SLOVENSKI STANDARD
SIST I-ETS 300 819 E1:2003

01-december-2003

Telekomunikacijsko upravljavno omrežje (TMN) – Funkcijska specifikacija za upravljanje informacij o merjenju zasedenosti na vmesniku operacijski sistem/omrežni element (NE/OS)

Telecommunications Management Network (TMN); Functional specification of usage metering information management on the Operations System/Network Element (OS/NE) interface

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST I-ETS 300 819 E1:2003
https://standards.iteh.ai/catalog/standards/sist/56b7340a-94f0-43db-a073-75485e8ed029/sist-i-ets-300-819-e1-2003

Ta slovenski standard je istoveten z: **I-ETS 300 819 Edition 1**

ICS:

33.040.40	Podatkovna komunikacijska omrežja	Data communication networks

SIST I-ETS 300 819 E1:2003 **en**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

SIST I-ETS 300 819 E1:2003

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST I-ETS 300 819 E1:2003
https://standards.iteh.ai/catalog/standards/sist/56b7340a-94f0-43db-a073-75485e8ed029/sist-i-ets-300-819-e1-2003

SIST I-ETS 300 819 E1:2003

INTERIM
EUROPEAN
TELECOMMUNICATION
STANDARD

I-ETS 300 819

June 1998

Source: NA

Reference: DI/NA-043321

ICS: 33.020

Key words: TMN, information model, NE, Q3 interface

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST I-ETS 300 819 E1:2003
https://standards.iteh.ai/catalog/standards/sist/56b7340a-94f0-43db-a073-

Telecommunications Management Network (TMN); Functional specification of usage metering information management on the Operations System/Network Element (OS/NE) interface

ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE
Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE
Internet: secretariat@etsi.fr - http://www.etsi.fr - http://www.etsi.org

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

Copyright Notification: No part may be reproduced except as authorized by written permission. The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 1998. All rights reserved.

SIST I-ETS 300 819 E1:2003

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST I-ETS 300 819 E1:2003
https://standards.iteh.ai/catalog/standards/sist/56b7340a-94f0-43db-a073-75485e8ed029/sist-i-ets-300-819-e1-2003

Whilst every care has been taken in the preparation and publication of this document, errors in content, typographical or otherwise, may occur. If you have comments concerning its accuracy, please write to "ETSI Standards Making Support Dept." at the address shown on the title page.

SIST I-ETS 300 819 E1:2003

Contents

Foreword 7

1 Scope 9

2 Normative references 9

3 Definitions and abbreviations 11
3.1 Definitions 11
3.2 Abbreviations 11

4 General 12
4.1 Requirements for usage metering 12
4.2 Use of Usage Metering Records (UMR) 12

5 Conceptual model 13

6 Management Functions (MFs) and services 14
6.1 Usage metering control function 15
6.1.1 Initiate usage metering 15
6.1.2 Terminate usage metering 16
6.1.3 Get usage metering control data 16
6.1.4 Modify usage metering control data 16
6.2 Usage metering data function 16
6.3 Real-time UMR reporting function 16
6.4 Near real-time UMR reporting function 18
6.4.1 Initiation of UMR block logging 19
6.4.2 Transmission of record blocks 20
6.5 UMR transfer via file generating log 20
6.5.1 Initiation of UMR logging 21
6.5.2 Generation of a UMR file 21
6.5.3 Internal generation of a UMR file 22
6.5.4 File transfer and deletion 22

7 Functional units 23
7.1 Functional units 24
7.2 Functional units from other Recommendations 24
7.3 Negotiation of functional units 24

8 Conformance 25
8.1 Static conformance 25
8.2 Dynamic conformance 25

Annex A (normative): Information model 26

A.1 Overview 26

A.2 Naming hierarchy 27

A.3 Inheritance 27

A.4 Managed object classes 28
A.4.1 Block generating log 28
A.4.2 File generating log 28
A.4.3 Simple usage metering control 29
A.4.4 Usage metering data 29
A.4.5 Usage metering log record 30

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST I-ETS 300 819 E1:2003
https://standards.iteh.ai/catalog/standards/sist/56b7340a-94f0-43db-a073-75485e8cd020/sist-i-ets-300-819-e1-2003

SIST I-ETS 300 819 E1:2003

A.5 Packages 31
A.5.1 Access delivery package 31
A.5.2 Called party number package 31
A.5.3 Calling party category package 32
A.5.4 Calling party number not screened package 32
A.5.5 Calling party number package 32
A.5.6 Calling party type package 32
A.5.7 Cause package 32
A.5.8 Charging information package 32
A.5.9 Conversation time package 32
A.5.10 Daily triggering package 32
A.5.11 Data validity package 32
A.5.12 Duration time ACM package 33
A.5.13 Duration time B-answer package 33
A.5.14 Duration time No B-answer package 33
A.5.15 Exchange info package 33
A.5.16 Fallback service package 33
A.5.17 File creation notification package 33
A.5.18 Immediate notification package 33
A.5.19 IN package 33
A.5.20 Network provider Id package 33
A.5.21 Operator specific1 additional number package 34
A.5.22 Operator specific1 number package 34
A.5.23 Operator specific2 additional number package 34
A.5.24 Operator specific2 number package 34
A.5.25 Operator specific3 additional number package 34
A.5.26 Operator specific3 number package 34
A.5.27 Original called number package 34
A.5.28 Partial generation package 34
A.5.29 Physical line code package 34
A.5.30 Progress package 35
A.5.31 Received digits package 35
A.5.32 Record extensions package 35
A.5.33 Record Id package 35
A.5.34 Redirecting number package 35
A.5.35 Redirection number package 35
A.5.36 Related call number package 35
A.5.37 Standard extensions package 35
A.5.38 Supplementary service list package 35
A.5.39 Trunk group incoming package 36
A.5.40 Trunk group outgoing package 36
A.5.41 UMR purpose package 36
A.5.42 User to user info counters package 36

A.6 Attributes 36
A.6.1 Access delivery 36
A.6.2 Call identification number 36
A.6.3 Called party number 37
A.6.4 Calling party category 37
A.6.5 Calling party number 37
A.6.6 Calling party number not screened 37
A.6.7 Calling party type 38
A.6.8 Cause 38
A.6.9 Charging information 38
A.6.10 Conversation time 38
A.6.11 Creation trigger list 39
A.6.12 Data validity 39
A.6.13 Duration time ACM 39
A.6.14 Duration time B-answer 39
A.6.15 Duration time no B-answer 39
A.6.16 Exchange info 40
A.6.17 Fallback service 40
A.6.18 Immediate notification 40

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST I-ETS 300 819 E1:2003
https://standards.iteh.ai/catalog/standards/sist/56b7540a-940-43db-a073-5405e8ed029/sist-i-ets-300-819-e1-2003

SIST I-ETS 300 819 E1:2003

A.6.19 IN specific information 40
A.6.20 IN service information list 41
A.6.21 Max block size 41
A.6.22 Max time interval 41
A.6.23 Network provider Id 42
A.6.24 Operator specific1 additional number 42
A.6.25 Operator specific1 number 42
A.6.26 Operator specific2 additional number 42
A.6.27 Operator specific2 number 42
A.6.28 Operator specific3 additional number 43
A.6.29 Operator specific3 number 43
A.6.30 Original called number 43
A.6.31 Partial generation 43
A.6.32 Physical line code 43
A.6.33 Progress 44
A.6.34 Received digits 44
A.6.35 Record extensions 44
A.6.36 Record Id 44
A.6.37 Record type 44
A.6.38 Redirecting number 45
A.6.39 Redirection number 45
A.6.40 Related call number 45
A.6.41 Service type 45
A.6.42 Service user 46
A.6.43 Standard extensions 46
A.6.44 Start time stamp 46
A.6.45 Supplementary service list 46
A.6.46 Times of day 47
A.6.47 Trunk group incoming 47
A.6.48 Trunk group outgoing 47
A.6.49 UMR purpose 48
A.6.50 Usage metering data identifier 48
A.6.51 User to user info counters 48

A.7 Actions 48
A.7.1 Create file 48

A.8 Notifications 49
A.8.1 Block record notification 49
A.8.2 File creation notification 49
A.8.3 UMR notification 49

A.9 Name bindings 49

A.10 ASN.1 defined types module 50

Annex B (normative): Usage metering records 62

B.1 General 62
B.1.1 Use of record types 62
B.1.2 Partial records 62
B.1.3 Use of supplementary services 62

B.2 Record contents 63

Annex C (informative): Alternative ASN.1 definitions 65

C.1 Definition of ASN.1 modules for use of 1994 version of ASN.1 65

C.2 Rules of extensibility 66

C.3 Use of management extension 67

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST I-ETS 300 819 E1:2003
https://standards.iteh.ai/catalog/standards/sist/56b7340a-94f0-43db-a073-73485e8ed029/sist-i-ets-300-819-e1-2003

SIST I-ETS 300 819 E1:2003

History 68

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST I-ETS 300 819 E1:2003
https://standards.iteh.ai/catalog/standards/sist/56b7340a-94f0-43db-a073-75485e8ed029/sist-i-ets-300-819-e1-2003

SIST I-ETS 300 819 E1:2003

Foreword

This Interim European Telecommunication Standard (I-ETS) has been produced by the Network Aspects (NA) Technical Committee of the European Telecommunications Standards Institute (ETSI).

An ETSI standard may be given I-ETS status either because it is regarded as a provisional solution ahead of a more advanced standard, or because it is immature and requires a "trial period". The life of an I-ETS is limited to three years after which it can be converted into an ETS, have it's life extended for a further two years, be replaced by a new version, or be withdrawn.

Announcement date	
Date of adoption of this I-ETS:	19 June 1998
Date of latest announcement of this I-ETS (doa):	30 September 1998

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST I-ETS 300 819 E1:2003
https://standards.iteh.ai/catalog/standards/sist/56b7340a-94f0-43db-a073-75485e8ed029/sist-i-ets-300-819-e1-2003

SIST I-ETS 300 819 E1:2003

Blank page

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST I-ETS 300 819 E1:2003
https://standards.iteh.ai/catalog/standards/sist/56b7340a-94f0-43db-a073-75485e8ed029/sist-i-ets-300-819-e1-2003

SIST I-ETS 300 819 E1:2003

1 Scope

This Interim European Telecommunication Standard (I-ETS) specifies the management information model which covers the management aspects of the "usage metering information" function.

The model specified in this I-ETS applies to the Operations System to Network Element (OS/NE) interface.

The scope is further limited to the following priorities assigned for the scope of the work:

- modelling of the requirements for the analogue, digital and Integrated Services Digital Network (ISDN) subscribers;

- modelling of these subscribers requirements in connection with Intelligent Networks (INs).

The scope of this I-ETS is also to give a list of elements needed to provide a complete usage information record to be utilized for charging and itemized billing and accounting. Collected data will be formatted and sent to the specialized centre (OS). The use of this data for other purposes, e.g. statistics, customer care etc. is possible, but out of the scope of this I-ETS.

Usage metering in connection with operator assisted calls is out of the scope of this I-ETS.

NOTE: The modelling of the charging and the billing processes is outside the scope of this I-ETS. Nevertheless, the usage metering record defined in this I-ETS may contain charge information if the calculation of charge is performed by the NE itself.

2 Normative references

iTeh STANDARD PREVIEW
(standards.iteh.ai)

This I-ETS incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this I-ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

SIST I-ETS 300 819 E1:2003
https://standards.iteh.ai/catalog/standards/sist/56b7340a-94f0-43db-a073-75485e8ed029/sist-i-ets-300-819-e1-2003

[1] ETS 300 182 (1993): "Integrated Services Digital Network (ISDN); Advice of Charge (AOC) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol".

[2] ETS 300 196-1 (1993): "Integrated Services Digital Network (ISDN); Generic functional protocol for the support of supplementary services; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[3] ETS 300 356-1 (1994): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 1: Basic services [ITU-T Recommendations Q.761 to Q.764 (1993), modified]".

[4] ETS 300 374-1 (1994): "Intelligent Network (IN); Intelligent Network Capability Set 1 (CS1); Core Intelligent Network Application Protocol (INAP)".

[5] EN 300 403-1 (1994): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 1: Protocol specification [ITU-T Recommendation Q.931 (1993), modified]".

[6] ETS 300 738 (1996): "Human Factors (HF): Minimum Man-Machine Interface (MMI) to public network based supplementary services".

[7] ITU-T Recommendation M.3100 (1992): "Generic network information model".

[8] ITU-T Recommendation M.3200 (1992): "TMN Management Service: Overview".

SIST I-ETS 300 819 E1:2003

[9] ITU-T Recommendation Q.811 (1993): "Lower layer protocol profiles for the Q3 and X interfaces".

[10] ITU-T Recommendation Q.812 (1993): "Upper layer protocol profiles for the Q3 and X interfaces".

[11] ITU-T Recommendation Q.850 (1993): "Usage of cause and location in the digital subscriber signalling system no. 1 and signalling system no. 7 ISDN user part".

[12] ITU-T Recommendation X.209 (1988): "Specification of basic encoding rules for Abstract Syntax Notation One (ASN.1)".

[13] ITU-T Recommendation X.680 (1993): "Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation".

[14] ITU-T Recommendation X.681 (1993): "Information technology - Abstract Syntax Notation One (ASN.1): Information object specification".

[15] ITU-T Recommendation X.682 (1993): "Information technology - Abstract Syntax Notation One (ASN.1): Constraint specification".

[16] ITU-T Recommendation X.683 (1993): "Information technology - Abstract Syntax Notation One (ASN.1): Parameterization of ASN.1 specifications".

[17] ITU-T Recommendation X.701 (1992): "Information technology - Open Systems Interconnection - Systems management overview".

[18] ITU-T Recommendation X.721 (1992): "Information technology - Open Systems Interconnection - Structure of management information: definition of management information".

[19] ITU-T Recommendation X.722 (1992): "Information technology - Open Systems Interconnection - Structure of management information: Guidelines for the definition of managed objects".

[20] ITU-T Recommendation X.730 (1992): "Information technology - Open Systems Interconnection - Systems Management: Object Management Function".

[21] ITU-T Recommendation X.734 (1992): "Information technology - Open Systems Interconnection - Systems management: Event report management function".

[22] ITU-T Recommendation X.735 (1992): "Information technology - Open Systems Interconnection - Systems management: Log control function".

[23] ITU-T Recommendation X.742 (1994): "Information technology - Open Systems Interconnection - Systems management - Usage metering function for accounting purposes".

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST I-ETS 300 819 E1:2003
https://standards.iteh.ai/catalog/standards/sist/5f6f7d4a-1f0f-4f3b-9f7c-2f4f6e8d0b1c/sist-i-ets-300-819-e1-2003

SIST I-ETS 300 819 E1:2003

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this I-ETS, the following definitions apply:

charging: The set of functions needed to determine the amount of charge units to be assigned to the service utilization.

service subscriber: Is the legal entity, which has subscribed to a certain service type. It is not necessarily a different party from the service user. (The calling and called parties of a service transaction are service users).

usage metering: The abstraction of activities that monitor the utilization of resources, for the purpose of accounting and controlling the recording of usage data.

usage metering data: Data which represents usage from which usage metering records may be derived.

usage metering record: A data item containing usage information relating to a specific period of resource utilization by a specific user.

usage: Quantification of the utilization of a resource from which information may be derived for the purpose of accounting.

user: An identifiable entity whose use of resources shall be accounted.

3.2 Abbreviations

iTeh STANDARD PREVIEW
(standards.iteh.ai)

For the purposes of this I-ETS, the following abbreviations apply:

SIST I-ETS 300 819 E1:2003
https://standards.iteh.ai/catalog/standards/sist/56b7340a-94f0-43db-a073-73485c8ed029/sist-i-ets-300-819-e1-2003

ACM	Address Complete Message
AOC	Advice of Charge
ASN.1	Abstract Syntax Notation No.1
CLIP	Calling Line Identity Presentation
DDI	Direct Dialling In
DN	Directory Number
EFD	Event Forwarding Discriminator
FCI	Furnish Charging Information
IAM	Initial Address Message
IN	Intelligent Network
INAP	Intelligent Network Application Protocol
ISDN	Integrated Services Digital Network
ISUP	ISDN User Part
MF	Management Function
MML	Man Machine Language
MOCS	Managed Objects Conformance Statement
MSN	Multiple Subscriber Number
NE	Network Element
NEF	Network Element Function
NPI	Numbering Plan Identification
OS	Operations System
OSF	Operations System Function
PSTN	Public Switched Telephone Network
TMN	Telecommunications Management Network
TON	Type Of Number
UMR	Usage Metering Record
UPT	Universal Personal Telecommunication
VAS	Value Added Service

SIST I-ETS 300 819 E1:2003

4 General

4.1 Requirements for usage metering

The usage measuring function shall fulfil the requirements by which resource utilization is determined so that the data that are gathered may be used for the process of accounting management and the generation of bills. The following requirements should be met:

- The function shall allow sufficient control over the collection of usage data so that the relevant information can be made available when required. A management system should have the capability to access individual usage records almost instantaneously. This feature is required e.g. for real time cost calculation like hot billing.

- A management system shall have a standardized way of obtaining and representing usage information to advise subscribers of their usage and to facilitate exchange of usage information with other suppliers.

- The usage record shall be self-contained, i.e. the interpretation of the record shall not be dependent on the system where the usage record was created.

- Several resources may be utilized to provide a service. The function should make it possible to relate usage-records to the resources that are actually used for providing the requested service.

- The function should support a number of conditions for reporting of a usage record. Conditions that will cause the reporting of a usage record are:

  - termination of a service;
  - change of service e.g. due to change of charging conditions;
  - reaching a volume threshold;
  - at regular intervals during a practical service transaction.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

4.2 Use of Usage Metering Records (UMR)

SIST I-ETS 300 819 E1:2003
https://standards.iteh.ai/catalog/standards/sist/56b7340a-94f0-43db-a073-75485e8ed029/sist-i-ets-300-819-e1-2003

Subscriber billing

The usage metering data collected from the Network Elements (NE) is employed to determine the network resources utilization charges for the basic and supplementary services utilized by the subscriber. The charges calculated are then combined with the network access (subscription) charges and billed to those customers served by the Operations System Function (OSF).

Account settlement management

The settlement of accounts with the operators of other networks for traffic carried, is generally performed on a bulk basis. Accounting information may also be used for settlement of accounts with services provided by services centres and other Value Added Service (VAS) providers. The charges for the various traffic shares may be determined on the basis of the call records generated by the NEs or on the basis of bulk counters (accounting meter records) in the gateway exchanges. For the purpose of this specification, the management information required is assumed to be derived from usage metering records. The management of bulk meters is outside the scope of this I-ETS.

SIST I-ETS 300 819 E1:2003

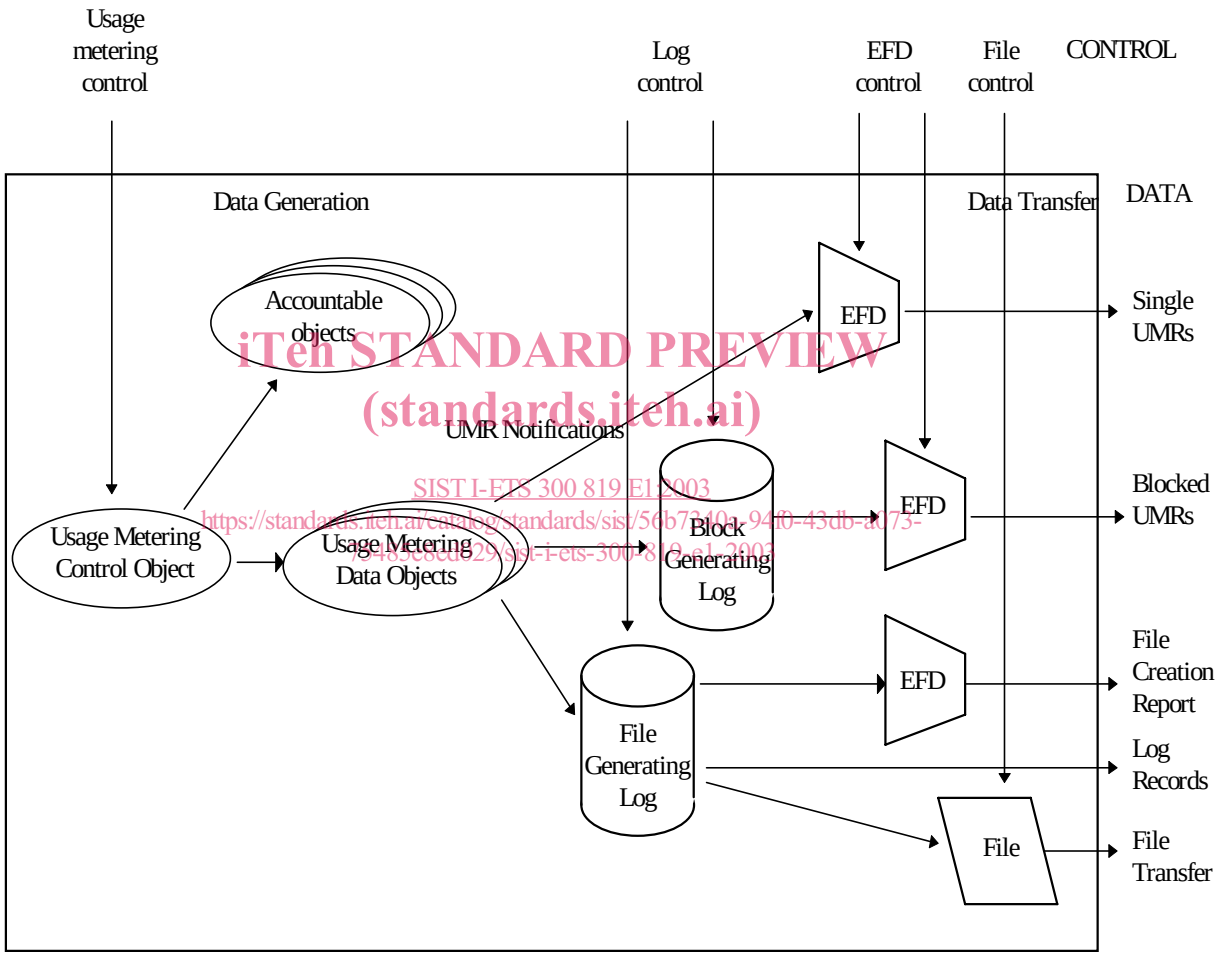
Service provision

The usage metering data collected from the NEs may be used to provide statistical information concerning the use of services within the network. In addition, the introduction of new services and/or modifications to the tariffs of existing services may also require the distribution of the appropriate tariff information to the NEs for Advice Of Charge (AOC) purposes. The management of tariff information is outside the scope of this I-ETS.

Customer administration

The call data collected from the NEs provides a historic record of subscriber activity and may be used for the handling of customer care enquiries such as billing complaints, statistic analysis, detection of abnormal use etc.

5 Conceptual model



iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST I-ETS 300 819 E1:2003
https://standards.iteh.ai/catalog/standards/sist/56b7340a-94f0-43db-a073-75485c8ed629/sist-i-ets-300-819-e1-2003

Figure 1: Data collection model

This I-ETS is a specialization of ITU-T Recommendation X.742 [23]. ITU-T Recommendation X.742 [23] defines the following object classes to control and collect the usage metering data:

- **usage metering control object** that is used to control the collection of usage data for one or more accountable objects (resource being used);

- **usage metering data object** that contains the collected information.