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Foreword

This Technical Report (TR) has been produced by ETSI Technical Committee Human Factors (HF).

Introduction

Acknowledgements are made to the Nordic Forum for Telecommunication and Disability who provided the Nordic Guidelines for Telecommunication Relay Services on which the present document was originally based. Additional information is taken from various American invitations to tender provided by D. Myers of the UK Telecommunications Advisory Group. Acknowledgement is made for information on operator ethics, which was provided by Mrs E Willett, and also for assistance from the WGHII group of PhoneAbility provided through WM Services.
1 Scope

The present document gives guidance on the requirements for the provision of relay services in all telecommunications networks.

The present document is applicable to all kinds of relay services especially those which enable a text telephone user to converse with a telephone user and to relay services which enable a text telephone user to converse with another text telephone user. It also applies to "Spoken to spoken " relays (which translate from a speech impaired user) and to videophone relays.

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] ETSI EG 201 013: "Human Factors (HF); Definitions, abbreviations and symbols".
[2] ITU-T Recommendation V.18: "Operational and interworking requirements for DCEs operating in the text telephone mode".
[3] ETSI ETS 300 145: "Integrated Services Digital Network (ISDN); Audiovisual services; Videotelephone systems and terminal equipment operating on one or two 64 kbit/s channels".

3 Definitions and abbreviations

3.1 Definitions

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

**automatic relay service**: service that enables a conversation between two terminals using different communication modes by providing the facility of automatic conversion between the two modes in substantially real time

**operator**: person whose prime task is to provide assistance and support to users (also known as an "attendant")

**relay service**: telecommunications service that enables users of different modes of communication to interact by providing conversion between the modes of communication

**spoken to spoken relay service**: telecommunications service that enables speech impaired telephone users and other users to interact by providing skilled assistance between them. This assistance is provided by a specially trained operator

**text relay service**: telecommunications service that enables text telephone users and voice telephone users to interact by providing conversion between the two modes of communication in substantially real time. This conversion is normally provided by a human operator
**text/text relay service:** telecommunications service that enables two text telephone users to interact by providing any necessary protocol conversion between the two text telephones in substantially real time. This conversion is normally provided automatically.

**text telephone:** terminal offering text telephony functions, either as a stand-alone unit or as an addition to a voice telephone or as an application in a multi-function computer-based terminal (EG 201 013 [1]).

**text telephony:** telecommunications facility offering real-time text conversation through telecommunication networks. Text telephony may be combined with voice telephony (EG 201 013 [1]).

**V.18 protocols:** protocols in accordance with ITU-T Recommendation V.18 [2]. The text telephones supported by V.18 are EDT, 5-bit (or Baudot), DTMF, V.21, V.23, Bell 103 and V.18-based devices.

**videophone relay service:** service that enables deaf videophone signers and voice telephone users to interact by providing conversion between the two modes of communication in substantially real time. This conversion is normally provided by a human operator.

### 3.2 Abbreviations

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

- **DTMF** Dual Tone Multi Frequency
- **EDT** European Deaf Telephone
- **GSM** Global System for Mobile Communication
- **SMS** Short Message Service
- **TRS** Text Relay Service

### 4 General

#### 4.1 Relay service

A relay service is telecommunications service that enables users of different modes of communication to interact by providing conversion between the modes of communication.

![Figure 1: Communication via relay service using a telephone network](image)

Such a service can be an automatic service using, for example, V.18 modems, to enable interworking between two text terminals operating in different communication modes, e.g. V.23 and EDT. The service can be provided over the normal telephone network (see figure 1) or it can be provided in the form of an overlay text network (see figure 2). This overlay network may be accessed either on a default basis or by other means such as special digits in the dialling code or via a carrier selection supplementary service.
4.2 Text/text relay service

A text/text relay service is a dedicated relay service, which enables two text telephone users to interact with one another, providing any necessary protocol conversion. The service shall accept calls to and from any terminal compatible with V.18 protocols. The service may be provided through a normal connection over the telephone network as shown in figure 2 or through an automatic overlay network as shown in figure 3.

![Diagram of Communication between textphones over a text network](image)

**Figure 2: Communication between textphones over a text network**

![Diagram of Communication via relay service using a text network](image)

**Figure 3: Communication via relay service using a text network**

4.3 Text relay service

A text relay service is a dedicated relay service enabling a text telephone user to interact with a voice telephone user. The conversion between the two modes of communication may typically be provided by means of a human intermediary. The service shall accept calls to or from any text terminal compatible with V.18 protocols. The service may be provided through a normal connection over the telephone network as shown in figure 2 or through an automatic overlay network as shown in figure 3.
4.4  Spoken to spoken relay service

A spoken to spoken relay service is a dedicated service that enables communication between speech impaired telephone users and other users by providing skilled assistance between them. This assistance is provided by a specially trained operator. The service would normally be provided through an ordinary connection over the telephone network.

4.5  Videophone relay service

A videophone relay service is a dedicated service that enables a deaf signer using a videophone to interact with a voice telephone user. The conversion between the two modes of communication would normally be provided by means of a human intermediary. The service shall accept calls to and from any videophone terminal compliant with ETS 300 145 [3]. The service may be provided through a normal connection over the telephone network as shown in figure 2 or through an automatic overlay network similar to the text network shown in figure 3.

4.6  Additional services

The additional services such as call diversion or message storage that are provided on most telephone networks can be made available in conjunction with any form of relay service. These additional services would normally be provided at the user's option at an additional charge, but may alternatively be provided as part of the basic service offering.

5  Service description

5.1  Basic Text Relay Service (TRS)

5.1.1  Text/speech conversion

The Text Relay Service should, as its basic service, provide the facility for the conversion of text from a text telephone to voice to a voice telephone and vice versa in substantially real time.

All connections set up from the TRS to the text telephone subscriber should be connected in text-mode, so that the recipients are clearly informed that the conversation is from a text telephone.

5.1.2  Emergency services

The relay service should provide a text user with access to the whole range of public emergency services, preferably via the normal emergency service dialling code.

5.1.3  Directory enquiry services

The relay service should provide a text user with access to the whole range of national and international directory enquiry services, preferably via the normal directory service dialling code.

5.1.4  Calling line identification presentation (CLIP)

When a call is made using the relay service, the calling line identity (CLI) that is forwarded to the called party should be the CLI of the originating caller, not that of the relay service.

When calling line identity restriction (CLIR) has been activated, the CLI should not be forwarded to the called party.
5.1.5  Connected line identification presentation (COLP)

When a user with the COLP service activated makes a call using the relay service, provision should be made to forward the connected line identity to the calling party.

When the called party has activated connected line identification restriction (COLR), the connected line identity should be withheld.

5.1.6  Talk through

The service should provide a speech path in both directions when required so as to permit a voice-to-voice connection.

5.1.7  Voice messaging

Where a called party has incoming calls diverted to a voice message facility, provision should be made to permit a textphone user to leave a voice message.

5.1.8  Text messaging

Where a textphone user has incoming calls forwarded to a text message facility, provision should be made to permit a voice telephone user to leave a text message.

5.2  Basic spoken to spoken relay service

5.2.1  Text/speech conversion

The spoken to spoken relay service should, as its basic service, provide skilled operator assistance to enable communication between a speech impaired user and any other user.

5.2.2  Emergency services

The relay service should provide a speech-impaired user with access to the whole range of public emergency services, preferably via the normal emergency service dialling code.

5.2.3  Directory enquiry services

The relay service should provide a speech-impaired user with access to the whole range of national and international directory enquiry services, preferably via the normal directory service dialling code.

5.2.4  Calling line identification presentation (CLIP)

When a call is made using the relay service, the calling line identity (CLI) that is forwarded to the called party should be the CLI of the originating caller, not that of the relay service.

When calling line identity restriction (CLIR) has been activated, the CLI should not be forwarded to the called party.

5.2.5  Connected line identification presentation (COLP)

When a user with the COLP service activated makes a call using the relay service, provision should be made to forward the connected line identity to the calling party.

When the called party has activated connected line identification restriction (COLR), the connected line identity should be withheld.
5.2.6 Talk through
The service should provide a speech path in both directions when required so as to permit a voice-to-voice connection.

5.2.7 Voice messaging
Where a called party has incoming calls diverted to a voice message facility, provision should be made to permit a speech-impaired user to leave a voice message.

5.2.8 Text messaging
Where a speech-impaired user has incoming calls forwarded to a message facility, provision should be made to permit a voice telephone user to leave a message.

5.3 Basic videophone relay service

5.3.1 Signing to speech conversion
The videophone relay service should, as its basic service, provide skilled operator assistance to enable communication between a signing user and any other user. The signing language used should be the appropriate national sign language.

All connections from the videophone relay service the subscriber should be connected in video mode, so that the recipients are clearly informed that the conversation is from a videophone.

5.3.2 Emergency services
The relay service should provide a signing user with access to the whole range of public emergency services, preferably via the normal emergency service dialling code.

5.3.3 Directory enquiry services
The relay service should provide a signing user with access to the whole range of national and international directory enquiry services, preferably via the normal directory service dialling code.

5.3.4 Calling line identification presentation (CLIP)
When a call is made using the relay service, the calling line identity (CLI) that is forwarded to the called party should be the CLI of the originating caller, not that of the relay service.

When calling line identity restriction (CLIR) has been activated, the CLI should not be forwarded to the called party.

5.3.5 Connected line identification presentation (COLP)
When a user with the COLP service activated makes a call using the relay service, provision should be made to forward the connected line identity to the calling party.

When the called party has activated connected line identification restriction (COLR), the connected line identity should be withheld.

5.3.6 Talk through
The service should provide a speech path in both directions when required so as to permit a voice-to-voice connection.
5.3.7 Voice messaging

Where a called party has incoming calls diverted to a voice message facility, provision should be made to permit a speech-impaired user to leave a voice message.

5.3.8 Text messaging

Where a speech-impaired user has incoming calls forwarded to a message facility, provision should be made to permit a voice telephone user to leave a message.

5.4 Additional services

5.4.1 General

A relay service user should have available all of the normal supplementary services. Where a supplementary service offers the facility for the user to record a voice message, provision should be made for the relay service to record the message on behalf of a user.

5.4.2 Call forwarding

5.4.2.1 Call forwarding, text telephony

A supplementary service should be available which permits a text telephone user to have incoming calls forwarded to a text announcement. The message may invite the caller to leave a text message. The text telephone user should be able to interrogate the service to read any messages that have been left.

A text telephone user should be able to leave a message for another text telephone user without requiring assistance from an operator.

5.4.2.2 Call forwarding, video telephony

A supplementary service should be available which permits a videophone user to have incoming calls forwarded to a video announcement. The message may invite the caller to leave a video message. The videophone user should be able to interrogate the service to read any messages that have been left.

A videophone user should be able to leave a message for another videophone user without requiring assistance from an operator.

5.4.3 Message waiting indication

Where a relay service user has activated a messaging service, means should be available to provide a message waiting indication.

5.4.4 Alarm calls

Provision should be made on any alarm call service to provide an appropriate text announcement in place of (or in addition to) any voice announcement.

Where possible, provision should be made for an equivalent video announcement.

5.4.5 Do not disturb

Provision should be made on any do not disturb service to provide an appropriate text announcement in place of (or in addition to) any voice announcement.

Where possible, provision should be made for an equivalent video announcement.
5.4.6 Advice of charge

Provision should be made on any advice of charge service to provide an appropriate text announcement in place of (or in addition to) any voice announcement.

Where possible, provision should be made for an equivalent video announcement.

5.4.7 Call progress information

Where a relay service is provided by a dedicated text relay service, call progress information shall be provided in the form of appropriate text messages.

Where possible, provision should be made for an equivalent video announcement.

5.5 Facsimile services

5.5.1 Fax to text conversion

Any service providing for the central receipt of fax messages and their conversion to a speech message should make provision to provide the conversion into a message suitable for receipt by any text telephone compatible with V.18 protocols.

Where possible, provision should be made for an equivalent video message.

5.5.2 Text to fax conversion

Any service providing for the central receipt of speech messages and their conversion to fax messages should make provision to receive messages from a text telephone in any form compatible with V.18 protocols.

Where possible, provision should be made for receipt of an equivalent video announcement.

5.6 Short message service (SMS)

GSM SMS service centres should have provision to receive messages from a text telephone over the fixed network in any form compatible with V.18 protocols. The service centre shall then reformat the message into that provided by the short message service, for delivery to the mobile station.

5.7 Paging

Any paging service centre providing for the central receipt of speech messages should make provision to receive messages from a text telephone in any form compatible with V.18 protocols.

Where possible, provision should be made for receipt of an equivalent video message.

6 Call handling

6.1 Operator procedures

The operator should, in a conversion situation, always inform the user that the call is from a relay service and that the following conversation is going through that relay service.

The operator should, in a conversion situation, exchange messages in a neutral way. The operator should try to convey the spirit of all utterances, their flavour is important.

The operator should, in a smooth way, help the users to effectively use the relay service.
The operator should, helpfully and cautiously, carry out all assignments according to good translation practice.

An operator should stay neutral and unprejudiced during a conversion assignment.

Everything that is said should be converted into text and all relevant information for the user should be given, i.e. presence of dial tone, busy signal, significant background noises, etc. The conversion should be as accurate as possible including the repetition of terms and linguistic differences.

6.2 Confidentiality

According to trade practice the operators are prohibited from disclosing the content of any relayed translation. Operators should consider all transactions confidential.

The operator may not disclose what has been learned about the individuals, trade secrets, business relations or issues concerning national defence. Provision should be made for lawful interception.

If a caller is in an emergency or life-threatening situation or causes an emergency situation to exist by threatening the relay centre, necessary information may be disclosed by the operator to an emergency response centre or to a supervisor.

6.3 Calls to stored voice services

6.3.1 Messaging services

The operator should assist users to leave and retrieve messages on voice processing systems.

6.3.2 Transaction services

Using the relay service, the relay service user should be able to receive assistance in using any stored voice service, which requires the use of a tone sender. The operator calls the actual service and translates the spoken message into the appropriate format. The operator should, in agreement with the relay service subscriber, complete assignments corresponding with the subscriber’s wishes.

(Reservation: There may be a security risk if the service carries out financial transactions. There may also be practical problems due to time-outs in the service).

6.3.3 Data base access

The operator should provide any special assistance required for accessing on line databases such as for online voting and search of news and train timetables.

6.4 Profanity, obscenity and illegality

6.4.1 Conversations

Operators should handle all conversations irrespective of any profane obscene or illegal content. They should be permitted to pass any conversation to another operator a supervisor if they are upset by its content.

Illegal activities e.g. drug purchases should be treated as normal calls and be covered by normal confidentiality.

6.4.2 Obscenity directed to operator

Operators should not be required to tolerate obscenity directed at them. Such calls may be transferred to a supervisor who should try to determine why the caller is using obscenity and to explain that it is inappropriate.
6.5 Language translation

The conversion of any conversation should be carried out in the language of the Country or region where the relay service is based. Where more than one language exists in that Country or region, conversion into all appropriate languages should be available.

Translation into other European languages from that/those used where the relay service is placed should be offered, by appointment if necessary and at a reasonable additional charge.

The provider of the Relay service should inform the user of the possibility for translation into other languages (apart from the language(s) where the relay service is situated) that are offered continuously or can be ordered.

7 System requirements

7.1 Organization plan

The provider should draw up an organization plan that specifies who has the overall responsibility for the various areas of the relay service.

The organization should include a service manager designated by the provider who, among other things, has the overall responsibility for the relay service.

The service manager should make use of quality assessment tools to gain monitor the service and to ensure that it works in accordance with demands.

The provider should designate a person responsible for the quality of the service.

7.2 System reliability

7.2.1 Backup

A backup facility should be provided that would be able to take over the complete function of the relay service in case of system failure.

A backup power supply should be provided, sufficient to operate at full capacity for a minimum of 12 hours after a power failure. Such supply should support at least the switching system, the operator consoles and their emergency lighting and any system for recording call details.

7.2.2 Disaster recovery plan

A complete plan should exist for dealing with all types of natural or man made problems likely to cause failure of the service. The plan should detail the level of escalation that should be employed to deal with the problem and restore service. The plan should be designed to ensure that no aspect of relay service is significantly impaired.

Procedures should exist for reporting to the appropriate authority within ten days of any disruption of service lasting for more than 30 minutes. The report should give details of how and when the problem occurred, the steps required to correct it, and the time and date when full operation was resumed.

7.2.3 Fault messages

Appropriate fault messages should be provided in the event of any system failure. They should be provided in appropriate form for all users of the service.
7.3 Traffic

7.3.1 Traffic recording

Records should be kept of the supply time for the provision of the service, fault rate, fault repair time, unsuccessful call ratio, time to answer, call set up time and billing complaints.

Records should also be kept of the number of subscribers, the number of calls handled (split into types of call handled) and the average length of call (split into types).

7.3.2 Traffic standards

7.3.2.1 Text relay services

The service should be available on demand 24 hours a day every day of the year.

The average time to answer should be less than 7 seconds.

The delay on reaching the relay service should not exceed 20 seconds for at least 90% of all calls between 07.00 a.m. and 22.00 p.m. Outside this period of the delay shall not exceed 40 seconds for at least 90% of the calls. For the remaining 10% of the calls the maximum delay shall not exceed more than 2 minutes.

No established call should be put on hold.

It is preferable that the service be provisioned so as to avoid the need for a queue function, but where it is provided, verbal messages and text messages should be provided to the respective subscribers. Furthermore, in a queue situation, information should be given regarding waiting time.

There should be no restriction on the length and number of calls from any user.

7.3.2.2 Spoken to spoken and videophone relay services

The service should be available from 8 a.m. till 8 p.m. from Monday to Friday every week of the year.

The average time to answer should be less than 12 seconds.

The delay on answering should not exceed 40 seconds for at least 90% of all calls. For the remaining 10% of the calls the maximum delay shall not exceed more than 2 minutes.

No established call should be put on hold.

It is preferable that the service be provisioned so as to avoid the need for a queue function, but where it is provided, verbal messages and text messages should be provided to the respective subscribers. Furthermore, in a queue situation, information should be given regarding waiting time.

There should be no restriction on the length and number of calls from any user.

7.4 Transmission quality

The relay service should meet normal standards of network speech transmission quality for circuit loss, delay and noise.
7.5 Quality assurance

7.5.1 The quality organization

The provider should have effective control of the quality of the service. The quality organization should be documented. The quality control of the service should be delegated to a manager independent of the manager responsible for the day to day running of the service. The responsibility includes an evaluation of quality and continuous identification of improvements of the service.

The quality organization should ensure that the service complies with the directions and instructions which are mentioned in the quality assurance program (see following).

7.5.2 Quality assurance program

The quality assurance programme, should meet the requirements of ISO 9000 [4].

The provider is responsible for ensuring that the service fulfils the demands specified by the relevant authorities. Deviations from the program may not occur without a separate agreement with the relevant authority.

7.5.3 Presentation of the quality assurance program

The quality assurance program should contain a description of the functions in the service that the provider should perform. The quality assurance program should be based on demands set by the relevant authority. The program should also include a description of work assignments and areas of responsibility within the service.

The working group that drafts the quality assurance program for the relay service should also include user representation to secure user experience for the benefit of the quality of the service.

7.6 Operator Training requirements

The provider of the relay service has the responsibility for educating all staff so that all conversions remain ethical.

The provider of the relay service should make sure that the staff working with communication is sufficiently well trained to effectively meet the specialized communication needs of individuals using the relay service including mechanisms for dealing with the potential emotional problems arising from a relay service.

The provider of the relay service should ensure that staff working with conversion receive continuous in-service training in relay service. Deaf awareness training should keep up with new developments in the field.

An operator manual should be provided.

7.7 Operator proficiency requirements

Before being permitted to handle any call any operator shall possess the following skills and abilities:

- a typing speed of at least 40 words per minute;
- proficiency in national language skills;
- proficiency in national grammar skills;
- the ability to understand users with limited language skills and to convert the limited language to correct language;
- the ability to use voice inflexion in typed messages.
7.8 Operator counselling

Counselling facilities should be provided to assist operators to deal with emotional aspects of relaying calls. The counselling support system should be confidential.

8 Charges

The user should pay rates no greater than the rates paid for calls made without consulting the relay services. The rates for a conversion between the relay service and the subscriber should be cost-free.

In a case where the calling subscriber desires an additional service offered by the relay service, the rate charged should correspond to rates for a local call provided by the operator in question, plus the actual service costs.

9 Complaints handling

The service provider should establish procedures to deal with complaints, enquiries and comments about the relay service and its personnel. All such complaints, enquiries and comments should be recorded and dealt with by a supervisor or customer service representative. The procedure should be described in appropriate publicity material.

10 User information

The relay provider should inform the user about the service. This includes information about the service, the extent of the service, a user guide and all information about changes. Information to the user should give full consideration to the users disabilities and problems with reading printed text.

The relay provider should make available suitable outreach material to educate the public on the existence and use of relay services. Such information should be published in a form making it available to all telephone users.
## History

### Document history

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<th>Version</th>
<th>Date</th>
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