



Human Factors (HF); Requirements for relay services

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Foreword

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

Modal verbs terminology

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Introduction

The present document is an update of ETSI ES 202 975 (V2.1.1) [i.2].

Further significant background and research information about relay services and the development of the original version of the present document can be found in ETSI TR 102 974 [i.3].

Recent development in the area has been taken into careful consideration.

The present document is intended to support the procurement and delivery of accessible and usable relay services including their provision and invocation. It may be useful for both public procurement agencies, relay service and communications service providers.

1 Scope

The present document specifies requirements for relay services, covering both the relay service and its invocation over ICT networks.

The present document applies to all types of relay services that enable users with functional limitations related to hearing, vision, speech or cognition, to communicate in real time with other users of electronic communications services. The present document applies to, inter alia, text relay services, speech-to-speech relay services, video relay services, captioned telephony services, lipspeaking relay services and cognitive and memory support services.

Functional requirements for the invocation of relay services within communication platforms are included. Implementation of the invocation functions is needed to ensure equal access to electronic communications services. Included use cases cover emergency communications, communication with other individual users, and the integration of relay services in multiparty conferencing scenarios. Requirements are specified for services provided on a 24/7 basis, as well as for limited-hour services.

2 References

2.1 Normative references

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The following referenced documents are necessary for the application of the present document.

- [1] [ETSI/CEN/CENELEC EN 301 549 \(V3.2.1\)](#): "Accessibility requirements for ICT products and services".
- [2] [ETSI ES 204 009](#): "Human Factors (HF); Requirements for interoperable total conversation services".

2.2 Informative references

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- [i.1] [Directive \(EU\) 2019/882](#) of the European Parliament and of the Council of 17 April 2019 on the accessibility requirements for products and services.
- [i.2] ETSI ES 202 975 (V2.1.1): "Human Factors (HF); Requirements for relay services".
- [i.3] ETSI TR 102 974: "Human Factors (HF); Telecommunications relay services".
- [i.4] ETSI EG 201 013: "Human Factors (HF); Definitions, abbreviations and symbols".
- [i.5] ETSI TR 102 202 (V1.1.2): "Human Factors (HF); Human Factors of work in call centres".

- [i.6] ETSI TS 101 470 (V1.1.1): "Emergency Communications (EMTEL); Total Conversation Access to Emergency Services".
- [i.7] ETSI TS 103 919: "Emergency Communications (EMTEL); Accessibility and interoperability of emergency communications and for the answering of emergency communications by the public safety answering points (PSAPs) (including to the single European Emergency number 112)".
- [i.8] IETF RFC 3261: "Session Initiation Protocol".
- [i.9] IETF RFC 4353: "A Framework for Conferencing with the Session Initiation Protocol (SIP)".
- [i.10] IETF RFC 4575: "A Session Initiation Protocol (SIP) Event Package for Conference State".
- [i.11] IETF RFC 4579: "Session Initiation Protocol (SIP) Call Control - Conferencing for User Agents".
- [i.12] IETF RFC 8825: "Overview: Real-Time Protocols for Browser-Based Applications".
- [i.13] [FCC-25-79A1](#): "Notice on proposed rule making in the Matter of Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities Speech-to-Speech and Internet Protocol (IP) Speech-to-Speech Telecommunications Relay Services", Adopted: November 20, 2025, Released: November 21, 2025.

3 Definitions of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in ETSI EG 201 013 [i.4] and the following apply:

caller identifier (caller ID): information presented to the recipient of an incoming request for a communication session (such as a phone call, video call, or messaging) that uniquely specifies the identity of the originating party

captioned telephony: service which converts speech to real-time text towards the primary user while letting voice through in both directions

NOTE 1: When provided for VoIP, it is called IP Captioned Telephony Service or IPCTS in the US.

NOTE 2: A conversation may have more than one primary user.

commissioning agent: person or body that procures or otherwise puts an obligation on a service provider to deliver a relay service, with respect to provision of relay services and/or their invocation

Communications Assistant (CA): human operator or automatic agent providing conversion between different modalities and/or interpretation or other communication support between the primary and secondary user

NOTE: Other terms to refer to human CAs that can be encountered include among others: "interpreter", "operator", "call handler", etc.

destination address: addressable identity specified by the initiating participant to initiate a session

ICT network: technology and resources supporting the connection and operation of interconnected ICT

Information and Communication Technology (ICT): technology, equipment, or interconnected system or subsystem of equipment for which the principal function is the creation, conversion, duplication, automatic acquisition, storage, analysis, evaluation, manipulation, management, movement, control, display, switching, interchange, transmission, reception, or broadcast of data or information

NOTE: Examples of ICT are electronic content, telecommunications products, computers and ancillary equipment, software, information kiosks and transaction machines, videos, IT services, and multifunction office machines which copy, scan, and fax documents.

interacting relay services: relay services connected through a common voice path, in order to provide connectivity and modality conversion between two (or several) primary relay service users

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

modality: way in which communication is perceived or is expressed

NOTE: The most valid examples for the present document are signed (= using sign language), written and spoken modalities.

primary user (of relay service): person who is using relay services because of a disability

NOTE 1: Primary users are the target users of relay services who need some communication modality conversion or other communication support in order to communicate with voice users.

NOTE 2: A primary user can initiate and receive communications.

Real-Time Text (RTT): form of text conversation in point-to-point situations or in multipoint conferencing where the text being entered is displayed in such a way that the communication is perceived by the user as being continuous on a character-by-character basis

relay service: electronic communications service which enables real-time bidirectional communication between end-users who use different communication modalities or need other communication support

NOTE: This is typically achieved by providing conversion between different communication modalities such as text, sign, and speech, or by providing the needed cognitive support for end-users during the communication, by a human operator or automatic means.

Relay Service Invocation Functions (RSIF): set of functions related to decisions, communication establishments and media interconnections between users and a relay service

NOTE: The implementation of RSIF may be distributed between communications services, primary user equipment and relay service.

relay service user: primary or secondary user of a relay service

secondary user (of relay service): communication user other than a primary user, participating in a communication facilitated by a relay service that is invoked based on the primary user's preferences or actions

NOTE 1: A secondary user may initiate or answer a communication in which a relay service is invoked by primary user's preferences or actions.

NOTE 2: A secondary user may also be another primary user participating in a communication via another relayed communication.

sign language interpreter: person working in a video relay service with sign language interpretation

NOTE: Also called "interpreter".

speech to speech relay service: electronic communications service that enables electronic communication users with speech disabilities and other users to interact by providing skilled communications assistance between them

text relay service: electronic communications service that enables users of user equipment with RTT capabilities and users of user equipment with voice capabilities to interact by providing conversion between the two communication modalities in substantially real time

NOTE: This conversion is provided by a CA.

total conversation: audio-visual conversation service providing bidirectional symmetric real-time transfer of motion video, text and voice between users in two or more locations

Video Relay Service (VRS): service that enables communication between sign language users and voice communication users by providing real-time interpretation between sign language and spoken language

NOTE: This conversion (interpretation) is normally provided by a sign language interpreter.

3.2 Symbols

For the purposes of the present document, the following visual symbols apply to indicate the three communication media:

Table 3.1: Visual symbols used to represent communication media

Symbol	Description
	Audio communication
	Real-time text communication
	Video communication

For the purposes of the present document, the following visual symbols apply to indicate the three communication modalities:

Table 3.2: Visual symbols used to represent communication modalities

Symbol	Description
	Spoken
	Written
	Signed

3.3 Abbreviations

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

CA	Communications Assistant
FCC	Federal Communications Commission
GSM	Global System for Mobile communication
HTML	HyperText Markup Language
ICT	Information and Communication Technology
IMS	IP Multimedia Sub-system
IP	Internet Protocol
IVR	Interactive Voice Response
NPRM	Notice of Proposed RuleMaking
PSAP	Public Safety Answering Point
RSIF	Relay Service Invocation Functions
RTT	Real-Time Text

SIP	Session Initiation Protocol
StT	Speech-to-Text
TtS	Text-to-Speech
VoIP	Voice over IP
VRS	Video Relay Service
WebRTC	Real Time Communication in Web browser

4 General functional requirements on relay services and use cases

4.1 Relay service types

4.1.1 General

A relay service is an ICT service, as outlined in Figure 4.1, that enables users of different communication modalities to interact by providing conversion between the modalities.

The invocation of relay service in ICT communication is handled by Relay Service Invocation Functions (RSIF) which may be provided separately but interoperating with the relay service.

The connections in Figure 4.1 represent general session and media connections and do not show the technological routes of the connections or points of media mixing.

The user who makes use of a relay service because of a disability is called primary user in the present document, and another user involved in the communication is called secondary user.

NOTE: Both primary and secondary users can initiate outgoing communications as well as receive incoming communications where relay service is invoked.

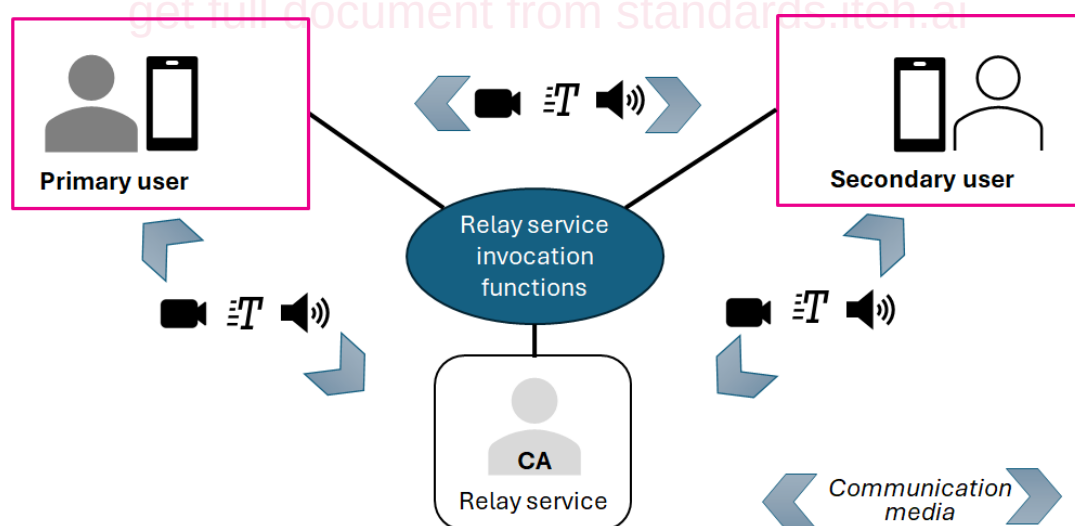


Figure 4.1: Electronic communication supported by a relay service

EXAMPLE: The relay service is facilitated by a Communications Assistant (CA), converting (interpreting) real-time communication between a user who has no or limited use of voice communication (e.g. sign language user or text user) and a voice communications user. The service 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/audio device can be based on mainstream ICT equipment. The relay service invocation functions connect the users and the relay service.

The aim of a relay service is to support users with disabilities in their communication with other users. The relay service support may be provided within the same service or across interoperating services and be delivered by:

- human Communication Assistant (CA) only
- human CA supported by automated CA (for example, speech-to-text tools)
- automated CA only - at the time of writing of the present document, relay services providing text relay and captioned telephony are available with automated CA only

The continuation of clause 4.1 specifies the recognized types of relay services. Each type makes use of a typical default set of media connections and provides the relevant conversions or other communication support. A set of tables in clause E.1 of the present document shows these media connections and the needed conversions or other communication support.

4.1.2 Text relay service

A text relay service shall enable the conversion:

- from real-time text, coming from user equipment with RTT capabilities, to speech delivered to user equipment with audio communication capabilities
- from speech, coming from user equipment with audio communication capabilities, to real-time text delivered to user equipment with RTT capabilities

NOTE 1: The conversion between the two communication modalities may be provided by a human CA, by automated speech-to-text/text-to-speech technologies, or semi-automated conversion where a communication assistant is supported by automated speech-to-text/text-to-speech technologies.

The following variations from this basic operation shall be provided, either by pre-defined user preference configuration or by requesting a variation at the beginning of the communication:

- No conversion towards the text primary user who can hear, i.e. the primary user sends text, but can hear directly the secondary user.

NOTE 2: This variation of the text relay service is sometimes referred to as Hearing Carry Over (HCO).

- No conversion from the text primary user who can talk, i.e. the primary user talks, but the speech of the secondary user is being converted to text for the primary user to read.

NOTE 3: This variation of the text relay service is sometimes referred to as Voice Carry Over (VCO).

4.1.3 Video relay service

A video relay service shall enable communication between sign language users and voice communication users by providing real-time interpretation between sign language and spoken language.

NOTE 1: This conversion will normally be provided by a sign language interpreter.

The video relay service shall have the supported sign and spoken languages announced.

All communication parties (including the video relay service) shall be enabled to use RTT as specified in ETSI ES 204 009 [2]. Other text communication technologies may also be available.

The video relay service should offer deaf-blind primary users the possibility to receive text conversion of the secondary user's speech.

NOTE 2: The combination of bidirectional real-time text, video and voice communication is known as total conversation, specified in ETSI ES 204 009 [2].

NOTE 3: Some deaf-blind users prefer to sign but receive responses from the secondary users converted to text as real-time text.

4.1.4 Captioned telephony services

A captioned telephony service shall provide the facility for the conversion of speech of the secondary user into real-time text for display to the primary user simultaneously with presentation of the original speech.

NOTE: The intention is that the primary user will use outgoing speech and use any combination of hearing and reading to perceive the communication at normal voice communication speed.

The conversion from speech-to-text is now often provided using automated speech-to-text technologies. It may also be provided by a human intermediary supported by automated speech-to-text technology for rapid provision of text output.

4.1.5 Speech to speech relay service

A speech to speech relay service shall enable primary users with functional limitations in speech to interact with other voice users. The CAs who are trained in understanding a variety of speech disorders, repeat when so needed what the primary users say in a manner that makes their words clear and understandable to the secondary user. When needed, the CAs also repeat or clarify what the secondary users say.

The service shall by default provide a direct speech/voice path between all three parties involved in the conversation. Variations may be provided on request from users.

4.1.6 Memory and cognitive support relay service

A cognitive support service shall provide the facility to support primary users who have cognitive disabilities and use communications services. The support concerns making sure that the primary user's input is adequately conveyed to the secondary user, but also that the secondary user's input is understood by the primary user. In addition, the support may include taking notes (if needed in easy to read language) to support understanding and remembering information by the primary users and providing clarifications for complex language. Another function is to keep track of the purpose and topic of the communication and support the primary user with these goals.

4.1.7 Lipspeaking relay service

A lipspeaking relay service shall provide a video communication with a CA repeating soundlessly the secondary users' spoken words with clear lip patterns, facial expressions and supporting gestures so that primary users who rely on lipreading can understand the spoken words.

4.2 Functional requirements for relay service invocation

4.2.1 Functional architecture and invocation of relay services

Relay services are intended to make real-time bidirectional communications services accessible. The most obvious component of that task is to provide the modality conversion described in the previous clause making the human communication accessible. This is achieved by including a relay service communication assistant CA in the communication between the two users. The CA translates for each user the communication from the other user so that it is perceivable or understandable.

The relayed communication should occur in an identical way as any other communication between the users who do not need relay service to communicate. An important aspect of this is establishment of the communication session between the users with relay service included. This is realized by the Relay Service Invocation Functions (RSIF). The present clause outlines the functional properties of the relay service invocation that should be provided in a seamless way to primary users of relay services.

The following functional entities are required to describe the operation of the Relay Service Invocation Functions (RSIF):

- **Primary user equipment.** Including functionality for all media needed for access to real-time communication by the user with disabilities.
- **Secondary user equipment.** The user equipment of the secondary user has voice capabilities and may also support the communication media that the primary user depends on.

- **Communications service of the primary user.** A communications service supporting the media required by the primary user and enabling communication with or without relay service included.
- **Communications service of the secondary user.** A real-time communications service of a user with whom the primary users may have communication.

NOTE 1: The communications services of the primary and secondary users may be the same (or different but fully interoperable) in real implementations for cases when the communications service provides communication in the media needed by the primary user.

NOTE 2: The primary user who is a subscriber of the regular communications service may need to also be a subscriber of a separate communications service because of media dependencies.

- **Relay service.** Provides the modality conversion and other communication support between the primary and secondary users.
- **Relay Service Invocation Functions (RSIF).** Support the communication establishment or the ongoing communication between the users and invoke (or disconnect) relay service in the communication based on selected conditions and actions. Provided as functionality separate from the relay service and realized through dedicated equipment and software needed to establish, manage, and terminate the relay service connection within a communication session, aimed at:
 - detecting conditions when relay service is to be invoked
 - connecting/disconnecting the requested type of relay service
 - completing the connection to the destination (primary or secondary user)
 - control of the initial communication media connections and interconnections for all involved parties, while giving the relay service control of variations of media connections needed during the communication
 - control of information to the parties about the progress and parties in the connection establishment

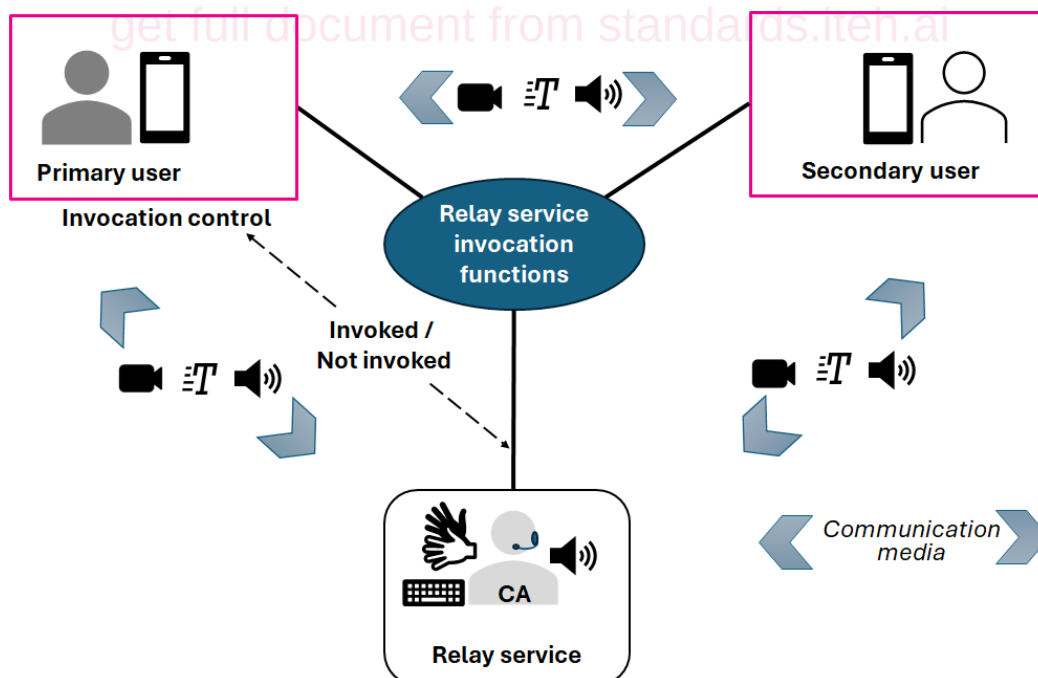


Figure 4.2: Conceptual view of relay service provision divided in functional entities

Figure 4.2 outlines the conceptual view of the relayed communication indicating the role of the different functional entities. Clause 4.2.2 specifies how they should function to achieve equal access to communication.

4.2.2 Relay service invocation for equal access to communication

4.2.2.1 General

The goal of the relay service invocation functions is to provide seamless relay service invocation for any primary relay service users' communication. The guiding principle is that the primary relay service users shall have equitable access to communications services, just like other subscribers who do not need relay support.

That implies that for the traditional telephone communication model with users establishing communication with each other, the primary relay service user shall be enabled both to initiate communications, and to receive incoming communications as any secondary user. This implies that in any communication of the primary users:

- calling identifiers associated with each of the users involved shall be used (see clause B.1 and point 5 therein)
- when a communication is being established, the primary user shall have the option to invoke or not invoke the relay service, either manually or automatically (see clause B.1 and points 2 and 6 therein)

NOTE 1: Solutions that restrict a mainstream number to be used exclusively for the relayed communication should not be considered equivalent, because they do not grant the primary user a free choice of whether to invoke the relay service.

NOTE 2: Legacy relay service implementations often operate without invocation functions causing a three-step invocation procedure with users first using a calling identifier associated with a relay service. This method is complex, especially for when secondary users start the communication establishment. It also has other shortcomings, so it cannot be seen as providing equal opportunities to communication.

NOTE 3: The special case of emergency communications where the secondary user is a PSAP in emergency communications is handled separately in clause 4.3.4.

At the time of writing of the present document, the mainstream communications services are required to provide voice and RTT communications. Hence, for the relay service types that do not require video, a relay service invocation should be possible within the mainstream communications services drawing on the preferences defined by the user. In cases where video is necessary, it is needed that this media communication is at least enabled between the primary user and the relay service; the path between the relay service and the secondary user may remain limited to voice only or voice and RTT communication.

4.2.2.2 Relayed communication when all media are available to all communication parties

When all communication parties have access to all communication media, the relay service is connected within the same communication session, see Figure 4.3. This way of operation shall be used in emergency communications (see clause 4.3.4).