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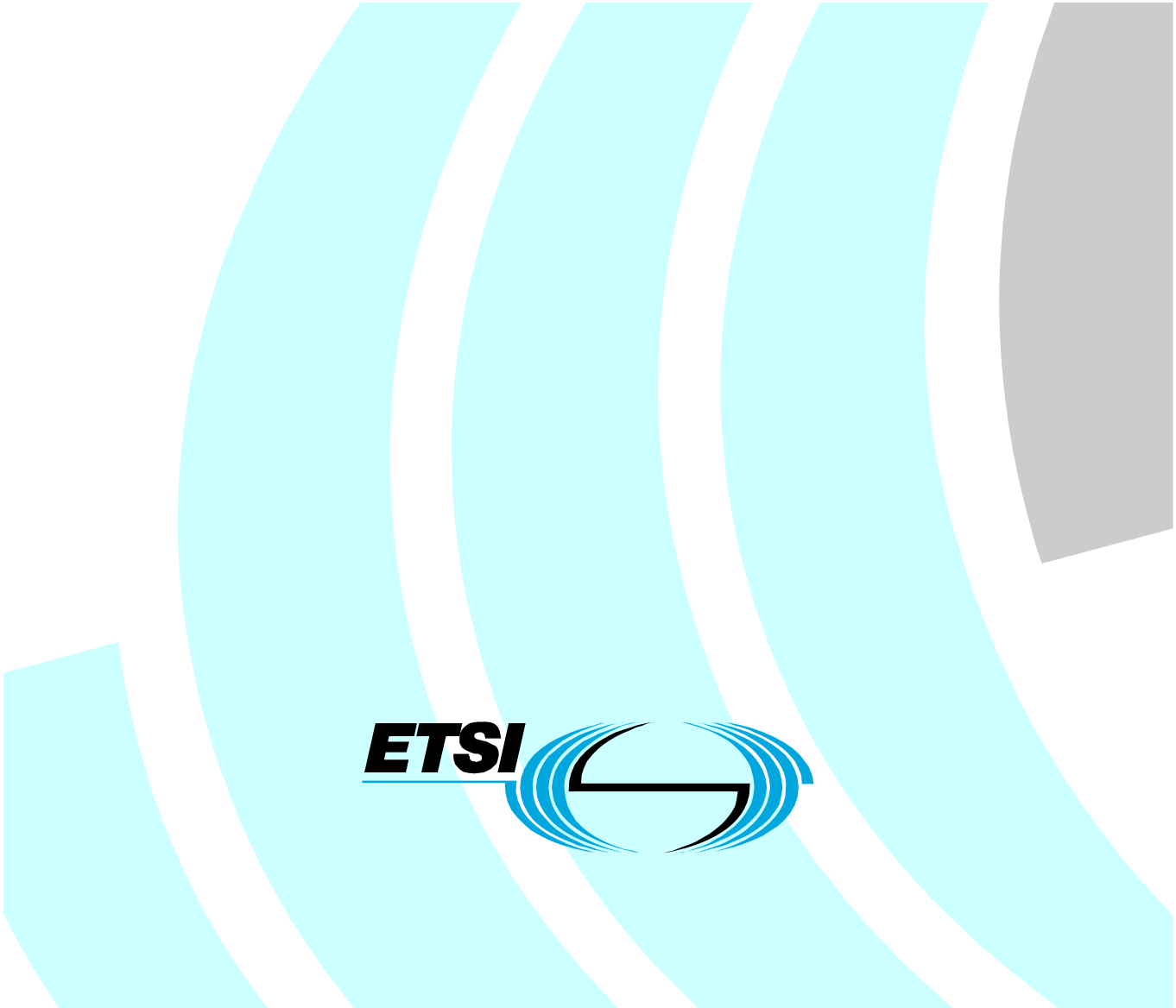
Technical Report

User Group;
Quality of ICT Services;
Standardization and regulation references
in the Metering and Billing area



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ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
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Contents

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Foreword

This Technical Report (TR) has been produced by ETSI User Group (USER).

Information and Communications Technology (ICT) standardisation is part of the general standardisation activities, and contributes to policy objectives to improve the competitiveness of European industry, as specified in the Lisbon strategy. The Directive 98/34/EC [i.15] is the legal basis for European standardisation and standardisation policy, including the ICT domain. One of its main elements is the formal recognition of three European Standards Organisations (ESOs), CEN, CENELEC and ETSI, active in various degrees in the ICT domain. Standards produced by the three ESOs and resulting from an open consensus building process are by nature voluntary and non binding technical documents.

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The present document has been produced within the ETSI Special Committee USER GROUP (USER) by the Specialist Task Force STF 375.

The present document is a companion of the TS 102 845 [i.1] and TS 102 846 [i.2] also produced by ETSI STF 375 USER GROUP (USER)

Introduction

Metering, charging and billing are very important for all the ICT stakeholders, such as Operators/Service providers, Regulators, Customers and Standardisation Bodies, and different documents define related parameters, test methods, and statistical results.

TS 102 845 [i.1] is dedicated to the requirements and definitions for a Method for checking Metering and Billing systems.

TS 102 846 [i.2] defines requirements for Bodies Providing Conformity Assessment of Check-up on Metering and Billing Processes.

The present document completes the contents of these two Technical Specifications in summarizing available materials on metering and billing available in publications from some national regulators, standardization bodies and customers associations.

1 Scope

The present document provides information on the standards and regulatory documents available in the area of ICT service metering and billing.

NOTE: The present document provides a non exhaustive review of documents related to Metering and Billing developed by European regulators or by Standardization Bodies and Fora.
As TS 102 845 [i.1] defines requirements and methods for checking Metering and Billing systems, it was agreed to avoid mixing requirements and information in the Technical Specification and therefore it was chosen to collect the useful information on billing and charging in a stand-alone Technical Report.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

2.1 Normative references

The following referenced documents are necessary for the application of the present document.

Not applicable.

2.2 Informative references

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] ETSI TS 102 845: "User Group; Quality of ICT Services; Requirements and Method for checking Metering and Billing systems".

[i.2] ETSI TS 102 846: "User Group; Quality of ICT Services; Requirements for Bodies Providing Conformity Assessment of Checking-up on Metering and Billing Processes".

[i.3] ETSI EG 202 057-1: "Speech Processing, Transmission and Quality Aspects (STQ); User related QoS parameter definitions and measurements; Part 1: General".

[i.4] ETSI EG 201 769-1 "Speech Processing, Transmission and Quality Aspects (STQ); QoS parameter definitions and measurements; Part 1: Parameters for voice telephony service required under the ONP Voice Telephony Directive 98/10/EC".

[i.5] ETSI EG 202 009-1: "User Group; Quality of telecom services; Part 1: Methodology for identification of parameters relevant to the Users".

[i.6] ETSI EG 202 843: "User Group; Quality of ICT Services; Definitions and Methods for Assessing the QoS parameters of the Customer Relationship Stages other than utilization".

[i.7] TMF TR149; Technical Report: Part 1 - Holistic e2e Customer Experience Framework.

[i.8] TMF TR149; Technical Report: Part 2 - Key Factor Analysis Workbook.

[i.9] Finland - National regulation 31E/2009 (Unofficial English translation: On technical aspects of charging in communication networks").

[i.10] Germany - Administrative Order 168/1999: "Technical Requirements for Metering and Billing Systems to Guarantee Accuracy in accordance with Section 5 of the Telecommunications Customer Protection Ordinance (TKV)" Official Gazette 23/1999 of 22 December 1999.

[i.11] UK - Ofcom Metering & Billing Direction - 15 July 2008.

[i.12] Spain - Orden Calidad ITC 912 2006.

[i.13] Denmark - National IT and Telecom Agency (Bilag 4: Minimumskrav til kvaliteten af de udbudte forsyningspligtydelser). .

[i.14] France - Arrêté du 01 février 2002 sur les "factures des services téléphoniques" NOR: ECOC0200002A.

[i.15] Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 Laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on Information Society services.

[i.16] ISO 9001-2000: "Quality management systems -- Requirements".

[i.17] Directive 98/10/EC of the European Parliament and of the Council of 26 February 1998 on the application of open network provision (ONP) to voice telephony and on universal service for telecommunications in a competitive environment.

3 Definitions and abbreviations

3.1 Definitions

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

billing: activity, within a Service Provider, which aims at charging a customer either by producing an invoice or by decreasing a prepaid account

NOTE: Billing usually involves three main types of activity:

- guiding is the allocation of a specific event to a specific customer;
- rating is the computation of a price of an event according to a rate plan; and
- charging is the imputation of the financial charge to the Customer.

customer: user who is responsible for payment for the Electronic Communication services

metering principles: set of non ambiguous principles set by a Service Provider to define and meter the Electronic Communications service it offers to its Customers

service provider: organization that provides Electronic Communications services to users and customers

pricing: set of Billed Quantity Valuation Methods and Unit Prices

3.2 Abbreviations

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

GRAPA	The Global Revenue Assurance Professional Association
IPTV	Television over Internet Protocol
MOS	Mean Opinion Score
STF	Specialist Task Force
TMF	TeleManagement Forum
TV	Television
VoIP	Voice over Internet Protocol

4 Summary of the review of available regulatory requirements

Several documents from national regulatory bodies in Europe were communicated to the STF expert Team. It seems from an informal survey (see annex A) that such documents/rules are not available in all the countries. The following clauses provide a short summary of documents received by STF 375 Team and the User Group on metering, charging and billing.

Some parts of the following texts are also copied from the messages or comments received by the STF. They are quoted in "*italic*".

There is no regulation documents in France but it should be noted that the "*Arrêté du 1 février 2002 relatif aux factures des services téléphoniques*" [i.14] defines the mandatory contents of a bill, including taxes, the billing period and detailing when needed the types of subscriptions, flat rates and when requested the detailed bills including e.g. call numbers, call durations and locations.

4.1 Criteria currently implemented in regulatory requirements

It appears that some parameters are currently defined on the basis of ETSI Guides such as EG 202 057-1 [i.3] or EG 201 769-1 [i.4] (see clause 5.1) and are shared by different countries, such as Billing/Charging correctness, Billing Accuracy, Billing complaints.

The documents from Finland, Germany, Spain and United Kingdom are summarized in this clause.

4.1.1 Charging/Billing correctness. Billing Accuracy

These parameters are the most commonly implemented in different European countries.

Finland

Clause 3 of national regulation [i.9] defines "Charging Correctness" and includes the following text:

"*Charging shall be carried out so that data collection records containing a charging error due to the telecommunications operator's own activity does not occur in more than 0.01% of all data collection records. Errors detected and corrected before billing, errors detected through complaints from customers, and errors detected by the operators themselves after billing are considered as charging errors. In order to fulfil this requirement, the telecommunications operator shall monitor the amount of incorrect data collection records.*"

The principles agreed in Finland are that operators self-monitor the charging correctness and check that the results are within the limits defined above. The national regulator has the right to cross-check that the requirements defined in the regulation are fulfilled (e.g. analysis of available statistics). If problems are identified the regulator can request the operator to correct the situation.

The regulation defining the basic requirements, operators fulfilling the requirements and the regulator supervising has been seen as an appropriate method to ensure reliable metering and billing.

Germany

The technical requirements laid down in clause 5 of the Telecommunication Customer Protection Ordinance [i.10] are to ensure minimum accuracy of metering and billing systems and hence to give customers confidence in the accuracy of the charges levied for connection-dependent telecommunications services provided for the public.

The document defines criteria and clauses to determine the accuracy of charging, such as:

- The accuracy when time is recorded continuously. The call duration and time of usage are calculated with an accuracy of 1 second, and converted in tariffs, providing the computed call charge.
- The accuracy for intervals recorded between time pulses, including when available the discounts or mark-ups.
- The discounts and mark-ups have to be taken into account.

- The price for every communication event is determined on the basis of net tariffs, taking into account the statutory turnover tax. Note that the gross rate has to be computed with an accuracy of two decimal places of the amount.

All measures taken in the process of metering and charging have to be recorded and kept by the provider at least for the period of time laid in clause 6, paragraph 3 of the Telecommunications Carriers Data Protection Ordinance [i.10].

It should be noted that these statements do not cover volume-sensitive telecommunications services.

Portugal

ANACOM has defined a statement on cost accounting system of PTCommunicações for the fixed telephone service (Article 35 of the Regulations for the Fixed Telephone Service Operation) and leased lines service (article 29 of the regulations for the public telecommunication network operation). This defined the obligation to introduce a cost accounting system appropriate to the application of established tariff principles.

Such an approach has some similarities with those defined in TS 102 845 [i.1].

More details are available on the web site of ANACOM (http://www.anacom.pt).

Spain

The article 110 in BoE n°77 [i.12] is intended to define mechanisms aiming to ensure the billing correctness. Chapter V is dedicated to billing quality. It should be noted that the basis for Spanish rules is EG 202 057-1 [i.3] (see clause 5.1 of the present document).

The scope of Chapter V defined above applies to all operators providing all types of Electronic Communications for users and having a minimum annual turnover defined by this regulation. These operators have to implement a global system to ensure the billing quality monitoring.

Billing quality monitoring takes into account the connection duration, the connection distance and the volume of exchanged information.

A special clause of the document details the "detailed billing allocation". It lists the different items that have to be defined in the bill, e.g. billing period, detail of all billed communications, aggregated data by tariff groups, taxes, etc.

United Kingdom

Ofcom regulates the accuracy of bills issued by providers of electronic communications services and has published the statement "The Ofcom Metering & Billing scheme" under the "General Condition 11" [i.11]. The process and the statements are described with a lot of details.

Providers with a minimum annual turnover have to seek and obtain approval of their metering and billing systems from third-party assessors against a prescribed standard intended to ensure that compliant systems will deliver accurate bills."

The rules define the rounding and resolution that influence the charge that appears on bills. It applies to two types of tariffs: Public domain Tariff and bespoke tariff.

The rules also detail the inaccuracy limits that define the maximum number of permitted tolerance errors.

One specific clause 4.8 defines the "Individual Bill accuracy" and covers error handling and customer complaints (clause 4.8.2).

4.1.2 Billing complaints

This parameter is also one of the most common defined by the regulators.

Denmark

The criteria are defined in "Bilag 4: Minimumskrav til kvaliteten af de udbudte forsyningspligtydelser" [i.13].

It is noted that these criteria are based on EG 201 769-1 [i.4] (see also clause 5.1).

In particular clause 5 "Regningskalger" defines the billing complaints from the customers. It is defined as 0,10 % for basic voice services, ISDN.

Spain

Chapter V, article 21 is dedicated to "Users complaints on bill contents" and refer to a specific rule on "conflict regulations" and to the parameters described in EG 202 057-1 [i.3] such as "Bill correctness complaints" and "Prepaid account credit correctness complaints".

Germany

The document [i.10] defined in the informative references does not refer explicitly to customers complaints. However, it may be noted that specific clauses such as "*it must be ensured that any outages of the metering and billing system do not lead to unjustified charges within the framework of call charge accounting*" may be linked with customer's enquiries or complaints.

United Kingdom

As indicated in the previous clause a specific clause 4.8 defines the "Individual Bill accuracy" and covers error handling and Customer complaints identifying the actions to be taken by the Service provider when it identifies that a customer has been overcharged (e.g. through a customer enquiry).

4.2 Some specific criteria

Some regulators have provided detailed parameters to ensure a proper check of bills' accuracy and billing process.

Germany

Time, duration and locations of calls may influence significantly charges and bills. The document of the German regulator defines in particular "*Time metering – Master Clock – Recording of the distance*".

Time metering defines the maximum differences that may occur and that may affect the accuracy (500 milliseconds or 1 second, depending on the conditions).

The Master Clock and Official time Standard are also defined. For the Master Clock the accuracy, i.e. the deviation of the master clock in dependence on the time, may not exceed 10exp(-7) within every second. The time of the master clock may deviate from the time of the official time standard by up to 3 seconds.

The regulation document also defines the principles for distance recording, based on the call numbers registered for the calling and the called party.

Spain

As the BoE n°77 refers to EG 202 057-1 [i.3] it defined also the parameters "Response time for admin/billing enquiries"

The annex II defines the conditions applicable to the global system ensuring billing quality. This annex also defines the measurement accuracy values (in milliseconds or percentages as relevant, billing punctuality, etc.).

United Kingdom

The rules define in annexes specific criteria for accesses/services such as fixed publicly available telephony service, Mobile PATS, High speed internet, VoIP. Some of them are mandatory, some are voluntary.

The annexes define in more details the allowable measurement tolerance and inaccuracy limits.

Depending on the services, the allowable measurement tolerances deal with variables such as Duration, Time of the day, Count and value of Charges, volume, count and value of aggregate charges.

Depending on the services, the inaccuracy limits deal with variables such as value overcharged, Events over recorded, count of events overcharged, specific usage events over counted and over-recorded, events over counted.

For mobile PATS and High speed internet billing is considered separately for pre-paid charging and post-paid charging.

4.3 Conformity/conformance/certification

The national regulators seem to have different approaches about conformity/conformance/certification of bodies in change of checking the billing quality or billing process.

Finland

It has been noted from the survey from the STF that Finland has not seen appropriate to create any third party auditing or certification system.

This position appears different from the approaches of the other national regulators such as Germany, Spain and UK which define rules, such as those available in TS 102 846 [i.2].

Germany

Under clause 5, paragraph 3 of the Telecommunication Customer Protection Ordinance proof of compliance with the technical requirements has to be furnished by the service providers. The procedure to be followed is published in the Official Gazette: Administrative Order 6/2001, RegTP Official Gazette 1/2001.Communication on Proof of Compliance as required by clause 5 of the Telecommunications Customer Protection Ordinance (TKV).

Portugal

ICP ANACOM promoted audits of Cost Accounting Systems carried out by independent entities.

Spain

Chapter II, Article 6 defines "Audit for Quality of Service".

Chapter V Billing Quality, Article 19 "Accreditation form" indicates that Operators have to provide once a year an Audit report produced by an independent entity. This article refers to the Standard ISO 9001-2000 [i.16].

United Kingdom

The process of managing risks to Total Metering and Billing System accuracy is subject to audit by the Approval Body.

The clause 5.1 defines the Assessment process including the Approval Body appointment, the initial assessment, the main assessment, approval and certification.

5 An overview of standardization within ETSI

In all the standardization Bodies producing standards on services or networks, information on metering and billing may be found (see annex B). It was not the intention of the present document to consider all these materials but only to review standards on metering and billing from the User point of view.

The main documents produced by ETSI have been developed by TC STQ and User Group.

5.1 User related QoS

One of the main documents in this field developed by ETSI TC STQ is the EG 202 057-1 [i.3] "User related QoS parameter definitions and measurements; part 1: General". Another EG 201 769-1 [i.4] "parameters for voice telephony service required under the ONP Voice Telephony Directive 98/10/EC [i.17]" may be used as alternative.

The following parameters related to billing are defined in the quoted ETSI Guides:

- Response time for admin/billing enquiries EG 202 057-1 [i.3], clause 5.8. The measure of this parameter applies to enquiries addressed to call centres and is defined by the mean time to answer or by the percentage of calls answered within 20 seconds. EG 201 769-1 [i.4], clause 5.7 provides a similar parameter however without referring specifically to billing enquiries.

- **Bill correctness complaints** EG 202 057-1 [i.3], clause 5.11. This parameter (expressed in %) describes the percentage of bills resulting in a customer complaint. Even if this parameter takes into account the types of billing errors it does neither detail the types of complaints nor check the validity of these complaints. This parameter is complementary to those defined in TS 102 845 [i.1]. EG 201 769-1 [i.4], clause 5.9 defines the same parameter but is less detailed than in EG 202 057-1 [i.3].

- **Prepaid account credit correctness complaints** EG 202 057-1 [i.3], clause 5.12. This parameter (expressed in %) defines the percentage of all prepaid accounts resulting in a customer complaint.

- Bill presentation quality EG 202 057-1 [i.3], clause 5.13. This parameter (expressed in MOS values) is determined by customers survey; it takes into account several criteria such as easiness to find the different information in the bill or overall quality taking into account e.g., the clarity, the understand ability.

The second and third parameters (in bold) above are linked to the contents of TS 102 845 [i.1], the other parameters being more qualifying the QoS provided by the Service provider and defined in EG 202 843 [i.6].

5.2 User perceived QoS

ETSI User Group has developed two ETSI Guides defining the user perceived quality, including parameters linked with billing:

- EG 202 009-1 [i.5]: "User Group; Quality of Telecom Services". This ETSI Guide mainly defines the different parameters which are detailed in EG 202 843 [i.6].

- EG 202 843 [i.6]: "User Group; Quality of Telecom Services; Method for testing the QoS parameters of the Customer Relationship Stages other than utilisation " has been developed by STF 374. One of the stages covered by this ETSI Guide considers Metering, Charging and billing, defining the following parameters and the test methods to assess them.

These parameters related to Metering, Charging, Billing are:

- Rate of accessibility to the tariff information [%]
- Rate of successful notification of exceeding billing budget [%]
- Notification delay of exceeding billing budget [Time]
- Rate of accessibility to the account management [%]
- Time delay of charging information [Time]
- Rate of received bills [%]
- Bill delivery delay [Time]
- Late notification of payment [%]
- Modes of billing information transfer [Number]

These parameters are complementary to the parameters checked according to TS 102 845 [i.1].

6 Overview of other organizations (including customers organisation)

STF 375 has reviewed some available studies or documents available in other standardization bodies or organizations.

6.1 TM Forum activities

TeleManagement Forum (TMF) is an important place for IT management. One of the topics covered by its activity is charging and billing, from the Service Provider point of view. However the global approach developed by TMF include some interactions with the customer, defined as "Managing Customer Experience Program".

It may be noted that TMF is also currently developing benchmarking between Service providers in order to assess the "Billing performance". ETSI documents described in the present TR consider the customers point of view whereas TMF considers the Service Providers point of view; so TMF documents and studies could be complementary of those developed by ETSI within TS 102 845 [i.1].

Within the "Managing Customer Experience" program, TMF focuses on the quality of customer experience for new services such as Mobile TV, IPTV, and VoIP.

Excerpt of parameters defined by TMF in "Billing performance" Benchmark studies is provided below:

- The "Customer Performance" parameters defined by TMF which are linked with parameters defined by ETSI ("complaints or enquiries"): e.g. "% of incoming customer queries related to billing", "% e-bills issued", "% Bills adjusted" and "% billing contacts"

- The "Billing" parameters defined by TMF are linked with parameters defined by ETSI (see in particular EG 202 843 [i.6]): e.g. "Time taken to make data available for billing", "Time taken to resolve major bill processing faults" and "Collections efficiency against credit terms".

It should be noted that TMF has approved in December 2009 a document called TR 149 "Holistic e2e Customer Experience Framework. Part 2 [i.8] of this TR provides an example Excel worksheet for applying the methodology detailed in Part 1 [i.7].

The following Key factors defined in TR 149 Part 2 [i.8] are linked to Metering, Charging and Billing:

- Distribution of Bills by Delivery Method (B-CE-1a)

- Percentage of Late Fees (B-CE-4a)

- Bill Accuracy (B-CE-4c)

- Perceived Accuracy of Billing (B-CE-4d)

Within TS 102 845 [i.1], the informative annex B defines the principles for "Case Management & Corrective Actions enforcement" and may be linked with the following parameters defined in TMF TR 149 Part 2 [i.8]:

- Billing Data Availability Time (B-OE-2c)

- Error Revenue Efficiency of Billing Process (B-OE-3a)

- Error Correction Efficiency of Billing Process (B-OE-3b)

- Percentage of Erroneous SDRs (B-OE-3c)

- Percentage of written off Collectable Debt (B-OE-3d)

- Billing Revenue Leakage (B-OE-3e)

At the date when the present document is produced there is no more investigations developed between ETSI and TMF in these matters. However, for the benefits of Service Providers and Customers it appears relevant to plan some further collaboration between ETSI and TMF in these fields.

6.2 GRAPA - The Global Revenue Assurance Professional Association

Within the review of activities on metering/Charging and billing in other bodies it seems relevant to make reference to GRAPA, which deals with revenue assurance, even if this topic was outside the scope of the STF 375.

"The GRAPA Domains specifications provide the industry with a standardized method for the designation of different areas of operational responsibility and concomitant Bodies of knowledge."

GRAPA has designated two types of Domains: Vertical (operational areas where multiple revenue streams are processed and managed) and Horizontal (which summarizes all revenue transactions for services such as voice, SMS, streaming, etc.)

It may be noted that the inventory of vertical domains includes "Post-paid Billing Systems", "Interconnect Billing Systems" and "Roaming Billing Systems".

As for TMF activities, there is no direct link between the GRAPA activities and those developed by STF 375. However, from the Service Providers view it may be useful to consider the global view provided by the different actors.

6.3 Consumers organisations

The Customers organisations receive regularly letters/mails/telephone calls from customers, some of them being directly linked with complaints or questions about billing.

STF 375 has considered in particular reports from the French Telecommunications User organization (AFUTT) and in particular reviewed a collection of the complaints received by this consumer's organization.

In 2008, within the "Complaints Top Ten list", Internet Billing and Mobile Billing appeared respectively numbers 4 and 5. Billing is within the Top5 of complaints for Fixed, mobile an Internet and it has been noted that the percentage of billing complaints increases in comparison with the whole complaints. In 2009, the ranking of these complaints is still worse.

For mobile, complaints are mainly associated to communications to/from foreign countries and to communications including multimedia services (SMS, Wap, Smartphone, etc.)

For fixed, complaint numbers are decreasing and are mainly due to calls to unknown numbers, overtaxed numbers and for some services with added values.

For internet, billing complaints is the 4th reason after complaints for "service failure", "service/equipment provision" and "contract".

The intention of the implementation of TS 102 845 [i.1] is to improve the quality of billing process and consequently to reduce the number of customers complaints.

7 Conclusion

The bibliography listed in Annex B reminds that most of the standardization bodies define standards related to metering, charging and billing processes. Nevertheless, the quality of the process itself is covered only by the documents reviewed in clauses 4 to 6 of the present document. The technical specifications defined by the STF 375 (TS 102 845 [i.1] and TS 102 846 [i.2]) give to all the stakeholders the opportunity to check and to improve the quality of this process.

The present document indicates also the potential links that could be developed in the future between standardization bodies and fora in order to define cross-references (and potential new parameters and assessment methods) between the parameters defining the Service providers billing process and those defining the process to check this billing process from the user point of view.

Annex A:
Questionnaires sent to European Regulators and Operators by STF 375

A.1 Questionnaire sent to the regulators

Germany, Spain and UK have currently defined requirements or guidance on Metering and Billing systems:

- **Germany:** Administrative Order 168/1999 "Technical Requirements for Metering and Billing Systems to Guarantee Accuracy in accordance with Section 5 of the Telecommunications Customer Protection Ordinance (TKV)" Official Gazette 23/1999 of 22 December 1999. [i.10].
- **Spain:** Orden Calidad ITC 912 2006. [i.12].
- **UK:** The Ofcom Metering & Billing Direction - 15 July 2008. [i.11].

Are there similar dispositions for metering and billing systems in your countries, or updated documents for countries listed above?
Yes / No

If the answer is Yes: Which ones? (join as far as possible an English or French version or if not possible a German one or at least a link to the relevant URL.) .....

- What are the major indicators?
- How are they measured?
- Are there target values?
- Are they currently reached?
- Are they published?

Is there any control process specified?
Yes / No

If the answer is Yes, What are the different parties involved in this control process?

- Is there a certification process or a Declaration mandatory?
- What does happen if the targets are not reached?

If such dispositions exist are they used by the consumer organizations?

If there is no such disposition would it be useful to have one?

As a Technical Specification verifying the metering and billing process exists, would the compliance with such specification be implemented?

A.2 Questionnaire sent to the Operators

Do you have knowledge of dispositions for checking metering and billing systems in the countries where your company is providing electronic communications?
Yes / No

If the answer is Yes: Which ones? (join as far as possible an English or French version or if not possible a German one or at least a link to the relevant URL.)

- What are the major indicators?
- How are they measured?
- Are there target values?
- Are they currently reached?

Is your Company currently checking for your own the metering and billing systems (on a Black Box approach)?
Yes / No

If the answer is Yes, is it done by internal services or is it outsourced?

Does your Company publish such results?

As a Technical Specification verifying the metering and billing process has been recently developed and is now available, would your Company implement such a TS?

Do you have considerations about the number of automated robots that could be relevant for such checking?

Do you have any suggestion on the Annex A of the Technical specification (defining the Stratified Sample of Electronic Communications)?

Annex B: Bibliography

The following documents are not analyzed in the present document. However they can be considered for supplementary information.

B.1 Standards

- ETSI EG 202 009-2: "User Group; Quality of Telecom Services; Part 2: User related parameters on a service specific basis".
- ETSI TS 101 456: "Electronic Signatures and Infrastructures (ESI); Policy requirements for certification authorities issuing qualified certificates."
- ISO 4217: "International Organization for Standardization; Type Currency Code List".
- ISO-CEI EN 45011: "General requirements for bodies operating product certification systems." (ISO/IEC Guide 65:1996)
- TMF TR148; Technical Report: Managing the Quality of Customer Experience
- ETSI ES 282 010 V2.0.6 (2008-04): "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Charging management [Endorsement of 3GPP TS 32.240 Release 7, 3GPP TS 32.260 Release 7, 3GPP TS 32.297 Release 7, 3GPP TS 32.298 Release 7 and 3GPP TS 32.299 Release 7, modified]
- ETSI ES 283 003: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); IP Multimedia Call Control Protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP) Stage 3 [3GPP TS 24.229 [Release 7], modified]".
- ETSI TR 101 619 (V1.1.1): "Network Aspects (NA); Considerations on network mechanisms for charging and revenue accounting."
- ETSI TS 122 115: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Service aspects; Charging and billing (3GPP TS 22.115 version 8.3.0 Release 8)
- ETSI TS 129 458: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); TISPAN; SIP Transfer of IP Multimedia Service Tariff Information; Protocol specification (3GPP TS 29.458 V8.1.0 Release 8)".
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- ETSI TS 181 002: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Multimedia Telephony with PSTN/ISDN simulation services".
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- IETF RFC 2976: "The SIP INFO Method".
- IETF RFC 4006: "Diameter Credit-Control Application".

B.2 French documents

- "Arrêté 83-50/A du 3 octobre 1983 relatif à la facturation."
- "Ordonnance n° 86-1243 du l[er] décembre 1986 relative à la liberté des prix et de la concurrence."
- "Arrêté du 03/12/1987 relatif a l'information du consommateur sur les prix et la circulaire d'application du 19/07/1988."
- "Décret n° 92-1244 du 27 novembre 1992 et instruction administrative du l[er] mars 1993 relatifs aux mentions devant obligatoirement, figurer sur les factures."
- "Code de la Consommation."
- "Code des postes et télécommunications."
- "Les autorisations d'exploitation des services de téléphonie."
- COFRAC CEPE REF21-01: "Exigences spécifiques pour la qualification des tiers de confiance".
- "Loi sur l'information n° 78-17 du 6 janvier 1978 relative à l'informatique, aux fichiers et aux libertés."

History

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