Customizing Non-Utilization Telecommunications QoS Parameters for Developing Countries Based on the ITU-T E.803 Recommendation

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Summary
The new trend in Quality of Services (QoS) encompasses the nonutilization QoS indicators and parameters, in addition to traditionally known in-service QoS parameters. This is due to the fact that customer satisfaction is the dominant factor in achieving QoS requirements. For this reason, in 2012 the ITU published its new recommendation, ITU-T E.803, to cover the non-utilization QoS parameters. In spite of its importance to the current situation of developing countries, the complete deployment of that recommendation may face some complications. This is due to the fact that it has 88 parameters in 13 stages characterizing this recommendation especially in the primary adoption phase for the developing countries regulatory authorities. Fortunately, that very recommendation offers flexibility in dealing with these parameters. In this paper, a local adequate scenario is proposed for the developing countries. In this respect, the thirteen stages are preserved, while the parameters are restructured by selection resulting in 28 measurable parameters. The above scenario is justified by so many factors such as the level of customer awareness and the requirements of the ICT market in the developing countries.

Key words:
Quality of service, QoS, ITU-T E 803, customization for developing countries

1. Introduction

The ITU-T E.803 [1] is a necessary complementary trend for the traditional inservice QoS in a way to integrate the whole mission of the customer perception satisfaction.
The E.803 Recommendation handles the non-utilization QoS parameters for managing the pre-launching services stage.
This paper aims to customize the E.803 parameters to meet the special situation of most of the developing countries. The E.803 Recommendation is structured out in a form of main stages and breakdown in measurable quantitative parameters.
According to the proposed scenario, the existing stages are preserved, whereas the parameters are modified by selection or omission in order to achieve the prescribed customization goal.
The Recommendation E.803 has been handled in a generic and global format. For this reason, it may not be completely applicable for all of the ICT markets. This is true, since so many countries are suffering from ICT market differences with respect to the ITU generic standards and directives.
These countries are characterized by their special situation deviating from the global approved standards. This is justified by the following worth mentioning points:

- Some parameters of the recommendation may not be considered by the customers due to lack of awareness such as the organizational and network structure.
- The network architecture may not be separated according to the standard ITU-T layers of services, operation (transport), and last mile access.
- Inadequate infrastructure and gateway monopoly.
- Competition level and regulatory independence.

For these reasons, the current paper reduces the original 88 parameters of E.803 to only 28 parameters by means of selection and omission.

2. Method

The ITU-T E.803 recommendation validates a reasonable flexibility for satisfying the adequate needs of different ICT communities by selecting the appropriate parameters.
To customize the ITU-T E-803 parameters for the developing countries, the total 88 parameters were restructured by selection and omission to yield only 28 quantitative measurable and reportable parameters. The details follow:

- Some parameters were selected without modification. An example is Parameter 5 (C3 in this paper).

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- Some parameters, in the authors view, are implied by one dominant parameter. An example: Parameters 54, 56, and 60 are implied by Parameter
- 59. The current paper renamed this parameter as C19.
- Omission of some parameters is necessary to avoid complexity in implementation, customers inconvenience and confusion of deploying irrelevant parameters. Examples: Parameters 43, 46, and 72 are of less importance for the ICT community in the developing countries.

3. The Proposed Modified Parameters

In this paper, the modified parameters are enumerated sequentially with the number preceded by the letter 'C'. All of the modified parameters hold the original names and definitions of their counterparts in E.803 [1].

3.1 Stage 1: Preliminary Information (PI) on ICT Services

C1 Integrity of preliminary information
Def: "Integrity of preliminary information (PI) is characterized by a true and fair view of the main points of an ICT service provided to the potential customers by the Service Provider (SP)" [1].
Measured by: opinion rating.
Source: Parameter 1 in [1].

C2 Response time for the provision of PI
Def: "Time taken from the instant a request for PI was sent to the SP to the instant all requested information was delivered to the customer requesting the information" [1].
Measured by: time.
Source: Parameter 4 in [1].

3.2 Stage 2: Contractual Matters between ICT Service Providers and Customers

C3 Integrity of contract contractual information
Def: "True and fair view of pertinent information on supply, maintenance and cessation for a telecommunications service provided by a SP" [1].
Measured by: opinion rating.
Source: Parameter 5 in [1].

C4 Compliance of contractual terms with preliminary information
Def: "Degree of concurrence of the contents of the contractual document to the PI. This comparison between contractual terms and PI should be based on the PI in force during the period of the contract. Contractual document could have detailed terms which were implicit in the PI. Where differences exist these are not to be considered as errors as long as additional and non-contradictory information is provided" [1].
Measured by: ratio or percentage.
Source: Parameter 6 in [1].

C5 Flexibility for customization before contract
Def: "The scope and boundary to meet individual customer's specific requirements of service feature(s), service performance(s) and terms and conditions before formal signature on the contract. NOTE These specific requirements would be departures from the standard service features, performance and terms and conditions normally offered by the SP" [1].
Measured by: opinion rating.
Source: Parameter 7 in [1].

C6 Ease and flexibility to amend terms after formal contract
Def: "The scope and boundary of the amendments that could be accommodated to contractual terms to satisfy the post contractual amendments sought by a customer.
This excludes contracts which the provider has specifically stated as not considered for amendments" [1].
Measured by: opinion rating.
Source: Parameter 8 in [1].

3.3 Stage 3: Provision of Services

C7 Meeting promised provisioning date
Def: "Successful completion of provisioning of service on the date promised in the contract in relation to the total number of signed contracts with promised service provisioning dates". [1].
Measured by: ratio or percentage.
Source: Parameter 9 (and also it covers Parameter 14) in [1].

C8 Time for provisioning
Def: "Period of time between the scheduled

provisioning time and the actual provisioning time" [1].
Measured by: time..
Source: Parameter 10 (and it also covers Parameter 11) in [1].

3.4 Stage 4: Service Alteration

C9 Time for alteration of service
Def: "Time elapsed from the instant alteration notification is received by the user to the instant the alteration is completed" [1].
Measured by: time.
Source: Parameter 17 in [1].

C10 Completeness of fulfillment of contractual specification in the alteration of a service
Def: "The ratio of all contracts where all specifications related to the service alteration contractually agreed are met or completed to the total number of contracts where alteration has been requested" [1].
Measured by: ratio or percentage.
Source: Parameter 19 in [1].

3.5 Stage 5: Technical Upgrade of ICT Services

C11 Time for Technical Upgrade of a Service
Def: "Time elapsed from the instant the technical upgrade period was announced to the user to the instant the technical upgrade was carried out" [1].
Measured by: time.
Source: Parameter 26 (and also covers Parameter 27 and 29) in [1].

C12 Technical upgrade not complete and correct first time
Def: "Ratio (percentage) of the number of contracts not completely carried out or not correctly carried out in the first attempt to the total number of contracts. NOTE The indicator for this parameter provides how well the SP has performed in complete and correct technical upgrade at the first attempt" [1].
Measured by: ratio or percentage.
Source: Parameter 31 in [1].

C13 Organizational efficiency of service provider to carry out technical upgrade
Def: "Organizational and hardware resource availability on the part of the SP to carry out technical upgrades to meet the needs of the customer and/or to meet contractual promises" [1].
Measured by: opinion rating.
Source: Parameter 34 in [1].

3.6 Stage 6: Documentation of Services (Operational Instructions)

C14 Integrity (correctness and completeness) of documentation
Def: "Correctness, completeness and user friendliness of pertinent information associated with the use of all features of a service and its maintenance" [1].
Measured by: opinion rating.
Source: Parameter 38 (and also covers Parameter 37) in [1].

3.7 Stage 7: Technical Support Provided by Service Provider

C15 Accessibility to technical support
Def: "Ratio of the number of successful attempts to technical support to the total number of attempts to reach this support" [1].
Measured by: ratio or percentage.
Source: Parameter 42 in [1].

C16 Integrity of technical solutions
Def: "Proportion of successful solutions with respect to the total number of requests within a specified period of time" [1].
Measured by: opinion rating.
Source: Parameter 45 in [1].

3.8 Stage 8: Commercial Support provided by Service Provider

C17 Commercial solution delivery time
Def: "Time elapsed from the instant the customer raised a problem with commercial support to the instant a solution was achieved" [1].
Measured by: time.
Source: Parameter 49 in [1].

C18 Integrity of commercial solutions achieved by service provider
Def: "Ratio of successful solutions achieved within the specified period of time to the total number of commercial support requests" [1].

Measured by: opinion rating.
Source: Parameter 51 in [1].

3.9 Stage 9: Complaint Management

C19 Overall quality of the complaint management process
Def: ”The combined effect of accessibility of the complaint management service: correct solutions at the first attempt, speed of resolution and the organizational capability to carry out these services” [1].
Measured by: opinion rating.
Source: Parameter 59 (it also stands for Parameters 54, 56, and 60) in [1].

3.10 Stage 10: Repair Services

C20 Efficiency of the repair services
Def: ”Efficiency of the repair service” (mainly technical) of a SP is characterized by the combined performances of: accessibility, the number of repairs in a specified period of time, repairs carried out successfully the first time, punctuality” [1].
Measured by: opinion rating.
Source: Parameter 65 (it also stands for Parameters 61, 62, 63, and 64) in [1].

3.11 Stage 11: Charging and Billing

C21 Successful notification of exceeding billing budget
Def: ”Ratio of the number of successful notifications by the SP of exceeding the customer’s billing budget to the total number of exceeding customer’s billing budget events” [1].
Measured by: ratio or percentage.
Source: Parameter 69 in [1].

C22 Notification time (delay) of exceeding billing budget
Def: ”Time from the instant of billing budget overrun to the instant of the reception by the customer of this notification from the SP” [1].
Measured by: time.
Source: Parameter 70 in [1].

C23 Bill delivery delay
Def: ”The delay between the expected time of bill and its receipt by the customer” [1].
Measured by: time.
Source: Parameter 74 in [1].

3.12 Stage 12: Network/Service Management by Customer

C24 Outage duration
Def: ”The total time a network/service management facility was not accessible to the customer during a specified reporting period” [1].
Measured by: time.
Source: Parameter 78 in [1].

C25 Frequency of outages
Def: ”The number of times access to the network/service management facility was not available to the customer during a specified period divided by the duration of this period” [1].
Measured by: number.
Source: Parameter 79 in [1].

C26 Overall reliability of network/service management service
Def: ”The consistent combined performance of availability, response times, response rates, correctness and completeness in the processing and fulfillment of customer requests for network/service management facilities” [1].
Measured by: opinion rating.
Source: Parameter 82 in [1].

3.13 Stage 13: Cessation of Service

C27 Cessation acknowledgement time
Def: ”The time elapsed from the instant of sending the cessation request to the instant of receipt by the customer of the acknowledgement from the SP” [1].
Measured by: time.
Source: Parameter 85 in [1].

C28 Accessibility of the cessation facility
Def: ”The ratio (percentage) of the number of successful attempts to the total number of attempts to reach the cessation facility” [1].
Measured by: ratio or percentage.
Source: Parameter 87 in [1].

4. Discussion

It is clear that the total number of parameters is reduced from 88 parameters in the original ITU-T E.803 Standard [1] to 28 parameters as proposed in this paper.
Despite the drastic reduction in the number of parameters, the authors believe that the objective of the original ITU standard is maintained. This will help a lot in simplifying the implementation of the scenario for developing countries.

5. Conclusion

- The resulting table:
    1. is easy to understand
    2. is applicable
    3. has less measurable reportable parameters
    4. still covers all objectives of ITU standard.
- It is recommended that the targeted parameters, as given in this paper, to be approved and deployed by the regulatory authorities.
- It is expected that, the proposed set of parameters will introduce a positive impact on the ICT community.

References

[1] Quality of Service Parameters for Supporting Service Aspects Models for Telecommunication Services, ITU Recommendation ITU-T E.803, 12-2011.

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