

Human Factors (HF); Telecommunications relay services

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Contents

Intellectual Property Rights	5
Foreword.....	5
Introduction	5
1 Scope	6
2 References	6
2.1 Normative references	6
2.2 Informative references.....	6
3 Definitions and abbreviations.....	7
3.1 Definitions	7
3.2 Abbreviations	8
4 General	9
4.1 Background	9
4.2 Possible relay services.....	9
4.3 Relay services in Europe	9
4.4 Relay services internationally.....	10
4.5 Motivations for establishing relay services	10
4.6 Harmonization of communication systems	11
4.6.1 The need for harmonization	11
4.6.2 The European experience.....	11
4.6.3 Fragmentation caused by funding methods.....	11
4.6.4 Relay services and local harmonization.....	12
4.6.5 Global harmonization	12
4.7 Inclusion of relay service users in the number plan.....	12
5 Relay services in Europe	13
5.1 Austria	13
5.2 Belgium	13
5.3 Bulgaria	13
5.4 Cyprus	13
5.5 Czech Republic	13
5.6 Denmark.....	13
5.7 Estonia.....	13
5.8 Finland.....	14
5.9 France	14
5.10 Germany.....	14
5.11 Greece	15
5.12 Hungary.....	15
5.13 Iceland	15
5.14 Ireland	15
5.15 Italy	15
5.16 Latvia.....	15
5.17 Lithuania.....	16
5.18 Luxembourg	16
5.19 Malta	16
5.20 Netherlands.....	16
5.21 Norway	16
5.22 Poland.....	16
5.23 Portugal	16
5.24 Romania	16
5.25 Serbia and Montenegro	17
5.26 Slovakia.....	17
5.27 Slovenia.....	17
5.28 Spain.....	17
5.29 Sweden	17

5.30	Switzerland.....	18
5.31	United Kingdom.....	18
6	Relay service internationally.....	19
6.1	General.....	19
6.2	Australia.....	19
6.3	Canada.....	19
6.4	New Zealand.....	19
6.5	USA.....	19
6.6	Multi-national.....	20
7	Service offerings summary for Europe.....	20
7.1	Text Relay Service.....	20
7.2	Sign Relay Service.....	20
7.3	Speech Relay Service.....	21
7.4	Captioned Telephony Relay Service.....	21
7.5	Text-to-text relay services.....	21
8	Quality of Service (QoS) criteria.....	21
8.1	General.....	21
8.2	Examples of QoS requirements.....	22
8.2.1	General.....	22
8.2.2	Sweden.....	22
8.2.3	USA.....	22
8.3	Conclusions.....	22
Annex A:	Bibliography.....	23
History.....		24

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 (standards.iteh.ai)
 Full standard
<https://standards.iteh.ai/catalog/standards/sist/22e607ae-8295-4256-9ecd-25e1b6320055/etsi-tr-102-974-v1.1.1-2009-09>

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Foreword

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

Introduction

The present document is intended to set out the background to ES 202 975 [i.5] the standard on Harmonized Relay Services, to describe the research involved and to provide general information on relay services derived during the research. Relay services in the sense described in these documents, are communication services that translate between different modes of communication.

Relay Services are provided mainly to enable people with communications related disabilities to participate on more equal terms in a society where telephony and electronic communications have become such an important part of life.

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1 Scope

The present document sets out significant background information to the writing of ES 202 975 [i.5] Harmonized relay services.

It records the results of researches made during the preparation of the standard.

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:
 - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
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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.

Not applicable.

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] BT SIN 359: "BT TextDirect™ Service description".
 - [i.2] EICTA: "Position paper on eInclusion", Brussels, 5 November 2008 .
- NOTE: See at <http://www.eicta.org/index.php?id=34&id-article=290>.
- [i.3] ETSI EG 201 013: "Human Factors (HF); Definitions, abbreviations and symbols".
 - [i.4] ETSI EG 202 320: "Human Factors (HF); Duplex Universal Speech and Text (DUST) communications".
 - [i.5] ETSI ES 202 975: "Human Factors (HF); Harmonized relay services".
 - [i.6] ETSI TR 101 806: "Human Factors (HF); Guidelines for Telecommunication Relay Services for Text Telephones".
 - [i.7] IETF RFC 3261: "Session Initiation Protocol (SIP)".

- [i.8] IETF RFC 4103: "RTP payload for text conversation".
- [i.9] ITU-T Recommendation F.703: "Multimedia conversational services".
- [i.10] ITU-T Recommendation H.323: "Packet-based multimedia communications systems".
- [i.11] ITU-T Recommendation T.140: "Protocol for multimedia application; Text conversation".
- [i.12] ITU-T Recommendation V.18: "Operational and interworking requirements for modems operating in the text telephone mode".
- [i.13] ITU-T Recommendation V.23: "600/1200-baud modem standardized for use in the general switched telephone network".
- [i.14] NTFH: "Nordic guidelines for Telecommunications relay services".
- [i.15] TIA-825-A: "A Frequency Shift Keyed Modem for Use on the Public Switched Telephone Network".
- [i.16] FCC 47 CFR § 64.601-606: "TRS Rules. FCC USA, The set of regulations that form the basis of the relay services in USA. It is amended when new details take effect".
- NOTE: See at <http://www.fcc.gov/cgb/dro/4regs.html>.
- [i.17] FCC 08-151A1 E911: "Requirements for IP-Enabled Service Providers", June 2008.
- NOTE: See at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-08-151A1.pdf
- [i.18] ITU-T Recommendation V.21: "300 bits per second duplex modem standardized for use in the general switched telephone network".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in EG 201 013 [i.3] 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 one direction of the conversation

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

lip-reading relay service: service that enables lip-readers and voice telephone users to interact by providing conversion between the two modes of communication in substantially real time N

NOTE: This conversion is normally provided by a human operator who is a lip-speaker.

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

sign relay service: service (often known as a video relay service) that enables sign language users 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.

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 telephone users 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.

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

text telephony: telecommunications facility offering real time text conversation through telecommunication networks. Text telephony may be combined with voice telephony

NOTE: See EG 201 013 [i.3].

text to text 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

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

NOTE: See EG 202 320 [i.4] and ITU-T Recommendation F.703 [i.9].

V.18 protocols: protocols in accordance with ITU-T Recommendation V.18 [i.12]

NOTE: 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 synonymous with sign relay 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

NOTE: 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
EICTA	European Information and Communications Technology Association
FCC	Federal Communications Commission (USA)
GSM	Global System for Mobile communication
HCO	Hearing Carry Over
QoS	Quality of Service
RNID	Royal National Institute for Deaf people
SIP	Session Initiation Protocol
SMS	Short Message Service
TRS	Telecommunication Relay Service
VCO	Voice Carry Over
VRS	Video Relay Service

NOTE: Referred to as sign relay service in the present document.

4 General

4.1 Background

A relay service in the sense described in the present document enables users of different modes of communication to interact by providing conversion between differing modes of communication. The primary motivation is to enable people with disabilities which influence their capability to use a voice telephone to have communication with voice telephone users and users of other types of communication than they have themselves. Relay services are commonly established as government enabled or government mandated services because of the evident economical and social value in fulfilling policies for the provision of equal opportunities for all in the field of communications.

The present document records the background to and research undertaken during the writing of ES 202 975 [i.5], the ETSI standard for Harmonized Relay Services. This standard was originally derived from TR 101 806 [i.6], Guidelines for Telecommunications relay services for text telephones which dealt mainly with text telephones and recommended very high performance targets based upon the best available in the world. The present document in its turn was largely based on the Nordic guidelines for Telecommunications relay services [i.14].

The primary aim of the new standard was to update the original technical report in the light of new opportunities in telecommunications, setting standards for new types of relay service that were not envisioned when the original report was written.

Secondly it was necessary to take on board the changes in the telecommunications environment. When the report was first written it was common for a single national operator to provide both the network and the relay service. Nowadays the network and the service provision are often run by different entities and it therefore became necessary in the ES 202 975 [i.5] to separate out those provisions such as supplementary services that are primarily network based.

Furthermore, as the purpose of a standard is to set mandatory requirements it was necessary to determine how many of the performance targets could be achieved in practice and what level of achievement was possible for each of the performance requirements.

4.2 Possible relay services

The original Technical Report TR 101 806 [i.6] set out detailed requirements for a basic text relay service based upon PSTN text phones and also for an ISDN videophone based sign relay service. Some reference was also made to providing textphone capability for Fax to speech conversion services and also for SMS and Paging services.

It was decided to consider new communications services introduced since the original document. The possibility of a signing service over IP and over mobile telephony was considered as was a lip-reading service and one for the translation of Fax to speech or text. In addition a service to assist users with impaired speech was investigated as was Captioned telephony.

4.3 Relay services in Europe

A search was made to find which services are currently available within Europe. Letters requesting information were sent to those ETSI members representing administrations within Europe asking for contact addresses of relay service providers within their Countries. They were sent to Administration representatives of Austria, Belgium, Bulgaria, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Luxembourg, Malta, Norway, Poland, Portugal, Slovakia, Spain, Switzerland and the UK.

Replies were received from the Czech Republic, Finland, Malta, Norway, Portugal, Slovakia and Switzerland.

Further letters were sent to members of the European Union of the Deaf. Replies were only been received from Austria, Italy, Latvia and Serbia. A further attempt was made to seek information from the European members of the World Federation of the Deaf. This approach showed a little more success and replies were received from Austria, Bulgaria, the Czech Republic, Finland, Greece, Malta, Norway, Portugal, Serbia, Slovakia and Switzerland.

Further information was acquired through personal contacts in Italy, Greece, Spain, UK, Ireland, Norway, Sweden, Holland, France, Switzerland, Germany, USA and Canada.

The results of these enquiries showed that relay services exist in only a few European countries. Details of these services are given in clause 5.

4.4 Relay services internationally

Internationally, relay services are found at least in USA, Canada, Australia and New Zealand. Some relevant characteristics of them are described in clause 6. One service was also found that provides service in many countries over the Internet.

4.5 Motivations for establishing relay services

Relay services can be provided for both economic and social reasons.

Relay services can contribute to better integration of disabled people into society, thereby reducing the overall cost to society by:

- reducing unemployment;
- reducing the load on health services;
- reducing the need for support actions by colleagues at work;
- reducing the travel time of sign language interpreters and increasing their efficiency;
- reducing the travel time of text transcribers and increasing their efficiency;
- increasing work efficiency;
- reducing the loss of lives and property (by provision of emergency number calling via relay services to 112).

Relay services can contribute to meeting social policy goals to provide equal opportunity to people with communication disabilities by:

- Giving an opportunity to converse with anybody who has a voice telephone.
- Improving the harmony and efficiency of private life.
- Giving an opportunity to be more efficient and self-sustained at work.
- Providing a basis for equality at work.
- Providing equal access to emergency services in cases of emergency.

A cost/benefit analysis can be performed by evaluating these benefits and comparing them to the cost of providing relay services.

On the cost side of such evaluation there might be factors such as:

- Setting up, operating, maintaining and renewal of the technical system for the relay service.
- Maintaining the regulatory and financial platform for relay services.
- Education and manning of operators with suitable skills for each type of relay service.
- Informing the public about the availability of the relay services.
- Informing communication providers about the need to include relay service support in current and future communication systems.
- The cost of extra call routing via the relay service.

There are also costs for provision of suitable terminals to the relay service users that is seen in some countries as part of a broader social policy to provide equal opportunities in communication both permitting people using the same modes of communication directly, and for people using differing modes of communication to connect through relay services.