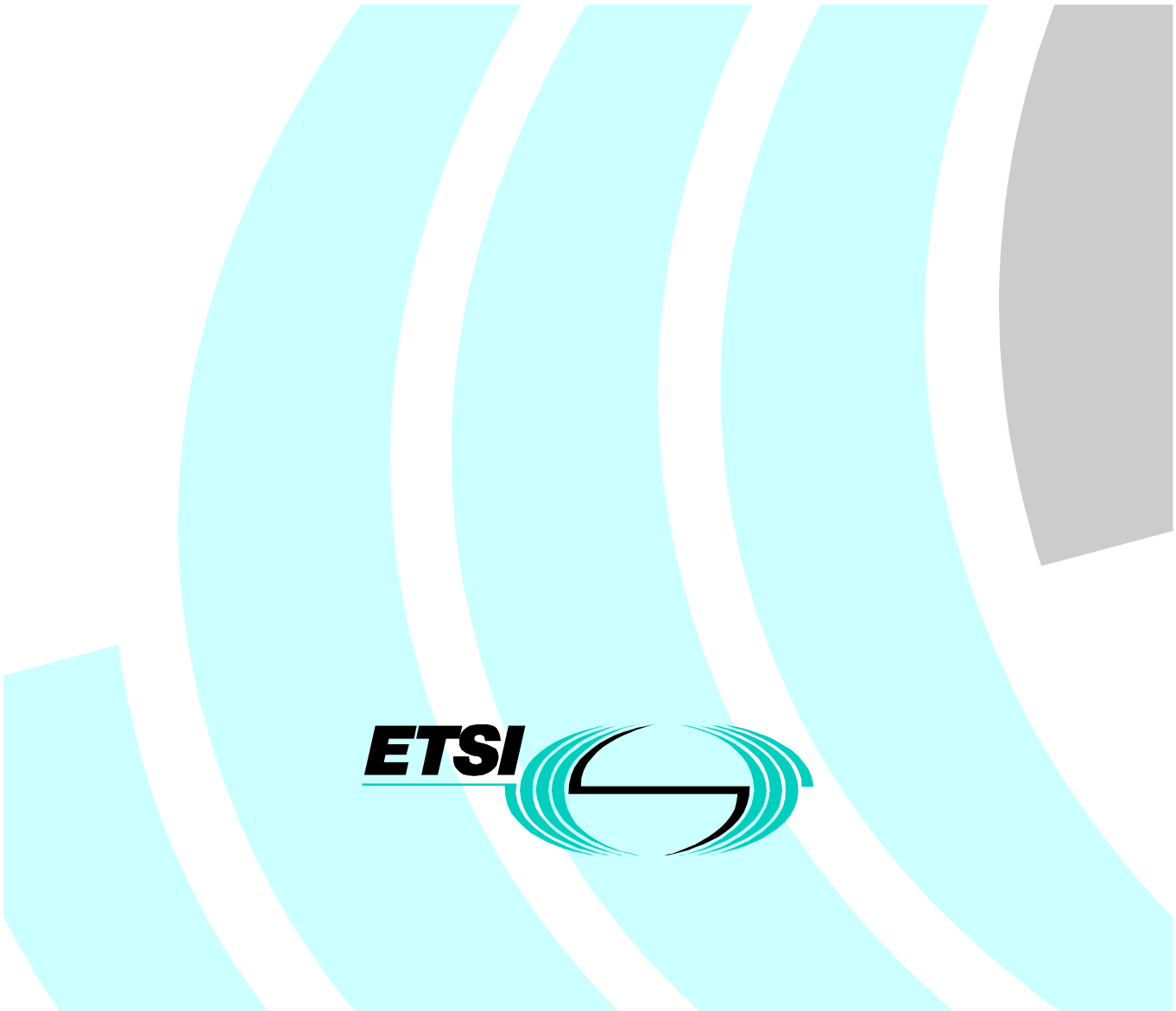
EN 301 131 V1.1.1 (1999-01)

European Standard (Telecommunications series)

Integrated Services Digital Network (ISDN); Teleaction teleservice; Service description



Reference
DEN/NA-022240 (ah000ico.PDF)

Keywords
ISDN, stage 1, teleaction, supplementary service

ETSI

Postal address
F-06921 Sophia Antipolis Cedex - FRANCE

Office address
650 Route des Lucioles - Sophia Antipolis
Valbonne - 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
Sous-Préfecture de Grasse (06) N° 7803/88

Internet
secretariat@etsi.fr
Individual copies of this ETSI deliverable
can be downloaded from
http://www.etsi.org
If you find errors in the present document, send your
comment to: editor@etsi.fr

Contents

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available **free of charge** from the ETSI Secretariat. Latest updates are available on the ETSI Web server (http://www.etsi.org/ipr).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Network Aspects (NA).

In accordance with CCITT Recommendation I.130 [1], the following three level structure is used to describe the supplementary telecommunications services by European public telecommunications operators under the pan-European Integrated Services Digital Network (ISDN):

- Stage 1: is an overall service description, from the user's standpoint;
- Stage 2: identifies the functional capabilities and information flows needed to support the service described in stage 1;
- Stage 3: defines the signalling system protocols and switching functions needed to implement the service described in stage 1.

The present document relates to stage 1 (overall service description) for the teleaction bearer service in ISDN.

National transposition dates	
Date of adoption of this EN:	25 December 1998
Date of latest announcement of this EN (doa):	31 March 1999
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 September 1999
Date of withdrawal of any conflicting National Standard (dow):	30 September 1999

1 Scope

The present document defines the stage one of the teleaction bearer service for the pan-European Integrated Services Digital Network (ISDN) as provided by European public telecommunications operators. Stage one is an overall service description from the user's point of view (see CCITT Recommendation I.130 [1]), but does not deal with the details of the human interface itself.

The present document defines the interworking requirements for the teleaction bearer services supported by networks other than ISDN (including private ISDNs) with the teleaction bearer services described in the present document.

The present document does not specify the additional requirements where the service is provided to the user via a telecommunications network that is not ISDN but does include interworking requirements of other networks with the public ISDN.

Charging principles are outside the scope of the present document.

Teleaction is a service providing for reliable low volume data communication and allied processing service to the users. The teleaction bearer service can be used for applications such as monitoring, indicating, controlling or verifying of remote events, operations, and measurements.

The present document is applicable to the stage two and stage three standards for the ISDN teleaction bearer service. The terms "stage two" and "stage three" are also defined in CCITT Recommendation I.130 [1]. Where the text indicates the status of a requirement (i.e. as strict command or prohibition, as authorization leaving freedom, or as a capability or possibility), this needs to be reflected in the text of the relevant stage two and stage three standards. Furthermore, conformance to the present document is met by conforming to the stage three standard with the field of application appropriate to the equipment being implemented. Therefore, no method of testing is provided for the present document.

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, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] CCITT Recommendation I.130 (1988): "Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".

[2] ITU-T Recommendation I.112 (1993): "Vocabulary of terms for ISDNs".

[3] ITU-T Recommendation I.210 (1993): "Principles of telecommunication services supported by an ISDN and the means to describe them".

[4] CCITT Recommendation Q.9 (1988): "Vocabulary of switching and signalling terms".

[5] EN 50136-1-1 (1996): "Alarm systems, Alarm transmission systems and equipment - Part 1-1: General requirements for alarm transmission systems".

[6] ITU-T Recommendation X.2 (1996): "International user classes of service in, and categories of access to, public data networks and Integrated Services Digital Networks (ISDNs)".

[7] ITU-T Recommendation X.25 (1996): "Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit".

[8] ETS 300 011: "Integrated Services Digital Network (ISDN); Primary rate user-network interface; Layer 1 specification and test principles".

[9] ETS 300 012: "Integrated Services Digital Network (ISDN); Basic user-network interface; "Layer 1 specification and test principles".

[10] ETS 300 049: "Integrated Services Digital Network (ISDN); ISDN Packet Mode Bearer Service (PMBS); ISDN Virtual Call (VC) and Permanent Virtual Circuit (PVC) bearer services provided by the D-channel of the user access - basic and primary rate".

[11] ETS 300 402-1: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Data link layer; Part 1: General aspects [ITU-T Recommendation Q.920 (1993), modified]".

3 Definitions and abbreviations

3.1 Definitions

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

Integrated Services Digital Network (ISDN): See ITU-T Recommendation I.112 [2], paragraph 2.3, definition 308.

service; telecommunications service: See ITU-T Recommendation I.112 [2], paragraph 2.2, definition 201.

supplementary service: See ITU-T Recommendation I.210 [3], paragraph 2.4.

Basic Network Provider (BNP): The one responsible for the installation and the maintenance of the network supporting the teleaction bearer service.

Teleaction Management Function Provider (TMFP): The one responsible for the installation and maintenance of one or more of the TMFs. A TMFP may be the same as the BNP.

Teleaction Management Function (TMF): Set of network functions added to either the public ISDN, a private ISDN or assigned to a separate public, or private, network entity. The tasks of the TMF are:

- ensure reliable communication paths between the End User Terminals (EUTs) and the Service Provider Terminal (SPT), i.e. to ensure available and secure access for the EUTs to the network and communication paths for the SPT in the ISDN, respectively;
- authorization of connected EUTs/SPTs;
- EUT/SPT functionality check;
- address the appropriate EUT/SPT for transfer of information generated by SPT/EUT;
- as a TMFP option, broadcast appropriate EUTs for transfer of information generated by a SPT.

The TMF executes these functions by polling the EUTs and the SPTs. The TMF stores status information obtained through the polling procedures. Depending on the application, EUT status information may be sent to the SPT either on request or immediately after a change of status has occurred.

NOTE 1: If the SP operates through the Packet Switched Data Network or a dedicated network, the TMF is considered to be the interworking unit and is, therefore, required to perform adequate protocol translation/conversion.

NOTE 2: In this description it is expected that all information transfer between an EUT and a SPT is routed via a TMF. This will allow the TMF to verify that an EUT - SPT communication path is available. However, paths directly between EUT and SPT may also be used if the TMF can verify that such a path is available. This is for further study (see also note 4).

NOTE 3: It is expected that the basic ISDN at a later phase will include maintenance functions which may be used to ensure reliable communications paths between EUTs and SPTs (e.g. maintenance of subscriber access). The TMF may take advantage by using these functions after they will have became available. The ISDN maintenance functions are for further study.

NOTE 4: The possibility of performing TMF functions by means other than polling, e.g. reporting procedures, is for further study.

Authorization and functionality check of the SPT and EUT are outside the scope of the present document.

End User (EU): The one to whom a teleaction application service is provided or who is affected by that application service.

Service Provider (SP): The one who, by using one or more TMFs, provides a teleaction application service to one or more EUs.

NOTE 5: The SP may be the BNP, the TMFP, or another organization responsible for one or more SPT.

End User Terminal (EUT): A device (or location of a device) that, depending on the application (e.g. by monitoring of subdevices):

- on the basis of local conditions or by interrogation, generates information and presents this information for transmission by the network to a SPT;
- receives information from a SPT in order to affect local conditions;
- upon polling requests received from a TMF executes the requested local actions (e.g. authorization, functionality checks, etc.) and sends appropriate responses to the TMF.

NOTE 6: Authorization and functionality checks are outside the scope of the present document.

Service Provider Terminal (SPT): A device (or location of such a device) which, depending on the application:

- receives information from one or more EUTs for handling and processing in accordance with the application service offered by the Service Provider (SP);
- generates control messages and information requests and presents that information for transmission to one or more EUTs;
- monitors EUTs on the network, either by retrieving EUT status information stored in TMFs, and/or by receiving status information automatically from TMFs (e.g. alarms);
- receives polling requests from TMFs and sends appropriate responses to the TMF;
- transfers to the TMF information to be broadcasted to the EUTs, if the broadcast functionality is supported by the TMF.

NOTE 7: Execution of local procedures such as authorization and functionality check are outside the scope of the present document.

EU access capability: The telecommunication means used between an EUT and a TMF (e.g. ISDN bearer service, dedicated connection, etc.).

SPT access capability: The telecommunication means used between a SPT and a TMF (e.g. ISDN bearer service, dedicated connection, etc.).

Teleaction application: The teleaction application is one specific end to end application offered by a service provider using the teleaction bearer service.

Teleaction bearer service: The teleaction bearer service is the transport mechanism used by a teleaction application.

3.2 Abbreviations

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

BNP	Basic Network Provider
DTN	Dedicated Teleaction Network
EU	End User
EUT	End User Terminal
ISDN	Integrated Services Digital Network
PLL	Permanent Logical Link
SP	Service Provider
SPT	Service Provider Terminal
TMF	Teleaction Management Function
TMFP	Teleaction Management Function Provider

4 Description

Teleaction is a service providing for reliable low volume data communication and allied processing service to the users. The teleaction bearer service can be used for applications such as monitoring, indicating, controlling or verifying of remote events, operations, and measurements.

The teleaction bearer service allows the exchange of low volume digital information between the End User (EU) and SP. A two-way simultaneous information transfer shall be continuously available during the information transfer phase. This shall apply also in such cases where only one-way information transfer is required by the application. The teleaction bearer service shall connect EUs to one or more SPs. Each EUT is logically associated with only one SPT. An EU may consist of more than one EUT. Messages from EUs shall be conveyed to one or more SPs, and vice versa.

NOTE 1: The context where one EUT communicates with several SPTs is outside the scope of the present document.

EUs and SPs shall access the network via ISDN T reference point, or coincident S and T reference point using standardized protocols defined for teleaction.

NOTE 2: SPs may be connected to networks other than ISDN. Interworking with these networks will then be necessary.

The applications of the teleaction bearer service can be divided into two basic categories, each with its own network implications and specific security functions. These categories are:

1) applications without other specific requirements regarding service reliability and security functions than those offered by the bearer service, i.e. **non-sensitive** applications;

2) applications with additional security and reliability requirements, i.e. **sensitive** applications.

Several levels of reliability and security shall, therefore, be offered with the teleaction bearer service in order to ensure reliable communications paths between the EUs and the SPs, and to prevent unauthorized data traffic or unauthorized access to EU data. To achieve this goal, TMFs shall be either added to the basic ISDN network or be assigned to a separate entity. The level of reliability and security shall be application dependent (see clause 8). Transmission delay between EUT and SPT shall conform to the delay categories defined in subclause 8.4.1 as appropriate for the service application.

5 Procedures

The context used when defining these procedures is outlined in annex A.

5.1 Provision and withdrawal

Basic Network Provider (BNP) and TMFP can be different organizations.

The teleaction bearer service shall be provided by the BNP on demand of one of the two linked parties with the assent of the other party.

Depending on the service provision characteristics, several subscription arrangements can be possible, e.g. indication of special user requirements (periodicity of polling, etc.).

The teleaction bearer service shall be withdrawn if requested by one party, by the BNP, or for administrative reasons.

5.2 Normal Procedures

5.2.1 Activation, Deactivation, Registration

5.2.1.1 Activation

Activation of the teleaction bearer service shall be performed by the BNP.

Activation shall make the necessary access capabilities available to both the EUT and the SPT (bearer service, dedicated connections, etc.) and shall also include activation of the TMF (starts EUT polling, etc.). The operation of the TMF shall be as described in subclause 6.2.2.

NOTE: As seen from the EU, activation of the teleaction bearer service makes the teleaction application supported by the SP available to the user (ready for invocations, e.g. send an alarm).

As seen from the SP, the teleaction application shall be made available through the network. Thereafter the application supported by the SP can be made available (activated) for each specific EU subscribing to the teleaction bearer service.

As a service provider option, the EU can have the possibility to dynamically activate the teleaction bearer service.

5.2.1.2 Deactivation

Deactivation of the teleaction bearer service shall be performed by the BNP.

As a SP option, the EU can have the possibility to dynamically deactivate the teleaction bearer service.

5.2.1.3 Registration

As a TMFP option, registration procedures can exist to enable the SP to choose the level of reliability, security and/or transmission delay as well as the SPT polling intervals used by the TMF. For some applications one or more of these levels may be fixed at provision time and may not be individually set (or reset) by the SP.

According to the level(s) offered by the SP, the EU can, as a TMFP option, select the appropriate level based on corresponding procedure.

The procedures used by the EU and the registration procedures for SPs are outside the scope of the present document.

5.2.2 Invocation and Operation

5.2.2.1 Originating the service (call establishment)

The establishment of communication between an EUT and a SPT happens in two phases:

Phase 1: Establishment of a communication path between EUT and TMF, and a communication path between SPT and TMF.

Phase 2: Establishment of a communication path between EUT and SPT using the two communication paths established in phase 1.

NOTE 1: All information transfer between an EUT and a SPT is routed via a TMF (see note 2 in clause 3, TMF definition).

NOTE 2: A phase 1 communication path between a SPT and a TMF may be used for several phase 2 communication paths.

The originating party can be the EUT or the SPT (application and situation dependent). EUT, SPT, or TMF may initiate phase 1 establishment. EUT or SPT may initiate phase 2 establishment.

The two phase 1 communications paths can have different modes, and shall be independent from the mode used for the phase 2 path.

Phase 1 establishment, EUT - TMF, and SPT - TMF:

- **permanent connection mode:** establishment shall take place at activation time (at the latest);
- **establishment on demand mode:** establishment shall take place at call request time if not already established.

NOTE 3: The phase 1 communication paths are also used for "local" traffic between TMF and EUT/SPT (i.e. polling and broadcasting) and may therefore be established even if no EUT-SPT communication is currently going on.

Phase 2 establishment, EUT - SPT:

- **permanent connection mode:** outside the scope of the present document;
- **establishment on demand mode:** establishment takes place at call request time.

5.2.2.2 Call Acceptance

This subclause shall only apply to the situation where non-permanent connection oriented communication paths are used. Under normal conditions an EUT, a SPT, or a TMF shall not reject a call request. This shall depend on the actual application and the subscribed/chosen level of service availability.

5.2.2.3 Void

5.2.2.4 Information Transfer Phase

Information shall be transmitted between EUT and SPT by using specific service data units named teleaction messages. The format of teleaction messages shall be independent of the application and the type of communication paths used.

NOTE: Application dependent protocols are used between the EUT and the SPT to provide/"execute" the teleaction application.

5.2.2.5 Terminating the Call

This subclause shall only apply to the situation where non-permanent connection oriented communication paths are used. Both, phase 1 and phase 2 communication paths shall be released, and the release shall be initiated by the EUT and/or SPT. The TMF may also release a phase 1 communication path as long as this path is currently not used by any phase 2 communication path.

Normally, the phase 2 communication path shall be released before one or both of the phase 1 communication paths are released.

NOTE: It may also be possible to keep a phase 2 communication path, i.e. logical relation between and EUT and a SPT without currently having the supporting phase 1 communication paths. However, in these cases the needed phase 1 communication paths have to be established before information can be transported between EUT and SPT.

5.2.2.6 TMF Operation

The main purpose of the TMF shall be to add reliability/security to the teleaction bearer service.

Procedures between EUT and TMF:

- after activation TMF shall start polling the EUT;
- depending on the application various polling intervals can be offered;
- the polling can be used for:
  - testing the availability of the communication path between TMF and EUT, including the user-network access used by the EUT;
  - authorization of EUT (to prevent any kind of misuse);
  - functionality check of EUT (detect malfunction).

NOTE 1: The TMF stores the status information obtained by the polling procedure.

Procedures between SPT and TMF:

- after its activation the TMF shall start polling the SPT;
- depending on the application various polling intervals can be offered;
- polling can be used for:
  - testing the availability of the communication path(s) between TMF and SPT, including the user-network access used by the SPT;
  - authorization and functionality check of the SPT are for further study.
- on request from the SPT, the TMF sends EUT status information to the SPT;
- on request from the SPT, the TMF shall broadcast to EUTs, subscribed to that SPT, information provided by that SPT;
- the TMF shall inform the appropriate SPT upon completion of a broadcast;
- as a TMFP option, multiple SPT broadcast requests, up to a maximum of 4, may be outstanding at any particular time.

NOTE 2: As it may take a certain delay time to transmit a broadcast message to all EUTs, it is the responsibility of the Teleaction Management Function Provider (TMFP) to ensure the delivery of the message to all EUTs within a maximum delay time. The definition of this maximum delay time can be negotiated between the TMFP and the SP, and is outside the scope of the present document.

When a previously fault alarm situation is no longer detected by the TMF when polling, this alarm shall be cleared.

As described in subclause 5.2.1, the TMF shall activate these procedures when the teleaction bearer service is activated. The phase 1 communication paths shall be used for transmitting the polling messages and for broadcasting the SPT's messages.

The teleaction bearer service procedures shall run independently of the availability of a teleaction application. The TMF shall serve as a routing function when information is sent between EUTs and SPT.

NOTE 3: In that case, where the SPT polls the EUTs connected to the SPT, the TMF is transparent to the polling exchange.

5.2.3 Interrogation

As a Teleaction Management Function Provider (TMFP) option, interrogation procedures shall exist as a SP option to enable an EU or a SP to determine the current level of reliability, security, delay, or other types of service status information.

5.3 Exceptional Procedures

5.3.1 Activation, Deactivation, Registration

5.3.1.1 Activation

Depending on the application, a failure of an activation attempt shall be indicated to the relevant parties (i.e. EU and/or SP).

5.3.1.2 Deactivation

If, at any time, the service becomes deactivated or unavailable this shall be considered as a fault alarm situation which shall be handled as described in subclause 5.3.4.

As described in subclause 5.2.1, deactivation may optionally be provided as part of normal procedure.

5.3.1.3 Registration

Failure of a registration attempt is treated as a system alarm situation as described in subclause 5.3.4.

5.3.2 Invocation and Operation

5.3.2.1 Call Establishment

This subclause shall only apply to the situation where non-permanent connection oriented communication paths are used. Unsuccessful call establishment shall be indicated to the calling party (EU or SP). The calling party (or the TMF for phase 1 communication paths) can then repeat the call request one or more times, depending on the actual application. If no communication path between the EUT and the SPT can be established, a fault alarm situation shall occur which is handled as described in subclause 5.3.4.

5.3.2.2 Information Transfer Phase

During the information transfer phase a fault alarm situation shall occur when:

- the communication path used between EUT and SPT becomes unavailable (unexpected disconnection, blocking, etc.);
- information becomes corrupted or lost during transmission;
- abnormal signalling occurs;
- or any other fault occurs which prevents correct operation of the teleaction bearer service.

Fault alarm situations shall be handled as described in subclause 5.3.4. Recovery procedures which need to be invoked to restart the communication between EUT and SPT are outside the scope of the present document.

5.3.2.3 Call Release

No exceptional procedures are identified in this phase.

5.3.2.4 TMF Operation

Exceptional procedures between EUT and TMF:

A fault alarm situation shall occur when the TMF detects through polling of the EUT that:

- the communication path between EUT and TMF is not available;
- no EUT is present (or not responding);
- a non-authorized EUT has replaced the authorized EUT;
- EUT functionality check fails.

Exceptional procedures between SPT and TMF:

A fault alarm situation shall occur when the TMF detects through polling of the SPT that:

- the communication path(s) between SPT and TMF is not available;
- no SPT is present (or the SPT is not responding);
- a non-authorized SPT has replaced the authorized SPT;
- SPT functionality check fails.

SPT authorization and SPT functionality check are outside the scope of the present document.

EUT authorization and EUT functionality check are outside the scope of the present document.

Fault alarm situations shall be handled as described in subclause 5.3.4.

As a TMFP option, the broadcast functionality can be provided to SPTs. In the case where a TMF does not provide the broadcast functionality and receives a request from a SPT, the TMF shall send back an information indicating that the broadcast functionality is not supported.

5.3.3 Interrogation

No exceptional procedures identified.

5.3.4 Handling of system fault situations

System faults described here are situations where the teleaction bearer service becomes unavailable or does not operate correctly.

A system fault situation can be detected by either:

- the TMF;
- the SPT; or
- the EUT.

A system fault situation can be the result of a report or indication from the ISDN network (e.g. disconnection of communication paths used).

As a general rule, the one who detects the fault situation should send an alarm signal to the communicating parties. This shall make all parties aware of the fault situation, and each party may initiate predefined fault handling procedures. Fault report delay classes shall be as defined in subclause 8.4.3.

NOTE: EUT and SPT may initiate local alternative procedures. However, these local procedures are outside the scope of the present document.

However, situations may occur where it is not possible for the one who detects the fault situation to send an alarm signal to the other parties (e.g. no communication path available). In these cases as a SP option the alarm information can be stored locally and sent when possible. For the TMF-SPT communication path Alternative Routing, to provide resilience, is possible as a TMF option.

As an EU/TMF/SP option, procedures may be used where fault situations are detected but the alarm information is only sent on request from the communicating party (e.g. for TMF which may be requested by SPT to send all stored EUT status information).

6 Intercommunication considerations

The EUT, TMF and SPT shall also be considered valid for networks different from ISDN (e.g. data over voice connections and dedicated lines are considered part of Dedicated Teleaction Networks (DTN). Hence, the following interworking scenario as shown in figure 1 can be identified, where interworking with the ISDN shall be mandatory and the other possibilities shall be TMFP options.

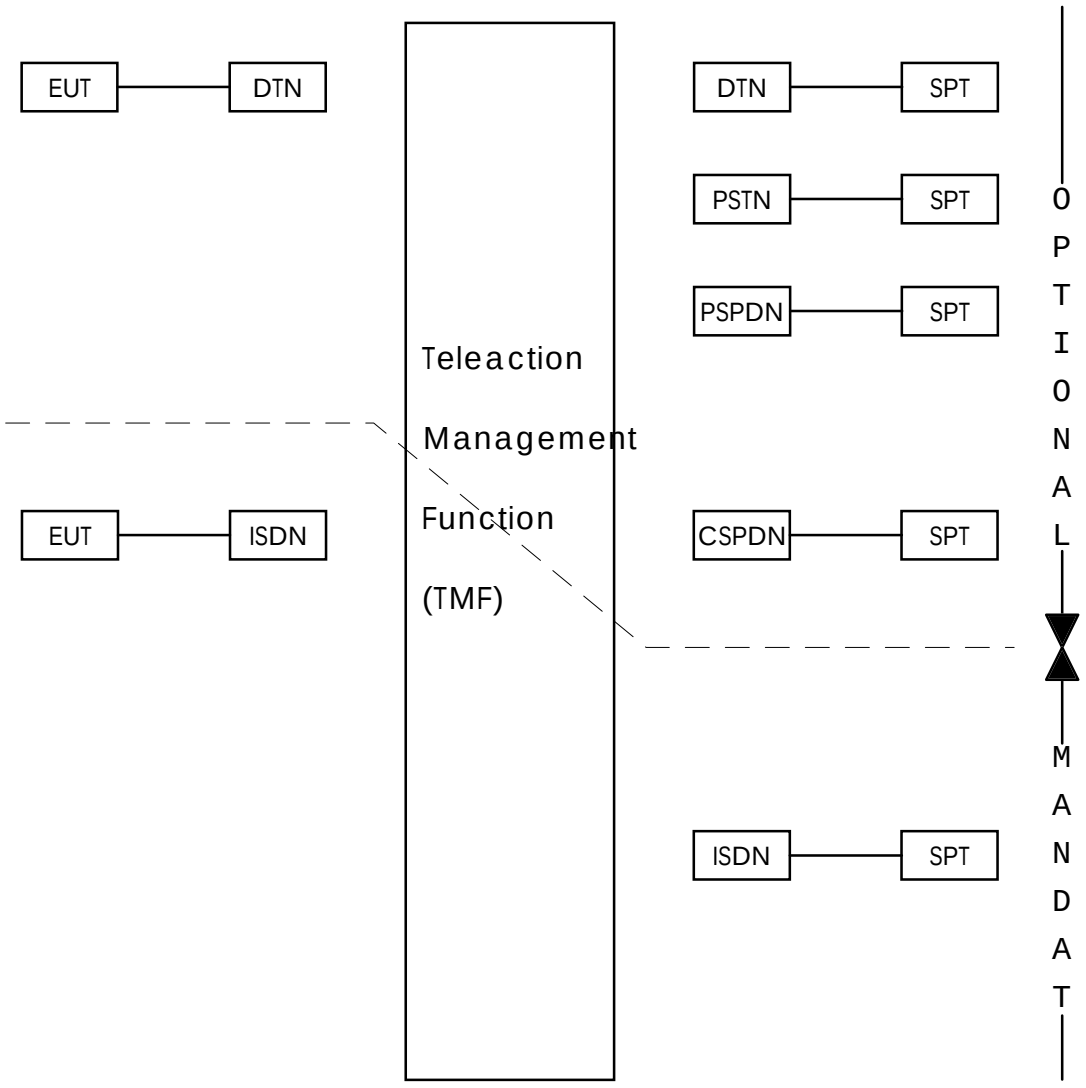


Figure 1: Teleaction interworking scenario

The situation where the communicating users are connected to a private and public ISDN shall be as detailed in clauses 4 and 5.

7 Interaction with supplementary services

The teleaction bearer service shall not be affected by any supplementary service.

8 Attributes and values

A synopsis of the teleaction service attributes and values is contained in table 4.

8.1 Low layer attributes

8.1.1 Information transfer attributes

8.1.1.1 Information transfer mode

Packet mode.

NOTE: Packet mode is used as a generic term taking into account the communication path between the EUT and the TMF is based on frame transfer.

8.1.1.2 Information transfer rate

Depending on the supporting network and complying with ITU-T Recommendation X.2 [6].

8.1.1.3 Information transfer capability

Unrestricted.

8.1.1.4 Structure

Service data unit integrity.

8.1.1.5 Establishment of communication

Asynchronous on demand.

8.1.1.6 Symmetry

Bi-directional symmetric.

8.1.1.7 Communication configuration

Point-to-point between the SPT and the TMF and between EUT and TMF.

8.1.2 Access attributes

8.1.2.1 Access channel and rate

D-channel 16 kbit/s, D-channel 64 kbit/s.

NOTE: Semi-permanent B channel 64 kbit/s connections are also possible but outside the scope of the present document.

8.1.2.2 Signalling access protocol layer 1

As per ETS 300 011 [8] and ETS 300 012 [9].

NOTE: Depending on the application the layer 1 at the user-network interface may need permanent activation.

8.1.2.3 Signalling access protocol layer 2

For the purposes of teleaction bearer services, the layer 2 protocol in the D-channel shall have the following properties:

- semi-permanent D-channel access method or Permanent Logical Link (PLL) access method according to ETS 300 049 [10]. Layer 2 protocol according to ETS 300 402-1 [11];
- continuous monitoring of the layer 1 readiness and availability.

8.1.2.4 Signalling access protocol layer 3

None.

8.1.2.5 Information access protocol layer 1

As per ETS 300 011 [8] and ETS 300 012 [9].

8.1.2.6 Information access protocol layer 2

As per ETS 300 402-1 [11].

8.1.2.7 Information access protocol layer 3

System dependent (e.g. as per ITU Technical Standard X.25, layer 3, PVC (see ITU-T Recommendation X.25 [7]), Internet Protocol, etc.).

8.2 High layer Attributes

8.2.1 Type of user information

Not applicable.

8.2.2 Layer 4 protocol functions

Not applicable.

8.2.3 Layer 5 protocol functions

Not applicable.

8.2.4 Layer 6 protocol functions

Not applicable.

8.2.5 Layer 7 protocol functions

Not applicable.

8.3 General attributes

Not identified.

8.4 Quality of service

The teleaction bearer service shall provide a secure and reliable telecommunication and processing service to the users. The service shall include facilities to:

- ensure available communication paths between EUTs and SPTs;
- prevent corruption, loss, or tapping of information during its transfer;
- prevent unauthorized data traffic and data sources;
- ensure that the time delay for information transfer does not exceed a specific limit.

The availability of the teleaction bearer service shall not only include the availability of communication paths but also shall include the availability support granted by the SP.

The ISDN shall provide reliable and secure communication paths between the EUT and TMF and between the SPT and TMF.

8.4.1 Transmission delay

The transmission system response delay shall not exceed the limits given in table 1 (see EN 50136-1-1 [5]).

Table 1: Transmission system response delay

	Transmission Delay (s)				
Delay Category	D0	D1	D2	D3	D4
Arithmetic means of all transmissions		120	60	20	10
Upper 95 percentile for all transmissions	240	240	80	30	15
Maximum acceptable delay		480	120	60	20

For the definition of delay categories, see EN 50136-1-1 [5].

8.4.2 Availability

The availability shall be equal or better than the values shown in table 2, see EN 50136-1-1 [5].

Table 2: Availability

Class	A1	A2	A3	A4
Availability of the total teleaction network during a period of 12 months	97 %	99,3 %	99,5 %	99,8 %
Monthly availability	75 %	91 %	95 %	98,5 %

For the definition of availability classes, see EN 50136-1-1 [5].

8.4.3 Fault report delay

The maximum period from the instant the fault develops in the teleaction system until the fault information is reported to the alarm receiving center shall not exceed the limits shown in table 3 (see EN 50136-1-1 [5]).

Table 3: Fault report delay

Class	T1	T2	T3	T4	T5	T6
Maximum period	32d	25h	300m	180s	90s	20s

For the definition of fault report delay classes see EN 50136-1-1 [5].

Table 4: Teleaction bearer service attributes

Information transfer attributes				
1.	Information transfer mode			Packet mode (note)
2.	Information transfer rate, Throughput			According to Recommendation X.2
3.	Information transfer capability	Unrestricted digital information		
4.	Structure	Service date unit (SDU) integrity	SDU integrity	SDU integrity
5.	Establishment of communication	Asynchronous on demand		
6.	Symmetry	Bi-directional symmetric		
7.	Communication configuration	Point-to-point	Point-to-multipoint	Broadcast
8.	Access channel and rate	B(64)	D(16) D(64)	Outside the scope of the present document
9.1.	Signalling access protocol layer 1	ETS 300 011 [8]/ETS 300 012 [9]		Outside the scope of the present document
9.2.	Signalling access protocol layer 2	ETS 300 402-1 [11]		Outside the scope of the present document
9.3.	Signalling access protocol layer 3	None		Outside the scope of the present document
9.4.	Information access protocol layer 1	ETS 300 011 [8]/ETS 300 012 [9]		Outside the scope of the present document
9.5.	Information access protocol layer 2	ETS 300 402-1 [11]		Outside the scope of the present document
9.6.	Information access protocol layer 3	System dependent		Outside the scope of the present document
High layer attributes				
10.	Type of user information	Not applicable		
11.	Layer 4 protocol	Not applicable		
12.	Layer 5 protocol	Not applicable		
13.	Layer 6 protocol	Not applicable		
14.	Layer 7 protocol	Not applicable		
General attributes				
15.	Supplementary services	Outside the scope of the present document		
16.	Quality of service	See subclause 8.4		

NOTE: Packet mode is used as a generic term taking into account the communication path between EUT and the TMF is based on frame transfer.

Annex A (informative): Context used for teleaction bearer service description

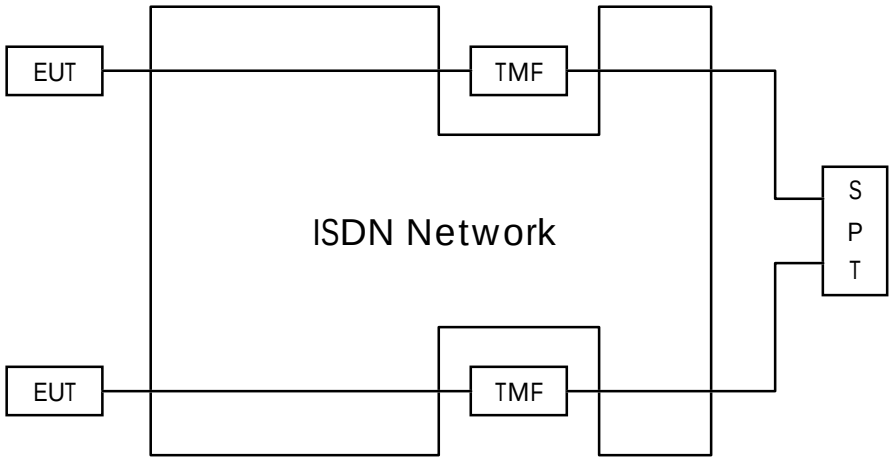


Figure A.1

The figure shows the context used when one teleaction application service is offered to the users:

- SPT provides the application to the EUTs by using one or more TMFs;
- one EUT communicates with one SPT via one TMF per application;
- one EU can communicate with one or more SPTs via one TMF;
- one TMF communicates with one or more EUTs;
- one TMF communicates with one or more SPTs.

One should especially note the following:

- if the EU wants to communicate with more than one SPT and/or more than one TMF, the user should use separate EUTs from the service point of view (the separate EUTs will be handled as logically independent devices, but may be implemented in the same physical terminal equipment);
- several TMFs may be implemented in the same physical device. TMF functions are of a kind that they may be used as functions for several teleaction application services, testing of EU's subscriber access does not necessarily need to be executed separately for each application. However, this kind of harmonization between different applications is outside the scope of the present document.

History

Document history				
V1.1.1	February 1998	Public Enquiry	PE 9824:	1998-02-13 to 1998-06-12
V1.1.1	October 1998	Vote	V 9851:	1998-10-20 to 1998-12-18
V1.1.1	January 1999	Publication		

ISBN 2-7437-2837-X
Dépôt légal : Janvier 1999