the most important for the same service.

6.5 Preferred values

Once the parameters have been defined and prioritized, then comes the issue of which references should be taken to decide whether the QoS is satisfying or not. The answer may be in the parameters itself: e.g. the mean opinion score for voice telephony is found "excellent". More often the QoS will be evaluated good depending on a statistical treatment of the results, e.g. > 80 % of answers states "high" or higher or alternately < 5 % states poor or less.

In some cases, the parameters is checked against a reference value e.g. call set-up time; the issue is then to define this reference value. EG 202 009-2 [7] proposes in some cases indicative values but these values have often to be adapted to take into account specific needs. Therefore, it can be useful to refer to data provided from a panel of users having the same kind of requirements, e.g. same activity sector, same size, etc. These data may be available either from some public repository or from a private contract with a consulting company specialized in such benchmarking surveys. The issue is then again to find a panel of users in the appropriate area of activity, size, etc. The reference value can be taken with respect to the results of such survey (mean value, best of breed, best practice, best in class, etc.) depending of the specific requirements.

6.6 QoS requirements review

Since the technology is evolving ever faster and users' QoS requirements as well, the parameters should be reviewed periodically to take into account new services and user expectations for improvement.

An every year cycle is a mean value for such review depending of course of particular cases.

7 Measurements

The assessment of the QoS is expected to be evaluated in checking parameters against reference values. As seen above these parameters are measured either objectively via technical means or subjectively (perceived QoS) via surveys amongst the users. Experts often agree that a mix of objective and subjective measurements is the best means to get the whole QoS picture. As stated above, both ends of the communication may influence the QoS and have to be taken into account for the measurements. In particular, the telecommunication network architecture is more and more often designed to include access networks and transport networks, the influence of which on QoS has to be taken into account in a QoS measurement policy.

7.1 Objective measurements

Parameters like call set up time, call failures, interruptions can quite easily be measured via adequate probes in appropriate locations. Measurements can be made either on real traffic or on artificially generated traffic. This can be done either on public traffic or private networks. Again, since QoS may be different with respect to the location, the geography of the network should be taken into account for the measurements particularly if the choice is done not to monitor all the parts of the network. A compromise should be set between the wish to monitor everything all the time and the costs and the possible oversizing of the network to ensure the management traffic. Optimization of the measurements may need to focus on some key point of the network or to perform the measurements at busiest hours of the day or week.

7.1.1 Intrusive measurements

This type of measurements is performed on artificially generated traffic and can provide more information since the traffic can be tailored to check almost everything. The drawback of intrusive measurements is to add traffic to the actual one and therefore to lead to additional costs and some possible disturbance.

7.1.2 Non-intrusive measurements

This type of measurements is performed on real traffic conditions and therefore is expected to give a more realistic vision of the QoS but its drawback is that some deficiencies might be missed since not all the possibilities are checked.

7.2 Subjective measurements

Subjective measurements are the only means to assess the psychological aspects of the QoS, e.g. those aspects that cannot be measured easily by technical means or that may be missed due to a reduced number of measurement points. This is the case for instance for billing accuracy, quality of customer care or relevance of the answer of the helpdesk.

Such measurements may be carried out once a year or if a complaint is raised.

7.3 Who should perform the measurements

There are various ways to perform the measurements. Big corporations may have their own organization to deal with this issue or, alternatively, the task may be given to a third party. Another possibility is to entrust the provider himself to supply also the QoS information. It is expected in such case that a mechanism is set to ensure the confidence in the information provided.

Taking into account that the private users (general public) have requirements and resources different from Business users, it is expected that the measurements related to their requirements are performed by a third party, e.g. some kind of public authority, and the results made publicly available.

8 Conclusion

The ETSI User Group hopes the present document provides useful guidance on how to get the users expectations on the QoS to the standard makers, regulators and providers. It is expected also that the users themselves can find here some help, e.g. general public when choosing a provider or user organizations when formulating recommendations or business users when establishing a SLA with their favourite provider. EG 202 009-3 [8] is intended to provide additional support on this last aspect.

Annex A (informative): Bibliography

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History

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