

## **Human Factors (HF); Harmonized relay services**

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## Foreword

This ETSI Standard (ES) has been produced by ETSI Technical Committee Human Factors (HF).

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## Introduction

The present document is based on an TR 101 806 [i.4] which in its turn was based on the Nordic Guidelines [i.9].

The present document responds to the policy objectives set by the European Parliament and Council aiming at an improved access for people with disabilities to the information society and can increase social cohesion and improve ebusiness by permitting Small and Medium-sized Enterprises (SMEs) to communicate with disabled customers. It will assist the task of ensuring harmonized provision of relay services throughout the Community.

The present document is intended to promote innovation by providing a standard that can be used in private and public procurement processes. Therefore, it also assists the implementation of the Public Procurement Directive (2004/18/EC [i.1]) by providing a harmonized technical specification for the provision of relay services which can be used to fulfil the requirements of article 23 of the Directive which requires that "technical specifications --- shall be set out in contract documentation" and states that "...whenever possible these technical specifications should be defined so as to take into account accessibility criteria for people with disabilities or design for all users".

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# 1 Scope

The present document specifies requirements for relay services provided over telecommunications networks. It is intended to give information suitable for incorporation into contracts between commissioning agents and service providers.

The present document is applicable to all kinds of relay services which enable a user with communication related disabilities to converse with another user. It applies to text relay services, speech to speech relay services, sign relay services, lipreading relay services, captioned telephony services, text to text services and facsimile relay services.

It specifies requirements for services provided on a full 24 hours basis and also for limited hour services.

The present document does not place requirements on network operators.

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# 2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
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  - for informative references.

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 indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

- [1] IETF RFC 4103: "RTP Payload for Text Conversation".
- [2] ITU-T Recommendation T.30: "Procedures for document facsimile transmission in the general switched telephone network".
- [3] ITU-T Recommendation V.18: "Operational and interworking requirements for DCEs operating in the text telephone mode".
- [4] ITU-T Recommendation H-series - Supplement 1: "Application profile - Sign language and lip-reading real-time conversation using low bit-rate video communication".
- [5] ITU-T Recommendation F.700: "Framework Recommendation for multimedia services".
- [6] ITU-T Recommendation G.711: "Pulse Code Modulation(PCM) of voice frequencies".
- [7] ITU-T Recommendation H.263: "Video coding for low bit rate communication".
- [8] ITU-T Recommendation H.264: "Advanced video coding for generic audiovisual services".

## 2.2 Informative references

The following referenced documents are not essential to the use of the present document but they assist the user with regard to a particular subject area. For non-specific references, the latest version of the referenced document (including any amendments) applies.

- [i.1] Directive 2004/18/EC of the European Parliament and of the Council of 31 March 2004 on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts (OJ L 134/114).
- [i.2] ETSI EG 201 013: "Human Factors (HF); Definitions, abbreviations and symbols".
- [i.3] ETSI EG 202 320 (2005): "Human Factors (HF); Duplex Universal Speech and Text (DUST) communications".
- [i.4] ETSI TR 101 806 (2000): "Human Factors (HF); Guidelines for Telecommunication Relay Services for Text Telephones".
- [i.5] ETSI TR 102 202 (2003): "Human Factors (HF); Human Factors of work in call centres".
- [i.6] ITU-T Recommendation F.703: "Multimedia conversational services".
- [i.7] ITU-T Recommendation V.21: "300 bits per second duplex modem standardized for use in the general switched telephone network".
- [i.8] ITU-T Recommendation V.23: "600/1200-baud modem standardized for use in the general switched telephone network".
- [i.9] NFTH: "Nordic guidelines for Telecommunications relay services".
- [i.10] UN: "Convention on the rights of persons with disabilities and optional protocol" - United Nations.
- [i.11] W3C (11 December 2008): "Web content accessibility guidelines 2.0".

NOTE: Available at <http://www.w3.org/TR/2008/REC-WCAG20-20081211>.

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## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of the present document, the terms and definitions given in EG 201 013 [i.2] and the following 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

**captioned telephony:** service that assists a deaf or hard of hearing user in a spoken dialogue by providing text captions translating the incoming part of the conversation

NOTE: The service is usually provided via the Internet on a computer terminal associated with the telephone being used.

**commissioning agent:** person or body that procures a relay service from a service provider by means of a purchasing contract

**lipreading relay service:** service that enables lipreaders and voice telephone users to interact by providing conversion between the two modes of communication in substantially real time

NOTE: This conversion is normally provided by a human operator who is a lipspeaker.

**lost call:** call that cannot be serviced as expected by the users, for reasons internal to the service and outside of control of the users

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

**real-time text:** alpha numeric characters perceived as being transmitted in real time over a communications network

**relay service:** telecommunications service that enables users of different modes of communication e.g. text, sign, speech, to interact by providing conversion between the modes of communication, normally by a human operator

**sign relay service:** service that enables sign language users and other users to interact by providing conversion between the two modes of communication in substantially real time

NOTE: This conversion is normally provided by a human operator (this service is often known as a video relay service).

**speech to speech relay service:** telecommunications service that enables speech impaired telephone users and other users to interact by providing skilled assistance between them

NOTE: This assistance is provided by a specially trained operator.

**text relay service:** telecommunications service that enables text terminal users and voice terminal users to interact by providing conversion between the two modes of communication in substantially real time

NOTE: This conversion is normally provided by a human operator.

**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 [i.2])

**text telephony:** telecommunications facility offering real time text conversation through telecommunication networks

NOTE: Text telephony may be combined with voice telephony (EG 201 013 [i.2]).

**text to text service:** telecommunications service that enables two text terminal users to interact by providing any necessary protocol conversion between the two text terminals in substantially real time

NOTE: This conversion is normally provided automatically.

**total conversation:** audiovisual conversation service providing bidirectional symmetric real-time transfer of motion video, text and voice between users in two or more locations (ITU-T Recommendation F.703 [i.6])

**V.18 protocols:** protocols for modems and character handling in accordance with ITU-T Recommendation V.18 [3]

NOTE: V.18 supports EDT, 5-bit (or Baudot), DTMF, V.21 [i.7], V.23 [i.8], Bell 103 and V.18 based devices.

## 3.2 Abbreviations

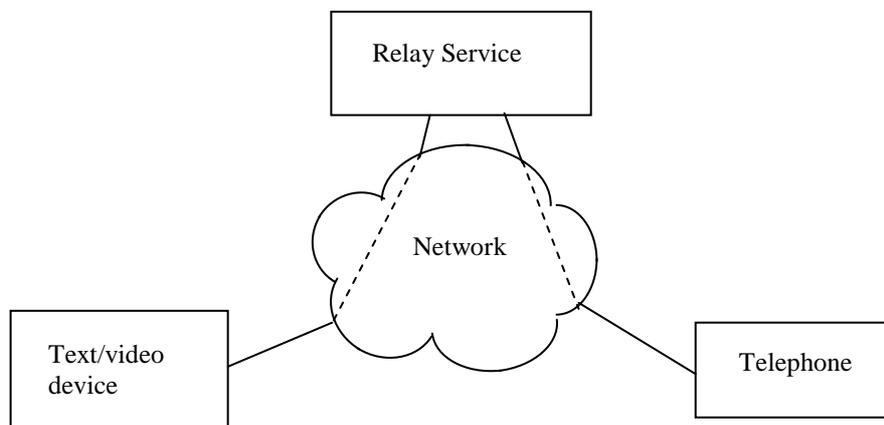
For the purposes of the present document, the following abbreviations apply:

CLI	Calling Line Identity
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identity Restriction
COLP	Connected Line Identification Presentation
COLR	Connected Line Identification Restriction
DTMF	Dual Tone Multi Frequency
EDT	European Deaf Telephone
GSM	Global System for Mobile communication
IETF	Internet Engineering Task Force
SIP	Session Initiation Protocol
SME	Small and Medium-sized Enterprise
WCAG	Web Content Accessibility Guidelines

## 4 General information

### 4.1 Relay service

A relay service is a telecommunications service as outlined in figure 1 that enables users of different modes of communication to interact by providing conversion between the modes of communication.



**Figure 1: Communication via a relay service over a network**

In its simplest form the relay service is outside the network and can be provided over a dial up network using an operator to mediate between a textphone user and a telephone user. Alternatively it can be provided by a relay service provider over any form of connection, for example over a mobile network or via an IP connection where the text/video device might be PC based. Such a service can be an automatic service using, for example, V.18 [3] modems in a gateway, to enable interworking between two text terminals operating in different communication modes.

Thus any user in any network using one mode of communication should be able to communicate with another user using a different mode of communication in the same or in any other network via a relay service. The manner in which calls are set up would be as appropriate to the communications medium used and it should be possible to set up calls to and from disabled users in the same manner as calls to and from other users (see annex B for options).

Ideally it should be possible to send/receive high quality real time text, video and voice over IP to and from any products used for mainstream communication, such as telecommunications terminals, computers (including those in Internet cafés) and mobile phones, with minimal network, firewall or terminal restrictions.

In order to satisfy the requirements of the UN Convention on the rights of persons with disabilities [i.10] it is also essential that interoperability should be achieved between all services so as to provide world wide communication equivalent to that provided for other users.

### 4.2 Service types

There are a number of different types of relay service offering conversion between differing modes of communication and many are still under development. The present document deals with the following relay services:

- text relay services;
- speech to speech relay services;
- sign relay services;
- lipreading relay services;
- captioned telephony services;
- text to text services;
- facsimile relay services.

## 4.3 Service provision

The present document is intended to provide a set of harmonized requirements for a relay service that can form the basis of a purchasing contract between some commissioning organization and a relay service provider.

The service provided to the disabled user is often subsidized in some way, the costs being partly or wholly funded by a third party, commonly some government agency. There are various ways in which a relay service might be provided and paid for and such arrangements tend to differ from country to country.

## 4.4 Grade of service

It has been found that it is not always feasible to provide a full 24 hour service, particularly in the case of those services with a relatively restricted usage and in the early trial stages of the provision of a new relay service.

The present document therefore provides for two possible options:

- a) a full 24 hour service;
- b) a limited hour service.

## 4.5 Supplementary services

Most supplementary services rely on special provisions in the network and cannot normally be provided by relay service providers. Nevertheless supplementary services such as call diversion or message storage that are provided on many networks can usually be made available in conjunction with any form of relay service.

Relay services may need to make special arrangements with network providers when offering such supplementary services. They also imply some special requirements which are dealt with in informative annex C.

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.

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# 5 Service requirements

## 5.1 Text Relay Service

### 5.1.1 Text/speech conversion

A Text Relay Service shall, as its basic service, enable the conversion between real-time text from a text terminal and speech to a voice terminal and vice versa in substantially real time.

The conversion between the two modes of communication may typically be provided by means of a human intermediary.

### 5.1.2 Call set up

All connections set up from the relay service to the text terminal subscriber shall be connected in text-mode, and an indication given to the call recipient that a text capability is required.

### 5.1.3 Emergency services

The relay service shall enable any text terminal user to access public emergency services.

This shall not preclude the possibility for the text terminal user to access the emergency service directly via the normal emergency service dialling code.

### 5.1.4 Directory enquiry services

The relay service shall enable any text terminal user to access the whole range of national and international directory enquiry service.

This shall not preclude the possibility for the text terminal user to access these services directly via the normal directory enquiry dialling code.

### 5.1.5 Talk through

The service shall provide a speech path when required so as to permit a voice to voice connection.

NOTE 1: The intention of this voice connection is to enable disabled people who are able either to speak or hear to do so and to let the relay service translate the appropriate direction of the conversation.

NOTE 2: Some services may offer text and speech paths simultaneously, in others an agreed modus operandi may be necessary to facilitate selection of the appropriate conversation mode.

### 5.1.6 Voice messaging

Where a called party has activated a voice message facility, provision shall be made to permit a text terminal user to leave a voice message or a DTMF number where necessary.

NOTE: This requirement implies that the service is able to follow the instructions of the voice message facility and convey responses in voice. If more time is required for preparations than the voice message service allows, it is permissible to make preparations in one call and enter the message in a subsequent call.

### 5.1.7 Text messaging

Where a textphone user has activated a text message facility, provision shall be made to permit a voice telephone user to leave a text message.

NOTE: This requirement implies that the service is able to follow the instructions of the text message facility and convey responses in text.

### 5.1.8 General

A text relay service shall meet the requirements of clauses 6 to 9.

## 5.2 Speech to speech relay service

### 5.2.1 Speech/speech service

A speech to speech relay service shall enable disabled speech or cognitively impaired telephone users and other speech users to interact by providing skilled assistance between them. The assistance shall be provided by a specially trained operator.

The service shall provide a direct speech path between all three parties involved in the conversation.

### 5.2.2 Call set up

All connections set up from the relay service to the disabled telephone users shall be connected in speech-mode, and an indication given to the call recipient that a relay operator is involved in the connection.

### 5.2.3 Emergency services

The relay service shall enable a disabled telephone user to access public emergency services.

This shall not preclude the possibility for the user to access the emergency service directly via the normal emergency service dialling code.

### 5.2.4 Directory enquiry services

The relay service shall provide a disabled telephone user with access to the whole range of national and international directory enquiry service.

This shall not preclude the possibility for the disabled user to access these services directly via the normal directory enquiry dialling code.

### 5.2.5 Voice messaging

Where a called party has activated a voice message facility, provision shall be made to permit a disabled telephone user to leave a voice message.

### 5.2.6 General

A speech/speech relay service shall meet the requirements of clauses 6 to 9.

## 5.3 Sign relay service

### 5.3.1 Sign/speech conversion

A sign relay service shall enable sign language users and voice telephone users to interact by providing conversion between the two modes of communication in substantially real time. This conversion will normally be provided by a human operator.

The sign language(s) used shall be those publicly announced for the service.

### 5.3.2 Sign/text conversion

A sign relay service shall enable sign language users and text users to interact by providing conversion between the two modes of communication in substantially real time. This conversion will normally be provided by a human operator.

### 5.3.3 Call set up

All connections set up from the relay service to the signing users shall be offered in video mode, and an indication given to the call recipient that that a video capability is requested.

### 5.3.4 Emergency services

The relay service shall enable a signing user to access public emergency services.

This shall not preclude the possibility for the signing user to access the emergency service directly via the normal emergency service dialling code.

### 5.3.5 Directory enquiry services

The relay service shall enable a signing user to access the whole range of national and international directory enquiry service.

This shall not preclude the possibility for signing user to access these services directly via the normal directory enquiry dialling code.

### 5.3.6 Talk through

The service shall provide a speech path between all three parties when required so as to permit a voice to voice connection.

The intention with this voice connection is to enable disabled people who are able either to speak or hear to do so and to let the relay service translate the appropriate direction of the conversation.

### 5.3.7 Text communication

The relay service shall be able to exchange information in text with the signing user during a call.

NOTE: When the appropriate ITU-T Recommendations are met, such a facility is known as Total Conversation.

### 5.3.8 Voice messaging

Where a called party has activated a voice or text message facility, provision shall be made to permit a signing user to leave a message in the appropriate mode.

### 5.3.9 Messaging

Where a signing user has activated a text or video message facility, provision shall be made to permit other users to leave an appropriate message.

### 5.3.10 General

A sign relay service shall meet the requirements of clauses 6 to 9.

## 5.4 Lipreading relay service

### 5.4.1 Speech to lipreading conversion

A lipreading relay service shall enable lipreaders 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 who is a lipspeaker. Where required, speech to speech support shall be provided in addition to the lipspeaking support.

### 5.4.2 Lipreading/text conversion

A lipreading relay service shall enable lipreaders and text telephone users to interact by providing conversion between the two modes of communication in substantially real time. This conversion will normally be provided by a human operator.

### 5.4.3 Call set up

All connections set up from the relay service to the lipreading users shall be connected in video mode, and an indication given to the call recipient that a relay operator is involved in the connection.

### 5.4.4 Emergency services

The relay service shall enable a lipreading user to access public emergency services.

This shall not preclude the possibility for the lipreading user to access the emergency service directly via the normal emergency service dialling code.

### 5.4.5 Directory enquiry services

The relay service shall enable a lipreading user to access the whole range of national and international directory enquiry services.

This shall not preclude the possibility for the lipreading user to access these services directly via the normal directory enquiry dialling code.

### 5.4.6 Talk through

The service shall provide a speech path between all three parties when required so as to permit a voice to voice connection.

The intention with this voice connection is to enable disabled people who are able either to speak or hear to do so and to let the relay service translate the appropriate direction of the conversation.

### 5.4.7 Voice messaging

Where a called party has activated a voice or text message facility, provision shall be made to permit a lipreading user to leave a message in the appropriate mode.

### 5.4.8 Video messaging

Where a lipreading user has activated a video message facility, provision shall be made to permit other users to leave a lipspoken message.

### 5.4.9 General

A lipreading relay service shall meet the requirements of clauses 6 to 9.

## 5.5 Captioned Telephony Service

### 5.5.1 Speech to text conversion

A Captioned Telephony Service shall provide the facility for the conversion of speech from a voice terminal user into text for display at a terminal collocated with another voice terminal used by the captioned telephony user. The intention is that the user with both a voice terminal and a text display will use speech for the outgoing part of the conversation and use any combination of hearing and reading to perceive the incoming part.

The conversion from speech to text may typically be provided by means of a human intermediary using technology for rapid provision of text output under the following conditions:

- 1) The mean time between the end of the user articulating a word and the word appearing on the text display terminal shall for 90 % of the words during one minute of a call be less than 6 s.
- 2) The number of lost or incorrect words during one minute shall be less than 10 % of all the spoken words.

### 5.5.2 Talk through

The service shall provide a speech path in both directions to permit a voice to voice connection.

### 5.5.3 Call set up

The call setup shall result in a two way voice communication between the two users, a voice path from both voice terminals to the service provider and a real-time text path from the service provider to the captioned telephony user. The call setup procedure for the voice phone user shall be as for any ordinary call.

## 5.5.4 Emergency services

The captioned telephony service shall provide a captioned telephony service user with access to the public emergency services.

This shall not preclude the possibility for the captioned telephony user to access the emergency service directly via the normal emergency service dialling code.

## 5.5.5 Directory enquiry services

The captioned telephony service shall provide a text terminal user with access to the whole range of national and international directory enquiry service.

This shall not preclude the possibility for the captioned telephony service user to access these services directly via the normal directory enquiry dialling code.

## 5.5.6 General

The captioned telephony service shall meet the requirements of clauses 6 to 9.

# 5.6 Text to text service

## 5.6.1 Text to text conversion

A text to text service shall enable two text terminal users to interact by providing any necessary protocol conversion between the two text terminals in substantially real time. This conversion is normally provided automatically.

## 5.6.2 Call set up

All connections set up from the relay service to the text terminal subscriber shall be connected in text-mode, and an indication given to the call recipient if a relay operator is involved in the connection.

Where one of the parties is a real time text user and the other user is operating with a message oriented text formats, the real-time text user shall be informed so as to prepare the user for the extra delays involved.

## 5.6.3 Emergency services

The relay service shall enable any text terminal user to access any text based public emergency services.

This shall not preclude the possibility for the text terminal user to access the emergency service directly via the normal emergency service dialling code.

## 5.6.4 Directory enquiry services

The relay service shall provide any text terminal user with access to any text based national and international directory enquiry service.

This shall not preclude the possibility for the text terminal user to access these services directly via the normal directory enquiry dialling code.

## 5.6.5 General

A text/text relay service shall meet the requirements of clauses 6 to 9.

## 5.7 Facsimile relay services

### 5.7.1 Fax/speech conversion

The facsimile Relay Service shall, as its basic service, provide the facility for the reading and description of a fax to a voice terminal user.

It shall also provide the facility for the conversion of speech from a voice terminal to a fax message.

The conversion between the two modes of communication may typically be provided by means of a human intermediary.

### 5.7.2 Fax/text conversion

The facsimile Relay Service shall also provide the facility for the conversion of text from a text terminal to a fax and vice versa.

The conversion between the two modes of communication may typically be provided by means of a human intermediary.

### 5.7.3 General

A facsimile relay service shall meet the requirements of clauses 6 to 9.

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## 6 Service provision

### 6.1 Organization plan

The provider shall have an organization plan that specifies who has the overall responsibility for the various areas of the relay service.

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

The service manager shall make use of quality assessment tools to monitor the service and to ensure that it performs in accordance with requirements.

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

### 6.2 Quality assurance

#### 6.2.1 The quality organization.

The provider shall have effective control of the quality of the service. The quality organization shall be documented. The quality control of the service shall 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 shall ensure that the service complies with the directions and instructions which are mentioned in the quality assurance program (see following).

#### 6.2.2 Presentation of the quality assurance program

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

## 6.3 Response time

### 6.3.1 24 hour service

A Relay service claimed to be a 24 hour service shall be available 24 hours a day every day of the year.

The average time to answer shall be less than 10 s measured over a period of 24 hours. If the conversion function is not immediately available, a suitable answering message is permitted. Answering times shall be measured from the first point in the call handling chain for which the relay service is responsible.

Between the hours of 7.00 A.M. and 22.00 P.M 85 % of all calls shall reach the conversion function within 20 s or as specified otherwise in the contract. Outside this period 90 % of all calls shall reach the conversion function within 40 s.

99 % of the calls shall reach the conversion function within 2 minutes.

Measured over a period of one month, no more than 0,5 % of the calls shall be lost for reasons internal to the relay service and outside the control of the user.

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, signed or lipspoken messages shall be provided as appropriate to the users. Furthermore, in a queue situation, information should be given regarding waiting time or queue position.

There shall be no restriction on the length and number of calls from any user except in exceptional circumstances.

### 6.3.2 Limited hour service

A Relay service claimed to be a limited hour service shall be available at least during normal working hours. i.e. for 7 1/2 hours each day Monday to Friday or for other periods specified in the contract and published to users.

The average time to answer shall be less than 10 s. If the conversion function is not immediately available, a suitable answering message is permitted.

During service hours 85 % of all calls shall reach the conversion function within 60 s.

99 % of the calls shall reach the conversion function within 3 minutes.

Measured over a period of one month, no more than 0,5 % of the calls shall be lost for reasons internal to the relay service and outside the control of the user.

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, signed or lipspoken messages shall be provided as appropriate to the users. Furthermore, in a queue situation, information should be given regarding waiting time or queue position.

There shall be no restriction on the length and number of calls from any user except in exceptional circumstances.

## 6.4 Hold

No established call shall be put on hold by the operator during normal operation. Exceptions are permitted when a call is modified for the reasons set out in clause 7.5.

## 6.5 Traffic recording

### 6.5.1 Service performance

Records shall be kept of the supply time for the original provision of the service, fault rate, fault repair time, unsuccessful call ratio, lost calls, time to answer and call set up time.

## 6.5.2 Call performance

Records shall 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).

## 6.6 Billing

Procedures for billing to the procuring organization should be specified in the relevant contract.

Information sufficient to justify any billing shall be presented together with the billing.

Information collected for billing purposes shall be stored and being kept available for detailed follow-up for at least one year.

## 6.7 System reliability

### 6.7.1 Availability

The service shall be available at least 99,7 % of the time expressed on a yearly basis.

### 6.7.2 Disaster recovery plan

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

Procedures shall exist for reporting to the appropriate authority within ten days of any disruption of service lasting for more than 30 minutes. The report shall 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.

### 6.7.3 Fault messages

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

## 6.8 Transmission quality

The relay service shall provide the normal standards of transmission quality appropriate to the service in use and the information being handled.

A video service shall support the "good usability" quality for lip reading and sign language described in ITU-T H-Series supplement 1, section 5. The test procedures in Section 6 may be followed for verification.

A real-time text service shall support the quality requirements for quality level T2 described in ITU-T Recommendation F.700 [5], section A.3.2.1.

The operator shall be permitted to discontinue handling a call if the received transmission quality is for any reason too poor for reliable comprehension. The user shall be informed of the reason for discontinuing the call.

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## 7 Operator aspects

### 7.1 Operator proficiency requirements

Before being permitted to handle any call an operator shall possess the following skills and abilities as appropriate to the service offered:

- a typing speed of at least 40 words per minute (or appropriate sign language skills);
- proficiency in appropriate language skills;
- the ability to understand users with limited language skills.

### 7.2 Operator procedures

#### 7.2.1 Information

The operator shall, 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.

#### 7.2.2 Freedom from bias

The operator shall exchange messages in an unbiased way. The operator should try to convey the spirit of all utterances, their flavour is important.

#### 7.2.3 Assistance

The operator shall, where necessary, help the users to use the relay service effectively.

#### 7.2.4 Translation practice

The operator shall, helpfully and cautiously, carry out all assignments according to good translation practice.

#### 7.2.5 Neutrality

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

#### 7.2.6 Accuracy

Everything that is said shall be appropriately converted and all relevant information for the user shall be given, i.e. presence of dial tone, busy signal, significant background noises, etc. The conversion shall be as accurate as possible and shall not modify any language usage.

### 7.3 Confidentiality

#### 7.3.1 Content disclosure

Operators shall not disclose the content of any relayed communication. Operators shall consider all transactions confidential.

#### 7.3.2 Secrecy

The operator shall not disclose what has been learned about the individuals, trade secrets, business relations or issues concerning national defence.

### 7.3.3 Privacy

The operators' work station and environment shall be so arranged as to provide the privacy necessary to prevent any call participants from overhearing any words spoken on another call.

NOTE: Advice on call centre layout can be found in TR 102 202 [i.5].

### 7.3.4 Emergencies

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.

## 7.4 Calls to stored voice services

### 7.4.1 Interactive services

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

A relay service user shall be able to receive assistance when using any stored voice service which requires the input of additional information such as DTMF number or voice input. The operator calls the actual service and translates the spoken message into the appropriate format. The operator shall, in agreement with the relay service subscriber, complete assignments corresponding with the subscriber's wishes.

NOTE: 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.

### 7.4.2 Data base access

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

## 7.5 Profanity, obscenity and illegality

### 7.5.1 Conversations

Operators shall not make any judgements on the profanity, obscenity or legality of a conversation. They should be permitted to pass any conversation to another operator or to a supervisor if they are upset by its content.

### 7.5.2 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.

## 7.6 Language

A relay service shall support conversation in a specific set of languages. Conversion shall be provided between specific modes of specified languages. The supported set of language and mode combinations shall be published.

## 7.7 Operator Training requirements

The provider of the relay service has the responsibility for educating all staff so that they can meet the requirements placed upon them.

The provider of the relay service shall make sure that their staff are sufficiently well trained effectively to meet the specialized communication needs of all individuals using the relay service. They should be taught to meet the emotional stresses arising from their work.

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

An operator manual shall be provided to the relay service staff.

## 7.8 Operator counselling

Counselling facilities shall be provided to assist operators to deal with emotional aspects of relaying calls. The counselling support shall be confidential between the operator and the counsellor.

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# 8 User aspects

## 8.1 Complaints handling

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

## 8.2 User information

The relay provider shall 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. The information should be made available in formats accessible to disabled users.

Information shall be published on the communication formats that are supported and the required call setup mechanisms.

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

The relay provider shall make available on request sufficient technical information to permit a terminal to make use of the service. This information shall include details of the call set up protocols, the compatible media codec specifications, the required transmission parameters and the necessary addressing information, specifying in each case the options required and supported.

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# 9 Interoperability

All relay services shall be interoperable one with another.

In order to facilitate this interoperability between services the relay service shall publish details of the specifications applicable to its external access interfaces for call control and media transmission.

The external access interfaces shall use open International standards. It shall be possible to make and receive calls through these external interfaces and use the media required for the type of relay service provided. The interface shall make it possible to achieve the required quality and performance criteria for the calls and media required for the service.

A listing of open International standards for interoperability is set out in annex A.

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## Annex A (informative): Interoperability

### A.1 General

The relay service should be interoperable with a set of real time text, voice and video terminal types and types of access agreed with the commissioning authority.

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### A.2 Access specifications

In order to assure interoperability between user terminals, relay services and emergency services throughout Europe, the following specifications should be met where appropriate.

NOTE: This requirement implies that other protocols may be supported as well as this set. The protocols listed may be used directly in connection with user terminals or through interworking functions with terminals using other protocols.

#### A.2.1 PSTN based voice services

Any PSTN based relay service should offer a speech performance compatible with other voice telephones on the network.

#### A.2.2 PSTN based text services

Any PSTN based text relay service should be interoperable with any text terminal compliant with ITU-T Recommendation V.18 [3] or with a set of sub-modes agreed with the commissioning organization.

#### A.2.3 IP based text service

Any IP based text relay service should be interoperable with any text terminal or service using IETF SIP for call control and RFC 4103 [1] for real-time text. Audio support should be provided for G.711 A-Law [6].

Further guidance on IP access can be found in EG 202 320 [i.3].

#### A.2.4 IP based Video service

Any sign relay service should be interoperable with IP based video terminals or services using IETF SIP for call control and ITU-T Recommendation H.263 [7] for video. It should also provide support for ITU-T Recommendation H.264 [8] for video. The relay service should offer sign language with good usability as described in ITU-T Series H Supp. 1 [4].

Audio support should be provided for G.711 A-Law encoding.

Real-time text support should be provided in accordance with RFC 4103 [1].

Further guidance can be found in EG 202 320 [i.3].

#### A.2.5 Web based service

Any relay service that provides web based access should be compliant at least with web content accessibility guidelines WCAG 2.0 [i.11] level "Double-A" and should be compatible with those web browsers specified in the contract and published to users.

## A.2.6 Facsimile service

Any fax relay service should be interoperable with fax terminals compliant with ITU-T Recommendation T.30 [2] and its amendments.

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## Annex B (informative): Call set up

### B.1 General

This annex describes a number of different methods of calling another party in a manner which invokes the appropriate relay service. It describes the advantages and disadvantages of each method.

#### B.1.1 Three step calling

The legacy method of calling through a relay services involves three steps:

- 1) The calling user calls the relay service using the relevant relay service number and get in touch with a relay service operator.
- 2) The calling user conveys the final destination number or address to the relay service operator.
- 3) The relay service operator makes the call to the final destination.

This method is inconvenient, cannot be automated, is not compatible with electronic address book, does not permit the implementation of many supplementary services and makes it difficult to give priority to emergency service call. It also makes difficult the provision of useful CLI information.

#### B.1.2 One step calling

It is desirable to be able to make a call by dialling the called party's address with a number that automatically invokes the relay service in the call. The mechanisms may be different for calls from a voice phone user compared to calls from a user with disabilities.

This can be achieved in a number of ways:

- 1) The called party can be allocated a second number from the national numbering plan that directs the call through the relay service.
- 2) An International or European service selection prefix can be dialled before the called party's number. This may be a supplementary service prefix.
- 3) A national or regional service selection prefix can be dialled before the called party's number. This may be a national supplementary service prefix.
- 4) In an IP environment the relay service might be invoked by calling the number@relay-service-domain and the relay is invoked and the call is connected to the destination number.
- 5) A user profile stored by the service provider automatically invokes the desired relay service when a call is made or received.

Each of these options has its advantages and disadvantages.

##### B.1.2.1 Option 1

###### A second number

Advantages:

- Only one number needs to be published which does not disclose the service user's disability.
- There are no number analysis problem, no number length limitation, no call routing functionality to cause malfunction because the number is taken directly from the national numbering plan.

- Where an International prefix is used to call the number; the correct relay service will be invoked.
- Such facility is easily implemented in the IP environment, by e.g. the resolving the number to a SIP-address or to an H.323 address via an Enum resolution.
- Any CLI that follows a call can be made to display this number, so that calls back will be routed through the relay service.

Disadvantages:

- It is only feasible to use this kind of specific voice-relay numbers for calls *to* users with disabilities. For calls *from* users with disabilities to any voice phone user with invocation of the relay service, some of the other options must be used.

### B.1.2.2 Option 2

#### **An International or European service prefix**

Two variants can occur: A number prefix followed by the called number or a supplementary service prefix followed by the called number followed by a suffix typically of the form \*service code\*number#.

Advantages:

- The number prefix can be seen as an operator selection prefix, that is a normal part of the numbering plan. It is a normal function of the phone network to route these calls to a specific call handling organization.
- The number prefix can be used embedded in an international dialling string starting with a country number, leading to invocation of the relay service in the intended country.
- The number prefix can be the first part of the dialled number, followed by the international dialling prefix, a country code and a number, to invoke the relay service in the own country and then a destination in another country.

Disadvantages:

- All national operators must implement routing to the relay-invocation-function based on the prefix found in the number analysis. This is a heavy coordination task.
- It will be complicated to arrange for competing relay services. The solution to allocate one prefix per relay service provider is not feasible for the supplementary service system.
- Using the supplementary service form when visiting another country will route the call to the relay service of that country, which may not have the correct language competence for the intended call.

### B.1.2.3 Option 3

#### **A national or regional service selection prefix**

Two variants can be thought of: A national number prefix followed by the number or a national supplementary service by the use of a supplementary service using a prefix of the form \*service code\*number#.

Advantages:

- Using a national or regional prefix facilitates the use of local subsidies.
- The prefix can be placed after a country code. The relay service of that country will then be invoked.
- The supplementary service code can be analyzed by a local PBX and permit the call to be diverted to the relay service without the need to get all operators to implement the routing.

Disadvantages:

- Using the supplementary service format when visiting another country will route the call to the relay service of that country, which may not have the correct language competence for the intended call.

### B.1.2.4 Option 4

#### **number@relay-service-domain**

In the IP environment it is possible to set aside a domain name to handle the relay-invocation-function. Calls to a number through the relay service can then be addressed to number@relay-service-domain. This addressing form can be simplified to a single number for the user if so wanted, by one of many possible IP calling mechanisms.

Advantages:

- It provides a simple addressing form often used in the IP field.
- The address can be simplified to a single number only.
- The address can be simplified to a number and a call type indicator that the called terminal can resolve.
- It can address any number in the international numbering plan and is therefore especially valuable for calling any voice phone user through the relay.

Disadvantages:

- Some phone-like IP-terminals require more complex dialling for alphanumeric portions of the address than for plain numbers.

### B.1.2.5 Option 5

#### **A user profile stored by the service provider**

When mode and language preferences can be stored in a user profile, the user profiles of two users to be engaged in a call can be compared. If a mismatch between preferred mode and language of communication is found, a relay service with capabilities matching the preferred mode and languages can be invoked in the call.

Advantages:

- Dialling can be made to the same number for all calls to the same person. The situation for the two parties will decide if a relay service is invoked or not.
- Detailed preferences can be arranged.

Disadvantages:

- Support for this feature is not yet implemented in European networks.
- It requires careful setting of the user profiles.
- Borrowing a phone would require logging in to one's stored user profile. It may be difficult to get the right services by only setting terminal characteristics.

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## Annex C (informative): Supplementary services

### C.1 General

Any relay service user should have available all of the normal supplementary services. Most such services will be dependent on the network although some may be provided by dedicated relay service providers.

#### C.1.1 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.

#### C.1.2 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.

#### C.1.3 Call forwarding, to announcement

##### C.1.3.1 Call forwarding, text announcement

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

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

##### C.1.3.2 Call forwarding, video announcement

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

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

#### C.1.4 Message waiting indication

Where a disabled user has activated a messaging service, and an audible message waiting indication is normally provided, means should be available to provide such a message waiting indication in an alternative perceivable mode.

#### C.1.5 Alarm calls

Provision should be made on any alarm call service (e.g. a wake up 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 signed announcement.

### **C.1.6 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.

### **C.1.7 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.

### **C.1.8 Call progress information**

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

Where possible, provision should be made for equivalent video information.

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## Annex D (informative): Service funding

Arrangements to fund the additional costs of relay services vary throughout Europe depending on the cultural, social and legislative context in each country.

Users have come to expect that any special arrangements made to accommodate their disability should be provided without additional charge. They expect the rates for a conversion between the relay service and the user to be cost-free.

They generally expect relay services to be subsidized so that they pay rates no greater than the rates paid for calls made without consulting the relay services.

Sometimes there is a special subsidy for disabled callers to acknowledge the fact that a text conversation is about five times slower than a speech conversation.

In cases where the calling user invokes any additional service extra to the basic service, it is expected that the additional charge would be the same the normal charge for such an additional service made without consulting the relay services.

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## Annex E (informative): Bibliography

- BT SIN 359: "Text Relay Service description".
- ETSI ETR 333 (1998): "Human Factors (HF); Text telephony; Basic user requirements and recommendations".
- ETSI EG 202 116 (2002): "Human Factors (HF); Guidelines for ICT products and services; "Design for All"".

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## History

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