ETSI ES 202 975 V3.1.1 (2026-05)

ETSI STANDARD

Human Factors (HF);
Requirements for relay services

Reference
RES/HF-00301560

Keywords
accessibility, HF, ICT, procurement, relay, service

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Foreword

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

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

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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

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found in the ETSI docbox.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long-term validity.

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

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long-term validity.

The following referenced documents may be useful in implementing an ETSI deliverable or add to the reader's understanding, but are not required for conformance to the present document.

[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

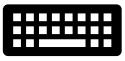
For the purposes of the present document, the following visual symbols apply to indicate the three communication media:

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.

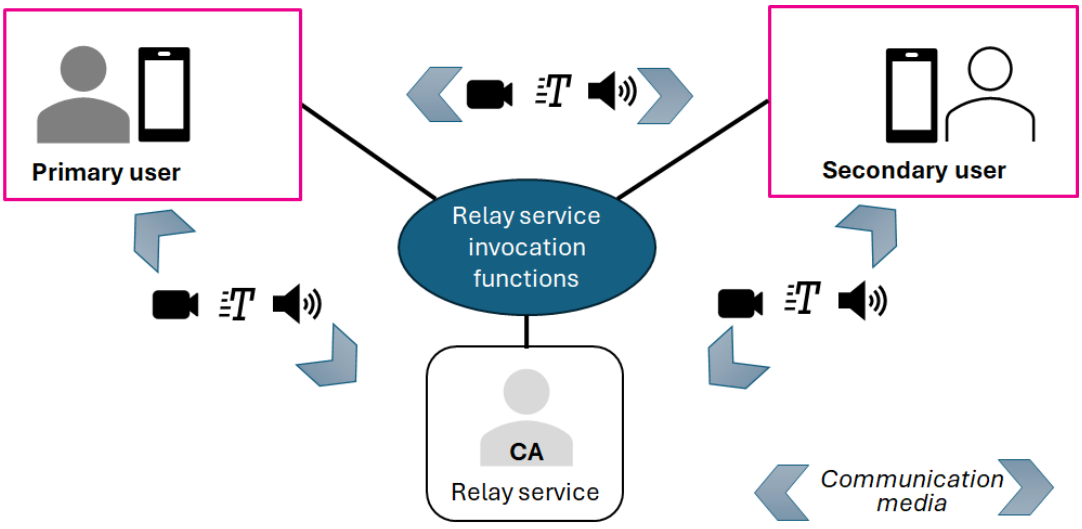


Figure 4.1: Electronic communication supported by a relay service

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

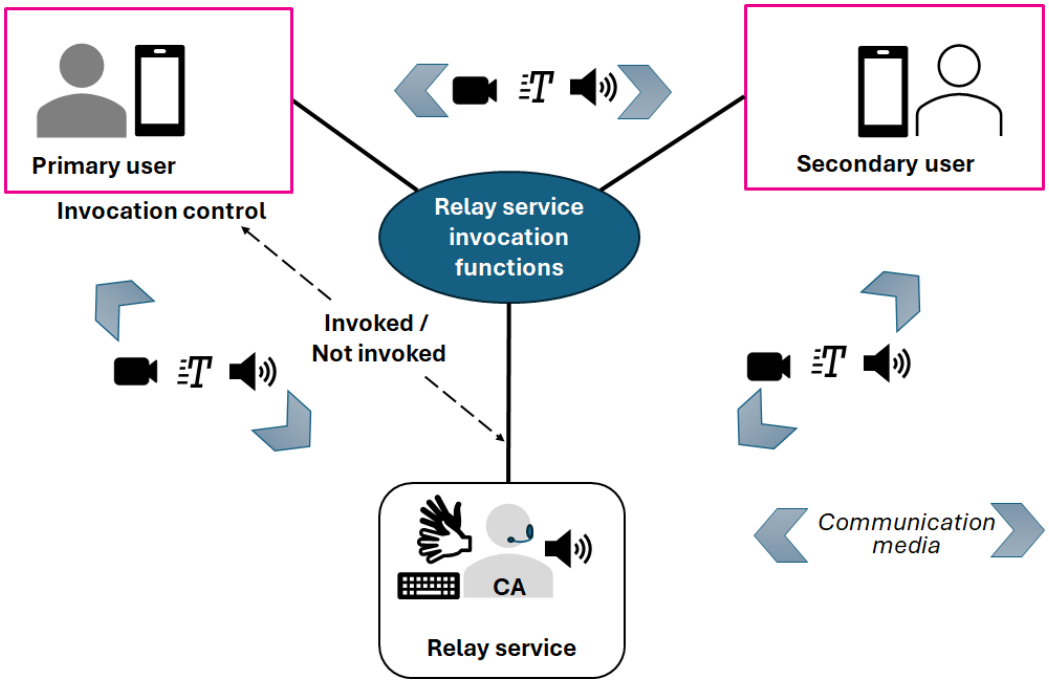


Figure 4.2: Conceptual view of relay service provision divided in functional entities

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 use 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).

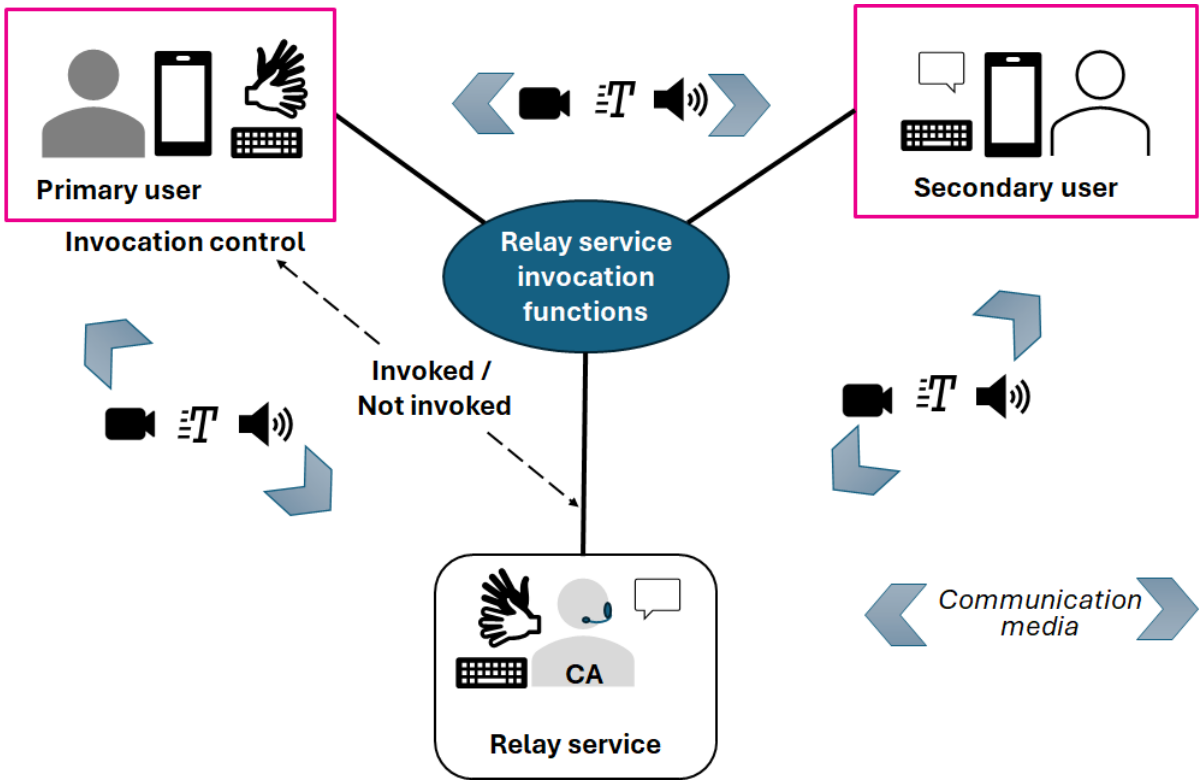


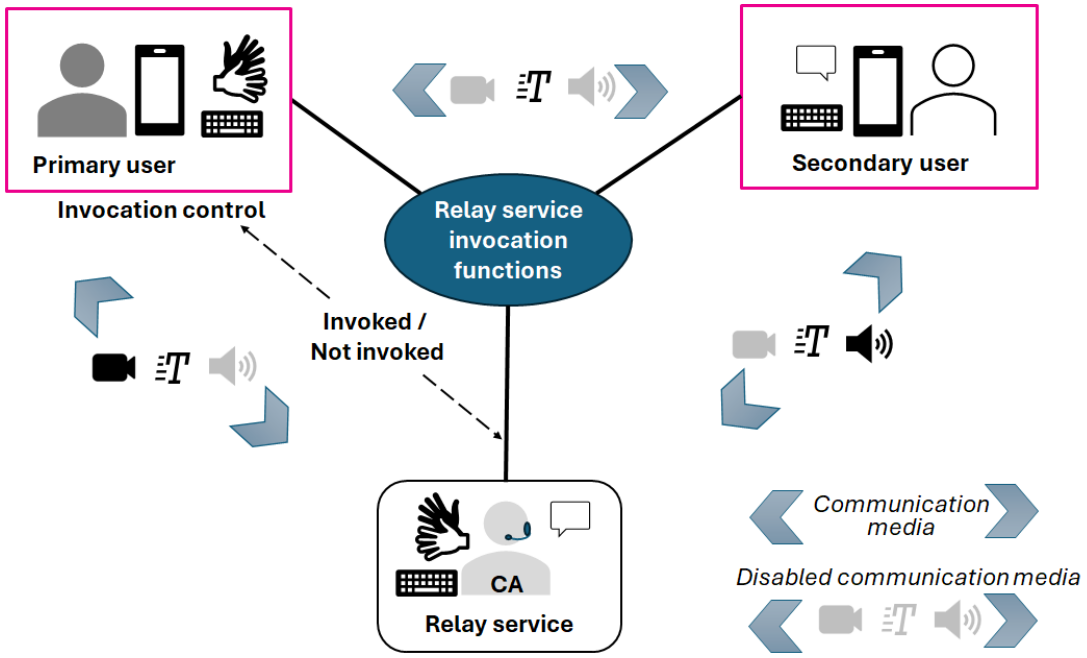
Figure 4.3: A conceptual figure illustrating communication between the primary and secondary user when all communication media are shared by and common for all communication parties, including relay services

4.2.2.3 Relayed communication when a subset of media is available to any one communication party

When different communication parties have different communication needs and have access to a different set of communication media, the relay service is connected with the primary and secondary users using different set of media. Clause E.1 contains a set of tables detailing communication media enabled for each of the relay service types. The tables show recommended default media connections and optional additions for the different relay service types. This shall not prevent any other combination to be offered by relay service functions.

When the primary user is a subscriber of a real-time communications service that is interoperable with the service to which the secondary user is subscribed, but the service does not provide all the media needed by the primary user, the primary user shall be provided with a subscription to another communications service. This other service shall provide the primary user the required media support capable to provide relay service invocation functions and shall be interoperable with the communications service that is common for the primary and the secondary user.

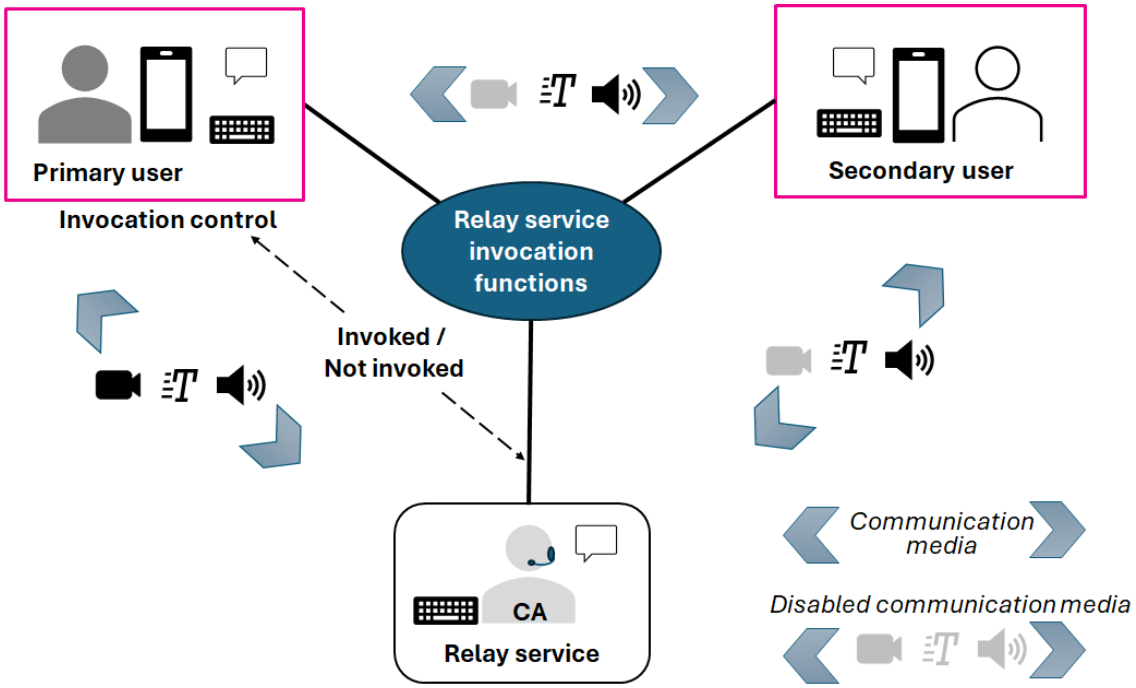
As an example, Figure 4.4 illustrates the most common scenario of video relay service, see Table E.5 in clause E.1. The secondary user does not have access to the video in their communications service. The video communication is however essential for sign language relay access. As indicated in Figure 4.4, a direct communication between the primary and secondary users is possible in RTT, while the relay service is connected with primary user with the video and RTT enabled, and with the secondary user with the audio and RTT enabled.



NOTE: The communication is relayed between the primary and secondary users; the secondary user has access only to the audio and RTT communication, but the primary user uses sign language and a video communication is needed for the required relay service support.

Figure 4.4: A conceptual diagram illustrating a case of video relay communication (see Table E.5)

Figure 4.5 illustrates a case of speech-to-speech relay where a video connection provides an additional support for the speech-to-speech conversion. The audio conversion of the primary user's input is relayed by CA to the secondary user in most cases together with the original audio from the primary user. The secondary user's voice input is transmitted to the primary user. In addition, RTT may be used directly between the users.



NOTE: The communication is relayed between the primary and secondary users; the secondary user has access to the audio communication; the primary user has additionally a video communication enabled with the relay service CA to facilitate the speech-to-speech conversion. RTT is optionally used between the users.

Figure 4.5: A conceptual diagram illustrating a case of video supported speech-to-speech relay communication (see Table E.5)

4.3 Relay service use cases

4.3.1 Generic outline of relay service use cases

Given a variety of needs of the relay service users, there may be many different use cases defined. An array of possible characteristics of the users (both the primary and secondary), communications services and relay services that may be involved in any communication, along with the possible characteristics of relay services involved and needed operational steps are presented in Annex B.

The following clauses are aimed to outline only a few of several common use cases. These examples are illustrative and not exhaustive; drawing on the catalogue of the characteristics and features enlisted in Annex B, each use case may be varied in a number of ways to produce a number of different situations.

4.3.2 Communication with other individual users (secondary users)

The most typical use of relay services is a primary user in communication with other users who are not primary users of any relay service. The communication may be:

- initiated either by the primary relay service user or by the secondary user
- established either using a number-based or non-number based communications service

In any case, the relay service best matching the primary user preferences (needs) should be invoked seamlessly (as described in clause 4.2.2) - either automatically or as a result of the primary user's request.

The primary user shall be enabled to disconnect the relay service during the communication, maintaining the connection with the secondary user(s). This action is of value when the users discover that they have a common way to communicate.

The primary users shall be enabled to invoke a relay service during an ongoing communication.

When the users have media capabilities in common which are not involved in the relaying actions, these media should be conveyed between the users.

NOTE: A typical example is that video would be conveyed between users of text relay services when the users have support for video.

4.3.3 Communication in a multiparty conference

A multiparty conference may be established either by including an additional secondary user(s) in the ongoing primary-secondary user communication, or by simultaneous joining a conference bridge by each of the users separately.

Similar to the basic communication scenario described in clause 4.3.2, it should always be possible to disconnect or add the relay service. The relay service should be provided in an unobstructive manner, taking into account the communication needs of both the primary and secondary users.

Primary users need clear presentation of the relayed communication (good visibility of the interpreter in case of the sign language interpretation, or text in case of text based interpretations) while having access to all other media that are essential for the communication (such as visibility of a shared document or alike).

On the other hand, it may be beneficial to hide the relayed interpretation for conference participants who do not need it.

4.3.4 Relay service use during emergency communication

In case of emergency communications it is essential that not only the relay service is provided in a proper manner (invoked according to the user needs - automatically, if so specified, and of the type that best matches the users' preferences), but also that it guarantees the transfer of the critical information such as the primary user's location and caller identifier.

Emergency callback should always be possible and invoke the same relay service.

The requests for relay services for emergency communications need to be prioritized:

- Regardless the CA's availability, the communication with the PSAP shall start as soon as possible, i.e. even before the CA connects, see clause 6.5.1.
- In case of unavailability of the CA, other relayed communication sessions should be put on hold and the CA should be redirected to assist in the emergency communication. The primary user who is put on hold because of the priority emergency communication, should be given an option to end the communication or to wait until there is again a capacity to complete the relay of their communication.

When emergency communication is launched without relay service invocation, but the relay service is needed, the PSAP shall be enabled to involve the needed relay service, see clause 6.5.2.

4.3.5 Queueing use case

Two types of queueing use cases may be encountered:

1) Queueing at a destination:

In case of communication with customer services or alike, the primary user's communication may be placed in a queue before the conversation is started. The queue function may require answering of some questions or active input of some preferences. Both the requests and the primary user's choices should be properly relayed.

2) Queueing for a relay service CA:

There will also be instances when there is no CA available to relay the communication. The primary users shall in a queue situation be placed in a queue and receive accessible information about the estimated waiting time and/or queue position.

4.3.6 Interacting relay services

Relay services shall provide support for interaction with other relay services enabling the required modality conversions (in potentially multiple steps) when two primary users of relay services wish to communicate but cannot communicate directly with each other.

4.3.7 Relaying automated alternatives to voice-based services

As in case of queuing at a destination and automated interactive voice response services, the relay service shall facilitate leaving the message on the answering machine services, as well as relaying information about unavailability of the destination.

4.3.8 Remote interpreting

A remote interpreting case is a case when the relay service provides interpretation of a face-to-face communication. In such case the relay service CA needs to be able to receive in a sufficiently good quality the input from the conversation participants. Similarly, the interpretation needs to be transmitted with a sufficiently good quality so that that the interpretation is also understandable for the secondary users participating in the on-site communication.

4.3.9 Call progress information and other audible signals

Information about the call progress and other information about the communication shall be presented to the primary user in the needed modality.

NOTE 1: Where a relay service provides text communication, call progress information and other audible signals and information from the communications services would be provided in text form to the primary user.

NOTE 2: Where a relay service provides sign language communication, call progress information and other audible signals and information would be provided in the form of appropriate video-based sign language information.

5 Requirements for provision of relay service

5.1 Relay service organization and quality

5.1.1 Organization plan

The provider of the relay service 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 (if other than the service manager).

NOTE: See informative Annex C for other aspects on the organization of relay services.

5.1.2 Quality assurance

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

The quality organization shall ensure that the service complies with the directions and instructions which are set out in the quality assurance programme.

The quality assurance programme shall contain a description of each service function that is provided and the respective operational responsibilities of the service provider.

5.2 Relay service delivery

5.2.1 Opening hours

5.2.1.1 24-hour service

A relay service should have a 24-hour operation.

A relay service claiming to be a 24-hour service shall be available 24 hours a day, every single day of the year.

5.2.1.2 Limited-hour service

A relay service may have limited opening hours.

A relay service with limited opening hours should at least be available during normal working hours each working day (typically Monday to Friday, e.g. for 7 ½ hours each working day).

The hours of service provision shall be communicated to the users of the service (see also clause 8.4).

NOTE: While any relay service may have limited opening hours, on an overall system level 24-hour access to relay services needs to be considered, e.g. to support emergency communications. Such support may be realized by ensuring that PSAPs have capacity to handle different communication modalities or by having one relay service point open 24 hours a day with priority to handle emergency communications.

5.2.2 Answering times

The following requirements should apply:

- at least 70 % of all communications are answered by the relay service CA within 30 seconds
- at least 90 % of all communications are answered by the relay service CA within 60 seconds

NOTE 1: A communication is answered by the CA when the CA is ready to provide the relay support.

The answering times shall be measured over a continuous one month observation period.

Emergency communications shall be given priority in getting a CA assigned to them.

NOTE 2: Information about possible interaction between relay services and IP-based emergency services can be found in ETSI TS 103 919 [i.7], ETSI TS 101 470 [i.6] as well as in ETSI ES 204 009 [2].

NOTE 3: For video relay services, the limited availability of sign language interpreters may lead to increased times to reach the conversion function.

5.2.3 Queue situations

Where a queue function is provided for reaching the relaying function, verbal messages and text, or signed messages shall be provided as appropriate for the selected relay service type. The information shall be given to the initiating user regarding the estimated waiting time and/or queue position.

When the initiating user is presented the information about the waiting time and/or queue position information, the initiating user should be offered the option of selecting to be called back, when the queue position has reached the CA.

NOTE: The value of the call-back function increases, if a time estimate for when the call-back is expected can be provided.

5.2.4 Language

A relay service shall provide information about:

- a set of supported languages
- a set of supported modalities for the specified languages

5.2.5 Communication restrictions

There shall be no restriction on the length and number of communications from any user, except in exceptional circumstances (e.g. abuse of the service or force majeure).

A limited-hour service may disconnect a communication at the end of the opening hours, informing the users in advance.

The CA shall be permitted to discontinue handling a communication 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 communication.

5.2.6 Hold

5.2.6.1 General

No established communication shall be put on hold during the operation of the service, except for necessary short periods of time, as needed during normal operation. For example, to handle prioritized emergency communication (as per clauses 5.2.2 and 6.5 of the present document). Exceptions are permitted when a communication is modified for the reasons set out in clause A.4.

5.2.6.2 Handling of queue situations at the destination

Communications put in queue at the destination for a long time are resource-consuming with regard to the limited availability of qualified CAs.

If an instant re-gain of a CA to attend the communication can be arranged, the CA may leave the communication unattended (if monitored) while in queue, waiting for a response at the destination. Otherwise, the CA should not leave the communication.

Whenever a call-back from the destination is offered as an alternative to staying in queue, the relay services should enable the use of the option facilitating the call-back from the destination to the primary user, including the relay service in the communication.

NOTE: The relay service invocation functions are supposed to handle also the relay service invocation in the call back. No special action of the relay service would be needed.

5.2.7 Traffic recording

5.2.7.1 Service performance monitoring

Records shall be kept of the supply time for the original provision of the service, fault rate, fault repair time, unsuccessful communications ratio, lost communications, time to answer and communication establishment time.

5.2.7.2 Performance monitoring

Records shall be kept of the number of unique called and calling identities, the number of communications handled (split into types of communications handled) and the average length of communications (split into types).

5.2.8 Communication with automated alternatives to voice-based services

5.2.8.1 Interactive services

The CA shall assist users to leave and retrieve messages on Interactive Voice Response (IVR) systems.

A relay service user shall be enabled to receive assistance when using any IVR service which requires the input of additional information for example via a keypad or as voice input. The CA converts the spoken message into the modality requested by the primary user. During the ongoing IVR communication, the CA shall complete the communication as agreed with the primary user.

NOTE: Security risks may arise if the interactive service is used for financial transactions, depending on how security is managed. Additionally, time-outs in the interactive service can lead to practical challenges.

5.2.8.2 Access to on-line information, data and services through a voice communication

The CA shall have the means to assist users in accessing information, data or online services, including banking or buying train tickets.

5.3 Relay service reliability

5.3.1 Availability

The availability of the relay service, expressed on a monthly basis, shall be specified in a service agreement.

NOTE: The achievable availability is likely to differ widely depending on the service scope, volume and financial conditions. A good practice advice would be to require the availability of at least 99,7 % of the stated service opening hours per month, while during early service establishment phase it may be more realistic to require 99 % availability.

5.3.2 Service performance management

The relay service provider shall keep records of all detectable communication establishment attempts and communications with deviations of specified kinds. The types of deviations can for example be communications:

- that are terminated by any user after invocation of the relay service but before the normal ending of the communication
- where media do not start flowing as intended
- where media cease to flow properly
- where the communication quality is not sufficient to perform the relaying action
- disconnected by any other reason than being terminated by any party
- not completely set up because of technical reasons
- where any of the users reported clear dissatisfaction with the communication performance
- where language problems of any of the parties in the communication severely disturbed proper CA performance
- that are unsuccessful due to technical, environmental or language related problems in the ongoing communication

The rate of the deviations listed above shall be reported to the commissioning agent as a percentage of the total number of detectable communication establishment attempts per month.

The allowable maximum rate should be 8 %.

NOTE: Some of the above reasons are outside the direct influence of the relay service. The overall performance of the relay service depends on the reliability of both the relay service invocation functions and the communications services, as well as user equipment. Active collaboration of the relay service with all actors involved in the communication is needed to improve the quality of the services and reduce the rate of lost and abandoned communications.

5.3.3 Error messages

Error messages shall be provided in the event of any system failure. They shall be provided in forms accessible for the users of the service.

5.3.4 Disaster recovery plan

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

Procedures shall exist for informing the commissioning agent, without delay, of any major disruption of the service. The detailed reporting to follow within ten days 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 Interaction of relay service , relay service invocation functions and communications services

6.1 Ensuring the interoperability

6.1.1 General

For the relay service and the relay service invocation functions to provide their intended functions, they need to be interoperable with the communications service of the primary user and the communications service of the secondary user, including their user equipment. This implies both that communication between these systems are enabled and configured to be addressable between the system components and that common communications protocols and media coding and transport are supported, at least in the interfaces between the system components.

6.1.2 Communication establishment

The establishment of communication with the relay service shall always go through the Relay Service Invocation Functions (RSIF). The RSIF shall provide an interface for the primary user to include the relay service in the communication, and the specified primary user equipment and secondary user equipment via their communications services.

6.1.3 Media specifications

6.1.3.1 Media support

Clause 4.1 of the present document specifies which media are required to be supported by each type of relay service.

When video is supported, total conversation shall be supported by support of the real-time text, video and voice media according to the requirements of clause 6.1.3 and synchronization of these media as specified in ETSI ES 204 009 [2] clause 5.2.4.

When the communications services of the primary and secondary users support other media than what is required for the relaying action, these media shall be enabled to be included in the communication between the users.

NOTE 1: A typical use case for this situation is support by a speech-to-speech relay service in a video communication including voice. Another example is support by captioned telephony in a total conversation communication.

NOTE 2: References to dominating media protocol specifications are provided in notes for the dominating communication control technologies: Session Initiation Protocol (SIP) used in VoIP type communications, IP Multimedia Subsystem (IMS) used in mobile technologies and Web based Real Time Communication (WebRTC) used in web communication.

6.1.3.2 Real-time text

Real-time text performance, protocols, and interoperability aspects specified in ETSI ES 204 009 [2], clauses 5.2.1 and 5.2.5.3 shall be fulfilled.

NOTE: The specifications provided in ETSI ES 204 009 [2], clauses 5.4.4 and 5.4.2 detail specific protocols for RTT used in SIP and IMS.

6.1.3.3 Video

Video performance and interoperability aspects specified in ETSI ES 204 009 [2], clauses 5.2.2 and 5.2.5.1 as well as clause 6.2 of the present document shall be fulfilled.

NOTE: The specifications provided in ETSI ES 204 009 [2], clauses 5.4.4 and 5.4.2 detail specific protocols for video used in SIP and IMS.

6.1.3.4 Audio

Audio performance and interoperability aspects specified in ETSI ES 204 009 [2], clauses 5.2.3 and 5.2.5.2 shall be fulfilled.

NOTE: The specifications provided in ETSI ES 204 009 [2], clauses 5.4.4 and 5.4.2 detail specific protocols for voice used in SIP and IMS.

6.1.3.5 Shared data

It is very common that shared presentation of documents is of central importance for participation in multiparty conference meetings. When a relay service is supporting participation in a multiparty meeting, the CA shall be enabled to view shared documents to be able to correctly convey the communication. Relay services shall have possibility to have web-based access to multiparty meetings.

Relay services may also have other tools for multiparty meeting participation including sharing documents.

6.1.4 Web access

Web access and user interface accessibility requirements specified in EN 301 549 [1] in general and EN 301 549 [1], clause 9 in particular shall be fulfilled.

Web based Real Time Communication (WebRTC) is a commonly used technology for real-time communication between user equipment and communications services. Many real-time communications services and multiparty conference services provide WebRTC access as well as access via apps. WebRTC is described in IETF RFC 8825 [i.12]

Relay services and relay service invocation functions should provide access to multiparty conference services through WebRTC technology for real-time text, video, audio and shared document presentations.

NOTE: Interoperability requirements for WebRTC are placed on the web browser used. The communication software using WebRTC for communication is usually expressed in HTML5 and is fetched from the web server of the accessed service and is therefore expected to be interoperable with the service when executed by a well performing web browser. Use of WebRTC for total conversation is specified in ETSI ES 204 009 [2], clause 5.4.5.

6.1.5 Access for ICT unsupported by the relay service

The relay service invocation functions shall include necessary interworking solutions to allow otherwise unsupported ICT to interoperate with a relay service.

NOTE 1: For example, a web based real time communication service would use an interworking solution to interoperate with a SIP-based relay service.

NOTE 2: Interworking solutions may come as APIs or specifications needed to establish the interworking.

6.2 Ensuring the transmission quality

The relay service and relay service invocation functions should not degrade the transmission quality of the communications service in use. The media quality requirements of ETSI ES 204 009 [2] clause 5.2 shall be fulfilled when the communication participants fulfil them. Further information about accessible communication can be found in ETSI ES 204 009 [2].

6.3 Ensuring addressing equivalence

6.3.1 Supported forms of addressing

6.3.1.1 Number-based addressing

Relay service invocation functions shall be able to invoke relay services in communications based on number-based destination addresses.

NOTE: The operation in number-based addressing space can be agreed in an operations agreement for the invocation functions or otherwise established and published.

6.3.1.2 Non-number-based addressing

Relay service invocation functions shall be able to invoke relay services in communications for non-number-based destination addresses.

The destination addresses for which the invocation functions act may be limited to addresses valid in a set of communications services.

NOTE: The range of addressing and operations in non-number-based services can be agreed in an operations agreement for the invocation functions or otherwise established and published.

6.3.1.3 Addressing between communication services

When a combined communication session involves communications services that use different forms or ranges of addressing, the relay service invocation functions shall provide an addressing mechanism to enable communication between the primary and secondary users.

NOTE: A combined communication session is needed whenever the primary user requires other communication media than what is supported by the communication service of the secondary user.

The following addressing mechanisms are examples of how addressing between services may be implemented:

- user-controlled communications transfer between the involved services
- number portability or equivalent addressing function in public communication networks
- address conversion managed by one of the involved communications or relay invocation services
- direct action within the primary user equipment
- use of a common caller identifier across multiple communications services, enabling communication both within services that support limited media and within services that support all required media, as well as between the services

Primary users whose communications service uses forms and ranges of addressing compatible with those of the secondary users shall not be required to use other communication services to be enabled to use relay services.

6.3.2 Equivalent access and use of communications service for the primary users

The destination address assigned to the primary relay service user by the communications service of the primary user shall be possible to use for communications with or without relay assistance (see clause 6.4.2).

Regardless context, the assigned destination address shall be treated equivalently to those of other users with respect to:

- recognition and service by the communications service, including interoperability within the same range of communications services

- use as a caller identifier in outgoing relayed communication and as destination address for incoming communications
- presentation to secondary users (by presentations of the number, address, username, or any other identifier) and including the same possibilities for suppression of the presentation
- linkage to a service subscription with the same offerings of service features

NOTE: Such service offerings include the possibility to use premium-rate services, implying special charges for cases when such services are offered.

6.3.3 Use of user equipment for communications involving relay services

When communications involving relay services are required, the primary user shall be enabled to use user equipment or a communications client registered with a mainstream communications service provider, provided that the service supports all media required by the primary user.

When the mainstream communications service provider does not support all media required for accessibility reasons, the primary user shall be provided with user equipment or communications client registered with a communications service provider that supports the required media and enables access to the relay service.

The primary user shall be enabled to perform the same type of communication operations as the secondary users and shall be provided with a consistent and predictable user experience across user equipment and services, to the extent permitted by the supported media.

NOTE: This includes cases where a sign-language user communicates with a destination address reachable via a mainstream communications service that does not support video, using total conversation equipment registered with a communications service supporting video and interconnected via relay service invocation functions.

Where the primary user has both a mainstream communications client and another communications client supporting the required media and relay services access, and both use the same caller identifier, the user should be enabled to use:

- the mainstream client for all forms of communication it supports (e.g. voice and RTT)
- the other communication client to use for communication with other media and to access relay services

6.4 Relay service invocation for communication with other individual users

6.4.1 Purpose of relay service invocation

The purpose of relay service invocation is to enable primary users to use communications services with the support of relay services.

The relay service invocation functions shall provide the necessary interfaces and control to support communication establishment and service usage in a manner comparable to that experienced by other communications service users (see clause 4.2.2). The primary user shall be enabled to include a relay service when needed in the communication session, based on user preferences or communication context. This functionality shall be provided to the primary users for both outgoing and incoming communications.

Secondary users shall be enabled to establish communication with primary users without prior knowledge that a relay service might become invoked in the communication. Initiating communications to, and receiving incoming communications from the primary users, shall be experienced as any other communication establishment.

6.4.2 Relay service invocation functions

The primary user shall be provided with the opportunity to select between the following options regarding invocation of a relay service for outgoing and incoming communication:

- Invoke a predefined relay service in all outgoing and incoming communications

- Do not invoke any relay service in selected outgoing and incoming communications
- Select by a simple user interface indication in outgoing and incoming communications if a predefined relay service will be invoked or not
- Select manually per outgoing/incoming communication a relay service to invoke (or none)
- Invoke a predefined relay service for all outgoing/incoming communications except to registered users of the same service type

As a result, the primary user shall be provided with a possibility to:

- Get a relay service invoked in incoming and outgoing communications based on an automatic as well as manual simple user action
- Avoid getting a relay service included for cases when it is not needed, either by automatic or manual decision

NOTE: Some primary users can be expected to be able to have communications with other users directly without relay service use. Examples are e.g. primary video relay users communicating directly with other sign language competent users. Deaf and hard-of-hearing users may be able to communicate without relay service by voice with some persons they know well while for general communication they need text relay or captioned telephony.

The primary user shall be provided with the opportunity to invoke a relay service during an ongoing communication, and to disconnect an invoked relay service during an ongoing communication, selecting between the following options for the invocation:

- Invoke a predefined relay service by a simple procedure
- Invoke a specified relay service
- Disconnect the invoked relay service

6.4.3 Relay service invocation procedure

6.4.3.1 Relay service invocation procedure outline

The present clause introduces suitable procedures for invocation of relay services. The centre of the functionality for the invocation is a conceptual Relay Service Invocation Functions (RSIF) which has interfaces to the electronic communications services used by the primary and secondary users and the relay services. The central entities in the RSIF are invocation logic based on a multi-party bridge, further referred to as RSIF bridge.

This procedure outlines the steps for establishing a relayed communication session using the RSIF bridge.

The procedure has variations depending on whether the primary or secondary user initiates the communication.

A fundamental principle for the procedure is that the relay service shall be ready to relay before the communication path with the secondary user is established for both the outgoing and incoming communication.

An exception is for emergency communications, where both the relay service and the emergency communication shall be initiated simultaneously, and the communication is established as soon as any of the services responds. See clause 6.5 of the present document.

As specified in clause 6.3.2, caller identifiers of the primary and secondary users shall be shared for the relayed communication in the same way as for direct communication with no relay service invoked:

- If the initiating secondary user has not suppressed their caller identifier presentation, the caller identifier shall be presented to the primary user, even when the relay service has been invoked to facilitate the communication.
- If the primary user has initiated the communication and has not suppressed their caller identifier presentation, the caller identifier shall be presented to the secondary user, even when the relay service has been invoked to facilitate the communication.

NOTE: Variations of this procedure apply specifically to emergency communications and conference participation. See clauses 6.5 and 6.6 of the present document.

1) Initiation and routing

- **Primary to Secondary:** The primary user initiates communication to the secondary user, selecting whether to invoke a relay service - either based on stored settings or as requested per call. The request is handled by the RSIF. If relay is selected, the RSIF initiates the communication with the relay service. The primary user receives queue status or call state information in accessible format.

- **Secondary to Primary:** The secondary user initiates a communication to the primary user. Based on the primary user's profile, the RSIF intercepts the incoming request. In accordance with the primary user's configured preferences, the RSIF either automatically invokes a default relay service or prompts the primary user to confirm whether a relay (default or specified) should be invoked. After the primary user responds and confirms the use of a relay, the RSIF invokes the relay. At this stage, the media channels between the users are not yet established. Instead, the secondary user receives ringing tone or call state information.

2) Relay engagement and subscription for notifications

The relay service subscribes to the RSIF bridge to receive notifications, including:

- the caller identifiers of the primary users to be shared to the communication parties (if this information is not requested to be suppressed) (see clause 6.3.2 of the present document)

- the roles of the users (primary vs. secondary)

- the specific type of relay service required (e.g. text, sign language, etc.)

The relay service is supposed to provide this information to the Communication Assistant (CA) so that the relaying action can start smoothly.

3) Queueing and contact completion

- The relay service sends ringing tone and visual ringing indicator or queue status information to the connected party(-ies) via the media paths.

- Depending on who initiated the call, and what type of relay service is invoked, when a CA answers, the following steps are taken:

  - For a primary user invoking speech-to-speech and memory and cognitive support relay service, the primary user informs the CA about the purpose of the communication, and a suitable greeting to use when the secondary user has answered. When that is ready, the CA signals to the RSIF that the communication to the secondary user can be initiated.

  - For all other types of relay services when the primary user initiated, when the CA answers, the RSIF initiates the leg to the secondary user on behalf of the primary user. The ringing tones and other call progress information are conveyed to the primary user.

  - For all types of communications initiated by the secondary user, the answering of the CA makes all three legs of the communication established and the RSIF now connects the media as specified in clause E.1.

4) Bridge completion and start of conversion

- Once all three legs are connected in the bridge with all media connections for the selected relay type, the CA conveys the answer to the other party when the communication is answered.

- For relay service types causing slow responses, or unusual experience for the secondary user, the CA may add a very brief statement in the answer conveyed to the secondary user that the communication is relayed. This action is useful for text relay service and for speech-to-speech and memory and cognitive support relay service.

- Ongoing conversion or other communication support is conducted as specified in clause E.1.

5) Variations during communication

During ongoing communication there may arise a need to use relay service invocation functions to adjustments of the ongoing communication:

- There may appear a need for a change of media connection, e.g. a media is desired to get connected through between the users which is normally not connected through. The relay service shall be provided with means to control such variations.

- The primary user may want to exclude the relay service and shall therefore be enabled to request the disconnection of the relay service while maintaining the connection with the secondary user.

6.4.3.2 Implementation details

The main communication control technology for relay invocation functions is expected to be SIP specified in IETF RFC 3261 [i.8]. Many additional standards use SIP to establish communication handling functions suitable for relay invocation functions. The framework for conferencing in IETF RFC 4353 [i.9] is a suitable base. The event package in IETF RFC 4575 [i.10] provides the possibility to inform the CA about the participants of the communication and the status of their connections. The specification about conferencing for user agents in IETF RFC 4579 [i.11] provides methods to establish the required three-party communications.

These specifications are suitable for composing implementations of relay invocation functions, interacting with primary user equipment, secondary user equipment, a multi-party bridge and the relay service in consistent and interoperable ways for implementing the relay service.

The most suitable placement of the RSIF may be in an electronic communications service or primary user equipment. When placed in an electronic communications service it may be in a mainstream communications service or a dedicated service with interoperability agreements with the service with which the primary service wants interoperability.

The relay services are most suitably implemented as separate services with a defined interface to the RSIF. This interface shall allow the relay service to get information about the participants, control when the leg with the secondary user is established, and select between a few media connection patterns between the parties relevant for the provided type of relay service.

6.5 Invocation related to emergency communication

6.5.1 Relay service invocation for emergency communication

The relay service invocation functions shall act on emergency communications of primary users.

Outgoing emergency communications from the primary user shall be recognized by the user equipment or communications service and addressed as IP based emergency communication but enabling the RSIF to intercept the communication and invoke a relay service when so indicated by the request from the user.

The invocation shall be made so that both the relay service leg and the emergency communications leg are initiated simultaneously so that some communication can start as soon as any of these parties have answered.

The communication between the emergency communications PSAP and the relay service shall be established in a three-party fashion with all media supported by each pair of parties in the communication conveyed to the parties.

The communication establishment shall be given priority in queues for access to the relaying function.

Emergency service callback to the user shall by default enable the same relay service invocation options as in the original emergency communication.

The relay invocation functions shall use the same procedure elements as specified in clause 6.4.3 of the present document with some procedure steps modified as specified in the present clause.

NOTE 1: Emergency communications PSAPs are expected to have RTT communication facilities. Therefore, text relay service users will usually not need relay service support for emergency communications in the home country. When visiting foreign countries, the situation is different and vary widely for different users and different PSAP call takers. The opportunity to get a relay service invoked without delaying the connection to the PSAP and the opportunity to disconnect the relay service during the communication will provide the best opportunities to handle the emergency communication efficiently when visiting other countries.

NOTE 2: More information on accessible emergency communications is available in ETSI TS 103 919 [i.7].

6.5.2 Relay service support requested by the emergency communications PSAP

When a user in an emergency initiates an emergency communication (e.g. to the emergency number 112), the connected emergency communications PSAP shall be enabled to invoke a suitable relay service.

This situation may e.g. occur when the user in emergency has not arranged to be a primary user of any relay service invocation functions.

The communication between the emergency communications PSAP and the relay service shall be established by the PSAP in a three-party fashion with all media in common between the user and the relay service also established in the communication path with the PSAP.

The user may anyway have made settings for preferred relay service and preferred language and modality. The PSAP shall be enabled to extract such information and use it to include a suitable relay service in the emergency communication automatically or after PSAP call taker assessment of the need.

These settings are expected to be part of the user profile available in the user equipment to be used in emergency communication establishment.

The relay service invocation initiated by the PSAP may use the same procedure elements as specified in clause 6.4.3 of the present document with adaptations for the emergency communications case.

More information on this case is available in ETSI TS 103 919 [i.7].

6.6 Relay service invocation in a multiparty conference

6.6.1 General about use of relay service in a multiparty conference

Multiparty conferences facilitate communication in a group, often but not always providing the use of video, voice, text chat, RTT, document sharing and floor control. Primary relay service users shall be enabled to participate in multiparty conferences. Clause 6.6 of the present document contains the requirements for such participation, with focus on the most prevailing form of conference, which is the call-in conference, where all participants get access to the conference through web or app access via a meeting-link.

6.6.2 Relayed communication within the same conference connection

When the conference service supports the communication media used by the primary relay user, the relay service can be provided entirely within the same conference connection.

This is especially beneficial when the primary users use sign language or RTT and the same relaying action can be used by more than one primary user.

The conference system should then provide functionality to provide the view of the relayed media, e.g. sign language in video or RTT in a text window, in a way that can be sized to a suitable size and displayed in a selected fixed position on the user display even if the relay service CA or interpreter is changed during the conference.

When the present document is authored, the invocation of relay service in conferences most often implies that the relay service is provided with an invitation to participate in the conference as a user or as an interpreter. The primary user is expected to be involved in getting an invitation to the conference and an agreement with the relay service on how to set up the relaying of the conference. This method is complex for the primary users and provision of better equality are desirable as indicated in clause D.4. The relay service invocation functions should provide means for participation in conferences where the conference is the secondary user, and the relay service is invoked in the conference through the connection actions to the conference by the primary user.

6.6.3 Relayed communication via a separate connection

When the conference service used for the conference does not have support for the media used by the primary relay user or has support only in a way that would disturb other users, the relay service shall enable provision of its relaying action through a connection that is not conveyed to the conference.

NOTE: Use cases may be a participant using sign language participating in a conference with only voice support. The user will in that case have a video communication with the CA.

6.7 Provision of supplementary services

6.7.1 General

Supplementary services such as diversion or message storage and retrieval can usually be made available in conjunction with any form of relay service via the relay service invocation functions.

These additional services would normally be provided at the user's option and sometimes at an additional charge but may alternatively be provided as part of the basic communications service offering.

The traditional supplementary services have in some cases an audio-based user interface that makes them inaccessible for primary relay service users who depend on other media. These supplementary services shall be made accessible to primary relay service users by providing the supplementary services with user interfaces in the media that the primary users are able to use. In some cases, the supplementary services are accessed with support by the relay services as specified in clause 5.2.8.

The supplementary services related to provision and presentation of calling address and caller identifier are discussed in clause 6.4 of the present document.

6.7.2 Conference and 3-party communication

Relay service invocation in conference- related supplementary services invoked as a variant of communication with individual users shall use the same procedures for invocation of relay services as specified in clause 6.4 of the present document.

6.7.3 Relay service invocation performance management

Non-distributed parts of the relay service invocation functions shall keep records and report the detectable communication establishment attempts and communications of the following:

- all attempts to establish communication;
- all attempts classified as successful by the relay service invocation functions;
- where media do not start flowing as intended;
- where media cease to flow properly;
- not completely set up because of technical reasons;
- not completely set up because of disconnection of either user.

The rate of the communications listed above should be reported to the commissioning agent in terms of a percentage of all detectable communication establishment attempts during each month.

The allowable maximum rate of types 3-6 compared to 1 should be 8 %.

7 Requirements on communications assistants

7.1 Communications assistants and sign language interpreters

"Communications Assistant" (CA) is defined for the purpose of the present document as a human operator or an automatic agent providing conversion between different modalities and/or interpretation or other communication support between the primary and secondary user. That includes sign language interpreters for video relay services.

Consequently, although many of the requirements provided in the present clause 7 apply to sign language interpreters, this is not spelled out specifically in most cases.

NOTE: See informative Annex A for more advice for CAs.

7.2 Proficiency requirements (including requirements on automated CAs)

Before being permitted to handle any communication, a CA shall possess the following skills and abilities (as appropriate to the service offered):

- for CAs working in text relay services: a typing speed of at least 250 characters per minute;
- for sign language interpreters working in video relay services: professional sign language interpreting education/certification and skills;
- proficiency in those language skills that are announced to be in the qualification range for the relay service (see clause 5.2.4);
- ability to understand users with limited language skills, as appropriate for the relay service;
- rapidity and correctness of automated transcoding verified to be sufficient for use in the service for the supported languages.

7.3 Procedures

7.3.1 Information

The CA shall have an option to briefly inform the secondary user that the communication involves a relay service and that the following conversation is supported by the relay service.

The primary user is not expected to need any introduction as they know that they have availability of a relay service.

NOTE: The appropriateness of providing this information varies between the different types of relay services. For captioned telephony service it is not appropriate. For the other types of relay services it is usually appropriate, and especially for the types resulting in delayed answers from the primary relay users.

7.3.2 Freedom from bias

The CA shall relay communications in a neutral, unbiased, and non-discriminatory manner.

The CA should try to convey the spirit of all utterances, as preserving their nuance and character.

7.3.3 Assistance

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

NOTE: Common topics for such guidance include turn-taking, the use of language directed to the other user, positioning and light conditions in video communications and information on quality problems in video communications and how to adapt to them.

7.3.4 Sign language interpreters' code of practice

A sign language interpreter shall, helpfully and cautiously, carry out all assignments according to the applicable interpreting code of practice.

7.3.5 Neutrality

A CA shall stay neutral and unprejudiced during a relay service assignment.

7.3.6 Accuracy

Everything in the communication shall be appropriately interpreted and all information relevant for the interpreting situation shall be given, e.g. presence of dial tone, busy signal, significant background auditive and visual input, etc. in accordance with the code of practice. The relaying action shall be as accurate as possible and shall not modify any language usage.

7.4 Confidentiality

7.4.1 Content disclosure

CAs shall not disclose the content of any relayed communication. CAs shall consider all transactions confidential, in compliance with the national law.

7.4.2 Secrecy

The CA shall not disclose what has been learned about the individuals, trade secrets, business relations or issues concerning national security, in compliance with the national law.

7.4.3 Privacy

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

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

7.4.4 Emergencies

If a user 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 CA to an emergency response centre or to a supervisor.

8 User aspects

8.1 General

The relay service users relevant for the present clause 8 include the primary users and, when not omitted by the titles of the clauses, also the human CAs of the relay service.

8.2 Primary user preferences

Primary users will benefit from being provided with means to store user preferences related to relay service usage with the purpose to achieve the desired usage conditions.

These user preferences are expected to be part of the user profile available for viewing and setting in the user equipment.

The following factors are of interest as user preferences. The list is not exhaustive, and some factors may not be needed in specific implementations:

- communication protocol, address and type of favourite relay service
- relay service invocation address
- use of relay service on new communications: always / on demand
- preferred language and modality for expression and perception specified separately

8.3 User interface considerations

The user interface considerations expressed in ETSI ES 204 009 [2] apply to the extent that the media in the user equipment is supported.

The relay service user interface provided for both primary users and the human CAs shall meet the relevant accessibility requirements of EN 301 549 [1].

NOTE: EN 301 549 [1] contains accessibility requirements applicable to ICT provision and procurement.

8.4 Information about relay service

8.4.1 General information

The relay service shall provide the user with information about the service. This includes information about the service (including relayed communication formats), the extent of the service, the relay service invocation functions, a user guide and all information about changes.

The relay service provider shall make available suitable outreach material to educate the public on the existence and use of relay services. Such information shall be available to all users of electronic communications services.

All provided information shall be available in accessible formats. Requirements for making information provided in a digital format are specified in EN 301 549 [1]. Requirements for making information provided in non-digital formats or through support services may be found in documents related to Directive (EU) 2019/882 [i.1].

8.4.2 Accessibility of the information provided during the use of the service (including interoperability with end user products and service)

Where the relay service provides to the primary users any means to access the service, the information provided during the use of these means shall meet the relevant accessibility requirements of EN 301 549 [1].

NOTE: EN 301 549 [1] contains accessibility requirements applicable to ICT provision and procurement.

8.4.3 Technical information

The relay service shall be provided with sufficient technical specifications for the use of the service. This information shall include details of the communication establishment protocols, the compatible media codec specifications, the required transmission parameters and the necessary addressing information, specifying in each case the options required and supported.

8.5 Test environment

The relay service shall be provided with a test environment for validation and testing purposes available to vendors and other parties to test technical access to and compatibility with the offered services.

Annex A (informative): Needs and Rights of Communication Assistants/Interpreters

A.1 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 should train their staff, on a regular basis, to meet the specialized communication needs of all individuals with the need the relay service addresses, using the relay service. They should be taught to meet the emotional stress arising from their work.

Deaf awareness training should keep up with new developments in the field.

A CA's manual should be provided to the relay service staff.

A.2 Counselling

Counselling facilities should be provided to assist CAs to deal with emotional aspects of relaying communications. The counselling support should be confidential between the CA and the counsellor.

A.3 Working conditions

Relay service interpreting services should follow the established code of practice for face-to-face interpreting.

Where no recommendations or requirements exist or apply to consecutive interpreting time, CAs should, in general, not work with interpretation for more than 30 consecutive minutes per hour (observed over each working hour), or for more than 50 % of the total of their scheduled work time (per workday).

NOTE: Recommendations can differ for the various types of interpreting.

A.4 Profanity, obscenity and illegality

A.4.1 Profanity and obscenity in conversations

CAs should not make any judgements on the profanity or obscenity of a conversation.

CAs should be permitted to transfer any communication to another CA or to a supervisor, if they are offended by its content. If necessary (e.g. no supervisor or other CA is available), the communication may be terminated.

Such events should, in all cases, be reported to and processed by a supervisor, following applicable practice.

A.4.2 Obscenity directed to the CA

CAs should not be required to tolerate obscenity directed at them. Such communications may be transferred to a supervisor or terminated.

Such events should, in all cases, be reported to and processed by a supervisor, following applicable practice.

A.4.3 Illegality

CAs should act in compliance with applicable law with regard to any illegality in the content of a conversation. CAs should be permitted to terminate or transfer to a supervisor any communication containing potentially illegal content.

Possible events should be reported to and processed by a supervisor, following applicable practice and law.

Annex B (informative): Use cases and their decomposition in operational steps

B.1 Operational steps

Use cases can be composed by combining operational steps. For this purpose, the following steps are defined:

The basic features defining a relay service:

1) Relay service type: The user's disability and communication preferences determine the choice of relay service type, which may include one or more relay service types:
    a) Video relay.
    b) Text relay:
        i) Text relay with RTT both ways.
        ii) Text relay with voice through to primary user.
        iii) Text relay with voice through from primary user.
    c) Captioned telephony.
    d) Speech-to-speech.
    e) Memory and cognitive support.
    f) Lip-speaking relay service.
2) Options for relay service invocation settings:
    a) Automatic invocation:
        i) Primary user in a regular mainstream service.
        ii) Primary user in a separate service (because of media needs or other reason).
    b) Invocation after manual action:
        i) Primary user in a regular mainstream service.
        ii) Primary user in a separate service (because of media needs or other reason).
3) Addressing of users:
    a) Number based.
    b) Non-number based.
4) The following basic actions may be involved in any of the use cases:
    a) Communication initiated by primary user.
    b) Communication initiated by secondary user.
    c) All participants initiate communication with a conference system.
5) For any communication in establishment the following set-up actions are needed:
    a) Conveying caller identifier from primary user to secondary user.
    b) Conveying caller identifier from secondary user to primary user.
    c) Anonymous connection establishment.

6) Relay service invocation:

   a) Automatic invocation of relay service.

   b) Invocation by primary user request.

   c) Initiating or answering without including any relay service.

   d) Invocation by secondary user request (just occasionally needed, e.g. by emergency PSAP).

   e) Invocation during ongoing communication by primary user request.

   f) Disconnection of the relay service during ongoing communication by primary user.

7) Relaying the conversation. Performing and relaying the intended communication.

   a) Relaying between sign language and speech, occasionally using text.

   b) Relaying between text and speech both ways.

   c) Relaying from speech-to-text only.

   d) Relaying from text-to-speech only.

   e) Adding text rapidly to speech.

   f) Supporting speech that is weak or hard to understand.

   g) Supporting memory or cognitive functions.

   h) Providing lipspeaking.

8) Actions specific to emergency communications:

   a) Invocation by primary user when wanting to do emergency communication.

   b) Invocation by emergency PSAP, using the PSAP bridge when the emergency communication is initiated by an user with no access to relay service invocation functions.

   c) Invocation by PSAP (in the PSAP bridge) in emergency call back.

   d) Invocation by primary user during call back from PSAP.

   e) Primary user equipment providing address of relay service in emergency communication directly to the PSAP for PSAP to use for possible relay service invocation during emergency communication.

   f) Setting language and modality preferences and relay service address for use in emergency communications.

9) Other possible actions:

   a) Communication placed in queue for a CA.

   b) Communication placed in queue at the destination.

   c) Providing address to relay service to be used in emergency communications.

   d) CA relaying information about call progress signals.

   e) Requesting type of communication after contact with CA (text both ways, text from primary user, text to primary user).

   f) Hand-over to other CA during communication.

   g) Selection of relay service provider.

   h) Use of media not involved in the relaying action.

   i) CA collecting information about the intended communication (for relay service types 1 c and d).

j) Communication is established between primary user and the CA.

k) Communication is established between the secondary user and the CA.

l) All media connections between primary user, secondary user(s) and CA completed.

B.2 Use case examples

B.2.1 General

The present clause B.2 provides examples of use cases composed by combinations of the operational steps provided in the previous clause. The purpose is to give the reader an opportunity to more familiarity with the usage situations and provide inspiration for testing of the provision of relay services and relay service invocation functions. The operational steps from the list above are marked with their number from the list above in parenthesis. Only a few use cases are elaborated here. Many more can be constructed from the list above.

B.2.2 Video relay user in different communication situations

B.2.2.1 Video relay user requesting relay for a communication to mobile voice user

The use case corresponds to the case illustrated in Figure 4.4 in clause 4.2.2.3, and captured Table E.5 in clause E.1.

Primary user: Julia, a deaf person Julia preferring Italian sign language, but can accept to have RTT communications as well. Julia is a user of an Italian video relay service (1 a).

Secondary user: Romeo, hearing friend of Julia, user of a mobile phone. Romeo can speak and understand the Italian language.

The mobile phone service which Julia is a subscriber to does not support video, so she is also subscriber of a service with total conversation support. She has the total conversation app in a tablet, using the same number as the mobile phone (3 a).

She wants to invoke the video relay manually when she so decides (2 b ii).

Julia calls Romeo, who has a regular mobile phone. She wants to have a fluent conversation in sign language and therefore use the total conversation client in the tablet and initiates a call to Romeo's number indicating that she want the video relay included (3 a).

Julia's number is linked to an RSIF (by the settings (2 a ii) she stores in her user profile available to her equipment), and her user preference for the video relay is conveyed to the RSIF when she initiates the communication with Romeo's number (4 a) (6 b).

The RSIF detects Julia's preference for getting the video relay service invoked, so it follows the procedure steps of clause 6.4.3.1 of the present document for a primary user getting in contact with a secondary.

The video relay service CA answers (9 j). That triggers the RSIF to connect to Romeo through, as a continuation of Julia's initiation. The communication is offered to Romeo's phone, Julia's number shows up (5 a).

The CA expresses in sign language to Julia the ringing tones heard in the audio because of the call ringing in Romeo's phone (9 d).

Romeo answers. (9 k) (9l) The CA signs the answer to Julia (7 a).

Julia signs back to Romeo. The CA talks out to Romeo (7 a).

The communication continues until they say "Bye" and disconnect.

B.2.2.2 Video relay user unable to answer communication by video

Primary user: Julia, a deaf person preferring Italian sign language, but can accept to have RTT communications as well, being user of an Italian video relay service (1 a).

Secondary user: Romeo, hearing friend of Julia, with mobile phone.

The mobile phone service which Julia is a subscriber of does not support video, so she is also subscriber of a service with total conversation support. She has the total conversation app in a tablet, using the same number as the mobile phone (3 a).

She wants to invoke the video relay manually when she so decides (2 b ii).

Romeo, who is a hearing friend of Julia and who has a regular mobile phone, wants to contact her. Romeo has a regular mobile phone with voice and RTT support. He got Julia's number once when she initiated communication with him from her total conversation tablet with the video relay service invoked (5 a).

Romeo calls Julia's number for a voice call (3 a) (4 b).

Julia is out hiking and does not have her total conversation tablet with her. But she has her mobile phone, and it supports RTT. The mobile is vibrating. It is ringing in her tablet at home as well, but that does not matter. The relay does not get invoked if she does not answer in that device according to the procedure of clause 6.4.3.1 of the present document for a secondary user getting in contact with a primary user.

Julia sees that it is Romeo calling (4 b). She answers with the option to add RTT to the communication but no relay service (6 c).

Romeo's mobile phone also supports RTT. So, a communication with voice and RTT is established without relay service (6 c).

Julia types "Hi Romeo, I am sorry I am not at my total conversation device, but we can text."

Romeo answers by RTT and they communicate briefly, agreeing to have a longer communication once Julia gets home.

They disconnect.

Thus, this time they communicated without relay service support.

B.2.3 Video relay user receiving an incoming communication starting with RTT

The use case corresponds to the case illustrated in Figure 4.4 in clause 4.2.2.3, and captured Table E.5 in clause E.1.

Primary user: Julia, a deaf person Julia preferring Italian sign language, but can accept to have RTT communications as well, being user of an Italian video relay service (1 a).

Secondary user: Frederic, hearing colleague in a project that Julia participates in at work, using his mobile phone.

The mobile phone service which Julia is a subscriber of does not support video, but she is also subscriber of a service with total conversation support. She has the total conversation app in a tablet, using the same number as the mobile phone (3 a).

She wants to invoke the video relay manually when she so decides (2a ii).

Frederic initiates a communication for voice from his mobile phone (4 b). It only requests voice but indicates that it has RTT capabilities.

Julia is at home working and feels the mobile vibrating indicating incoming communication and sees the incoming communication on her total conversation app on the tablet. They indicate that it is Frederic (5 b). It is also visible that RTT can be requested to be added.

Julia wants to first check what it is about before she bothers the video relay to handle the communication, so she answers without relay invocation and requests RTT to be included in the communication (6 c).

Frederic's mobile phone is capable of using RTT and it handles the request to add RTT, so a communication with voice and RTT is established and Julia answers by RTT first typing "Hi Frederic" and then by a simple click sending a standard phrase her total conversation app has enabled her to prepare for convenient answering. " I can only do RTT at the moment, if that turns out to be insufficient, I can add a relay service so we can talk."

Frederic understands the situation and types: "I want to discuss the agenda for the project meeting on Wednesday, did you want Ella to get a slot at 10:30?"

Julia realizes that it will be a long detailed discussion that suits better for her using sign language and him using speech, so she requests by a user interface action the video relay to be invoked (6 e) and then types to Frederic: "Yes, I think Ella needs 20 minutes for reporting on how we shall use AI."

The video relay service CA turns up at Julia's display (9 j) (9 k) (9 l), so she continues signing: "So, can you move the error statistics slot?". The CA speaks out to Frederic while Julia signs (7 a).

Frederic now talks back and the CA signs. The discussion continues. The RTT channel is still available if they need anything detailed to remember or is slow to transfer by relayed signing, such as phone numbers (7 a).

They resolve everything efficiently and disconnect.

B.2.4 Captioned telephony user answering

B.2.4.1 Captioned telephony user answering known person without relay service

Primary user: Martha, having hearing reduction by age, captioned telephony user.

Secondary user: Romeo hearing mobile phone user.

Martha has a hearing reduction by age. She speaks well. She has a mobile phone and is a subscriber of a mobile communications service providing RTT and voice. She can still hear a little, so she can have phone conversations with some people in the family she knows well, but for communication with others she prefers to have the captioned telephony service included (1 c).

She has made settings for using a captioned telephony service by manual action (2 b i).

Romeo is Martha's grandson. He has a regular mobile phone. He wants to get in touch with Martha and initiates communication to her number (3 a).

Martha perceives the incoming communication by vibrations in the phone and extra flashing lights at home reacting on the incoming communication. The phone shows that it is Romeo calling (5 b). Martha's phone shows options to answer including relay service and answering without relay service (2 b i).

Martha knows that she usually manages well to communicate with Romeo without relay support, so she selects to answer without relay service (6 c), but adds direct RTT to the voice communication.

Martha answers by voice and has a successful conversation by voice with Romeo.

But then they get stuck on a street name that Martha does not get. Romeo types it. Martha reads it, and the communication can continue by voice until they say bye and disconnect.

B.2.4.2 Captioned telephony user answering and including captioned telephony relay service

The case is captured in Table E.4 in clause E.1.

Primary user: Martha, having hearing reduction by age, captioned telephony user.

Secondary user: Mobile phone user, unknown to Martha.

Martha gets another incoming communication (4 b). This time she does not recognize the caller (5 b). The phone presents the alternatives to answer with relay and answer without relay (2 b i). She answers with her default relay service, the captioned telephony service, implying that RTT also gets activated (6 b).

Martha answers by voice. (9 j) (9 k) (9 l) The person initiating the communication does not speak very clearly, so Martha is happy to see the accompanying text coming in RTT from the automatic captioned telephony service (7 e). It is so rapid and correct that there is no need for Martha to tell the other party that a relay service is involved.

The communication completes and they disconnect.

B.2.5 Speech-to-Speech relay user initiating a communication to a bank employee

The case is captured in Table E.6 in clause E.1.

Primary user: Leif, a man with a speech disability who uses a speech-to-speech relay service.

Secondary user: Elena, a bank customer service employee with office phone.

Leif needs clarification on a transaction and initiates communication to his bank's customer service number.

Leif uses a mobile device that supports voice and RTT. He has configured automatic invocation of the speech-to-speech service for all outgoing calls (1 d, 2 a-i).

He dials the bank's number (3 a).

The RSIF recognize Leif's preference and automatically invoke the speech-to-speech relay service (4 a, 6 a).

A CA trained in understanding disordered speech answers (9 j). Leif explains the purpose of the call and the greeting the CA should use (9 i).

Once ready, the CA signals the RSIF to initiate the communication leg to the bank (5 a).

Elena receives the call and sees Leif's caller identifier (4 b). She answers (9 k) (9 l).

Leif speaks; the CA revoices clearly to Elena (7 f). Elena responds, her voice is passed through directly.

After receiving the transaction information, Leif ends the call and the communication is terminated.

B.2.6 Cognitive and memory support relay user initiating a call to a pharmacy

The case is captured in Table E.7 in clause E.1.

Primary user: Sara, who has cognitive disabilities affecting memory, task-tracking, and comprehension. She uses a memory and cognitive support relay service.

Secondary user: Jonas, a pharmacist.

Sara needs to renew a prescription and initiates a call to the pharmacy.

Sara uses a smartphone app connected to a communications service supporting voice, RTT, and optional video. She has set her preference to manually choose relay support per call (1 e, 2 b-i).

She selects "Call with cognitive support relay" and dials the pharmacy (3 a, 6 b).

The RSIF recognize Sara's request and invokes the cognitive and memory support relay service (6 b); a trained CA answers (9 j).

The CA asks Sara to briefly describe the purpose of the call so the CA can help structure it. Sara explains she needs a refill and is unsure of the prescription details (9 i).

The CA signals to the RSIF to proceed with initiating the communication to the pharmacy on behalf of Sara.

The RSIF then establishes the communication leg to the Pharmacy where Jonas answers (9 k) (9 l).

The CA supports by clarifying Jonas's questions, tracking the prescription number, reminding Sara of the needed information, and summarizing key points (7 g).

When Jonas confirms the refill time, the CA repeats and types the important information by RTT for Sara to review (7 g).

Jonas ends the call. The CA ensures that Sara understood the outcome before disconnecting (7 g).

B.2.7 Text relay user initiating a call to a delivery driver

The case is captured in Table E.1 in clause E.1.

Primary user: Ingrid, who is deaf-blind and communicates primarily through real-time text with assistive braille display.

Secondary user: Mark, a delivery driver attempting to drop off a package.

Ingrid receives a note that her delivery will arrive later in the afternoon, but she is asked to confirm building access instructions to Mark by phone (5 b).

Ingrid uses text-capable user equipment connected via a mobile communications service (1 b-i, 2 a-i, 3 a).

She initiates a text relay call to Mark's mobile number (4 a, 3 a).

RSIF recognizes her default setting for text relay and invokes the text relay service with speech output toward the secondary user (4 a, 6 a).

A CA answers (9 j) and the RSIF immediately initiates the connection to Mark (5 a) (9 k) (9 l).

The CA relays the ringing and call progress information to Ingrid in text form (9 d).

Mark answers, after receiving Ingrid's phone number as caller identifier (5 a).

Ingrid types instructions; the CA reads them aloud to Mark (7 b). Mark provides spoken confirmation, which the CA converts to RTT (7 b).

After confirming delivery access, both parties say goodbye and they disconnect.

B.2.8 Emergency communication getting text relay service invoked by PSAP

The case is captured in Table E.10 in clause E.1. for the initial phase and clause 6.5.2 and similar to Table E.1 for the final phase.

A primary text relay user Pierre has heard that all PSAPs have RTT capability (1 b i).

Usually, he is a text relay user and has his settings for invoking by user request so that his RTT calls with friends and colleagues will not cause relay service invocation (2 b i).

He has followed the advice to store his text relay service address and type among the settings in the UE (8 f).

Pierre has a severe medical emergency. He knows that the PSAP has RTT capability, so he calls 112 without invoking the relay service (6 c).

The PSAP call taker Frieda answers. She notices that she got Pierre's favourite relay service address and his preference for using RTT, and other contextual information from Pierre's user equipment (8 e). But she can handle RTT so there is no reason to invoke any relay service.

Pierre explains in RTT his emergency directly with Frieda.

Frieda rapidly sends an ambulance to Pierre's address that she got directly at call initiation.

To prepare well for Pierre's urgent treatment she wants to transfer the communication to the nurse Beatriz going with the ambulance to Pierre.

Frieda knows that the ambulance has not yet installed text capabilities in the communication system, so she includes by the multiparty bridge of the PSAP both the nurse Beatriz and Pierre's favoured text relay service in the communication (1 b i) (8 b) (9 l).

Frieda stays in the communication until she is sure that the communication flows well between Beatriz by voice in the ambulance and Pierre by RTT explaining his medications and symptoms and getting advice from Beartiz by the relaying actions of the text relay service (7 b).

Frieda can safely disconnect and handle next 112 emergency communication, knowing that Pierre's case is in safe hands.

Beatriz and Pierre continue the communication (7 b) Pierre feels safe and is soon fetched by the ambulance. The doctors can already prepare for the treatment because Beatriz has conveyed the emergency context to the hospital.

Annex C (informative): Additional considerations for relay services' organization

C.1 Billing

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

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

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

C.2 Complaints and inquiry handling

The relay service provider should establish procedures to deal with complaints, enquiries and comments about the relay service and its personnel as well as about the relay service invocation functions. All such complaints, enquiries and comments should be recorded and dealt with by a supervisor or customer service representative. The procedure should be described in appropriate publicly available material and should provide accessible options, formats and procedures (as specified for digital formats in EN 301 549 [1]).

Annex D (informative): Development directions

D.1 Development directions in general

The present annex is an informative overview of developments in electronic communication in general as well as in relay service implementation.

D.2 Move to IP based communications

The first text relay services were created for text telephony communications as a complement to voice communications in the 1980's. The first video relay services for sign language communication were established in the 1990's. These deployments were based on circuit switched technologies. Since early 2000's there has been a tendency to move to packet-based technologies, where multimedia communication is easier to establish. In 2026, the text telephones - known as specific user equipment 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 [i.4] and based on circuit switched technologies - are no longer officially supported in Europe and most electronic communications are IP based. Thus relay service deployments are expected to only be based on IP based technologies, even if interoperability with circuit switched landline voice telephony is expected to continue for some years, that interoperability is achieved without any specific actions by the relay services or the invocation functions.

D.3 Increasing use of non-number based electronic communication

An effect of the move to IP based communication is that non-number based communication increases and that is often done with no or limited interoperability with other electronic communications services. The accessibility needs are not limited to number based communication. The present document therefore describes the need for the users to be provided with electronic communication access by relay services to both number based and non-number based electronic communications.

D.4 Increasing use of digital conferencing

Digital conference solutions are now an important prerequisite for work and pleasure in many contexts. That implies an accessibility need to have support for accessible participation in such meetings by relay services. Therefore, that use is included in the present document. The most widespread tools for digital conferences are getting improved technical means for sign language interpreting and for automatic speech-to-text presentation. Means for use of relay services external to the conference are also in use. It is a complex task to set up and use accessible tools for digital conference participation, and further developments to ease the use would be welcome.

D.5 Reducing use of text and video relay services and increasing use of captioned telephony

Slightly decreasing use of analog text relay services and video relay services are reported by FCC in USA [i.13]. Similar trends are observed in Europe. The reason is believed to be that there are many other ways to have communication nowadays, so that persons who have no or limited use of voice telephony achieve their communication goals in many cases in other ways. There are however cases where electronic voice communication is the only practical way to achieve some tasks in society, and therefore the availability of relay services is foreseen to be important for accessibility. One such task is emergency communication, where at least the access to video relay service is expected to continue to be essential, while the emerging availability of RTT in mainstream mobile telephony is expected to reduce the need for text relay services used for emergency communications.

Where IP based captioned telephony is available, the opposite trend is observed. For users who speak well but do not hear well, captioned telephony forms an opportunity to perform voice communication in normal voice communication pace. The usability has even increased by more rapid and reliable solutions made possible by automatic speech-to-text technologies as reported by FCC [i.13].

D.6 Maintained need for app and web based video relay access

Video relay service use requires availability of video communication for the primary users. In the currently (2026) dominating cases of use, the secondary user is using voice communication in a number based mobile communications service. All current video relay service implementations are based on use of apps or web access in mobile phones or tablets just using Internet access but not using the number-based multimedia telephony system.

Therefore, address conversion and extra interoperability actions need to take place between the two communications environments, complicating implementation. Even when video has been included in the standards for IP based mobile communications since 2006, there is no clear trend to deploy video communication within the number based mobile communications services.

A development towards wider deployment of video in mobile communications services would ease deployment of video relay services for number based communications as well as smooth invocation of video relay services.

D.7 Smooth invocation via user's own number or address

The smooth invocation that makes relay services being accessible features to electronic communications services is specified in the present document. The function is essential for user integration in the information society. There are medical services only available by automated callback after initial calling in to the service which are inaccessible without this feature. The functional specification of the feature was included in the 2015 version of the present document. Yet it is only implemented in a few services worldwide.

The present document is an accessibility related standard and is not expected to specify technology for implementation deeply. For wide and smooth implementation of the invocation functions, further technical standardization of the feature would be desirable.

D.8 Desired development in speed of answer for non-speaking users

Automated means for modality conversion are spreading rapidly. Speech-to-text is deployed both as a local feature in user equipment and as an automated captioned telephony relay service and as accessibility features in digital conferences. The ease of including a service when it is automated is very attractive.

Text production by typing used in many of the accessible solutions is drastically slower than speech and sign language production. Alternatives are urgently needed to achieve more natural conversational speed.

There are users with disabilities who currently have no means for rapid answering in communications, and others who cannot use automated services in the normal rate of voice communication both ways. Further research and development of rapid conversion to speech of various ways of expressions would be desirable.

The FCC Notice of Proposed Rulemaking (NPRM) [i.13] in its paragraph 49, indicates that there are promising developments of automated speech recognition for speech of persons with speech related disabilities. Taking such research efforts to real deployment and inclusion in user equipment or relay services would have a potentially positive effect even for some deaf users.

Automatic production and recognition of sign language is an area with long-lasting efforts in research and development at least from the 1990's. Continued efforts in this area would be beneficial so that all efforts spent could eventually result in useable automatic services for deaf people. Even limited application, e.g. limiting the expression to fingerspelling could be explored for use while developing more reliable versions of the full language production and recognition models.

Eventually even automated thought-to-speech deployments in normal voice rate would become a reality to be integrated in relay service deployments by continued research and development.

Annex E (informative): Relay service media connections

E.1 Tables for relay service media connections

The tables in the present annex show the default set of media connections and relay service in communications with relay services invoked.

In emergency communication cases there is a benefit in connecting all three parties so that they all see each other if they have video. Therefore, two such cases are also included.

On the rows there are media to and from the primary user.

In the columns, there are the media to and from the secondary user(s)

"in" means communication direction from the network to the user equipment.

"out" means communication direction from the user equipment to the network.

The cell contents indicate media interconnections and relay action in the media.

The arrows in the cells indicate the directions of the media interaction.

Notation for the cell contents:

X	connected through
O	optionally or occasionally connected through
StT	speech-to-text
stt	speech-to-text occasionally
TtS	text-to-speech
tts	text-to-speech occasionally
SitS	sign-to-speech
StSi	speech-to-sign
StRev	speech-to-revoicing
StV	speech-to-video of lip-speaker
StS+X	speech-to-speech and media connected through
X+CM	media connected through and cognitive or memory support added
X+StS	media both connected through, and added relay service

Table E.1: Text relay service in default operating mode

Role		Secondary	Secondary	Secondary	Secondary	Secondary	Secondary
	Media and direction	Audio out	Audio in	Video out	Video in	RTT out	RTT in
Primary	Audio out						
Primary	Audio in						
Primary	Video out				O ⮩		
Primary	Video in			↲ O			
Primary	RTT out		TtS ⮩				
Primary	RTT in	↲ StT					

Table E.2: Text relay service with speech through (from primary to secondary)

Role		Secondary	Secondary	Secondary	Secondary	Secondary	Secondary
	Media and direction	Audio out	Audio in	Video out	Video in	RTT out	RTT in
Primary	Audio out		X ⮩				
Primary	Audio in						
Primary	Video out				O ⮩		
Primary	Video in			↲ O			
Primary	RTT out						O ⮩
Primary	RTT in	↲ StT					

Table E.3: Text relay service with hearing through (from secondary to primary)

Role		Secondary	Secondary	Secondary	Secondary	Secondary	Secondary
	Media and direction	Audio out	Audio in	Video out	Video in	RTT out	RTT in
Primary	Audio out						
Primary	Audio in	↲ X					
Primary	Video out				O ⮩		
Primary	Video in			O ⮩			
Primary	RTT out		TtS ⮩				
Primary	RTT in					↲ O	

Table E.4: Captioned telephony service

Role		Secondary	Secondary	Secondary	Secondary	Secondary	Secondary
	Media and direction	Audio out	Audio in	Video out	Video in	RTT out	RTT in
Primary	Audio out		X ⮩				
Primary	Audio in	↲ X					
Primary	Video out				O ⮩		
Primary	Video in			↲ O			
Primary	RTT out						O ⮩
Primary	RTT in	↲ StT					

Table E.5: Video relay service for sign language support

Role		Secondary	Secondary	Secondary	Secondary	Secondary	Secondary
	Media and direction	Audio out	Audio in	Video out	Video in	RTT out	RTT in
Primary	Audio out		O ⮩				
Primary	Audio in	↲ O					
Primary	Video out		SitS ⮩		O ⮩		
Primary	Video in	↲ StSi		↲ O			
Primary	RTT out		tts ⮩				O ⮩
Primary	RTT in	↲ stt				↲ O	

Table E.6: Speech-to-speech service

Role		Secondary	Secondary	Secondary	Secondary	Secondary	Secondary
	Media and direction	Audio out	Audio in	Video out	Video in	RTT out	RTT in
Primary	Audio out		X+StS ⮩				
Primary	Audio in	↲ X					
Primary	Video out				O ⮩		
Primary	Video in			↲ O			
Primary	RTT out						O ⮩
Primary	RTT in					↲ O	

Table E.7: Cognitive and memory support service

Role		Secondary	Secondary	Secondary	Secondary	Secondary	Secondary
	Media and direction	Audio out	Audio in	Video out	Video in	RTT out	RTT in
Primary	Audio out		X ⮎				
Primary	Audio in	↲ X+CM					
Primary	Video out				O ⮎		
Primary	Video in			↲ O			
Primary	RTT out						O ⮎
Primary	RTT in					↲ O	

Table E.8: Lipspeaking service

Role		Secondary	Secondary	Secondary	Secondary	Secondary	Secondary
	Media and direction	Audio out	Audio in	Video out	Video in	RTT out	RTT in
Primary	Audio out		X ⮎				
Primary	Audio in	↲ X					
Primary	Video out				O ⮎		
Primary	Video in	↲ StRev					
Primary	RTT out						O ⮎
Primary	RTT in					↲ O	

Table E.9: Emergency communications with video relay service support for sign language use

Role		Secondary	Secondary	Secondary	Secondary	Secondary	Secondary
	Media and direction	Audio out	Audio in	Video out	Video in	RTT out	RTT in
Primary	Audio out		X ⮎				
Primary	Audio in	↲ X					
Primary	Video out		SitS ⮎		X ⮎		
Primary	Video in	↲ StSi		↲ X			
Primary	RTT out						X ⮎
Primary	RTT in					↲ X	

Table E.10: Emergency communications without relay support usually working in voice and RTT.

Role		Secondary	Secondary	Secondary	Secondary	Secondary	Secondary
	Media and direction	Audio out	Audio in	Video out	Video in	RTT out	RTT in
Primary	Audio out		X ⮎				
Primary	Audio in	↲ X					
Primary	Video out				X ⮎		
Primary	Video in			↲ X			
Primary	RTT out						X ⮎
Primary	RTT in					↲ X	

Table E.11: Video relay service in video conference

NOTE: The sign language interpretation may be provided in a separate session just including the primary user, and the relay service.

Role		Conference	Conference	Conference	Conference	Conference	Conference	Conference	Conference
	Media and direction	Audio out	Audio in	Video out	Video in	RTT out	RTT in	Shared media out	Shared media in
Primary	Audio out		O ⮱						
Primary	Audio in	↲ X							
Primary	Video out		SitS ⮱		X ⮱				
Primary	Video in	↲ StSi		↲ X					
Primary	RTT out		tts ⮱				↲ X		
Primary	RTT in					X ⮱			
Primary	Shared media out								↲ X
Primary	Shared media in							X ⮱	

Annex F (informative): Change history

Date	Version	Information about changes
October 2009	V1.2.1	Publication
September 2015	V2.1.1	Publication of update
March 2026	V3.1.1	Publication of updates related to EU M/587 and Directive (EU) 2019/882

History

Version	Date	Status
V1.2.1	October 2009	Publication
V2.1.1	September 2015	Publication
V3.1.0	March 2026	MAP process MV 20260515: 2026-03-16 to 2026-05-15
V3.1.1	May 2026	Publication