

Relay services for deaf people

*Based on a contribution by
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■ How do you make a phone call if you are deaf? Or, more to the point, how do you respond to a call? Do you have to ask your child or your neighbour to make appointments for you or provide personal details to a caller? Do you have to run out into the street looking for someone to call an emergency service? These are just some of the scenarios that a hearing person takes for granted will not happen.

There are many different types of deafness: profoundly deaf people who use only sign language; profoundly deaf people who have intelligible speech; profoundly deaf people who have less intelligible speech; hearing people who are deafened; people who are blind as well as deaf; and people who are hard of hearing. People with age-related disabilities may fall into any of these categories.

Many deaf people have problems in daily living by not being able to make telephone calls to hearing people or organizations without someone or something in place to assist them. This is why relay services are so important for deaf telecommunication. They are professional services that do not rely on the kindness of friends, family or strangers.

But while relay services have been around for more than 40 years, most countries still do not offer these services for deaf people, even though hearing impairment is reportedly the most frequent sensory deficit in human populations, affecting an estimated 250 million people in the world.

Today, being able to make contact by telephone is a prerequisite for effective participation in society. And the United Nations Convention on the Rights of Persons with Disabilities provides for "Full and effective

participation and inclusion in society".

From teleprinters to videophones and more

In the 1960s, deaf people started using teleprinters (teletypewriters, also known as TTY) with custom made acoustically coupled modems to communicate with each other over the telephone network. The modems used the ordinary telephone handset as the transmitting device, thus enabling text to be sent over the telephone network, character by character. This was in real time and was the first real-time text later standardized at ITU as part of Total Conversation and used in the first accessibility standard (ITU-T V.18) for text phones.

Teletypewriters led to the development of text telephones, which incorporated the printing device and the modem in one portable unit.



Video phones and text phones are among devices that benefit from ITU's standardization work

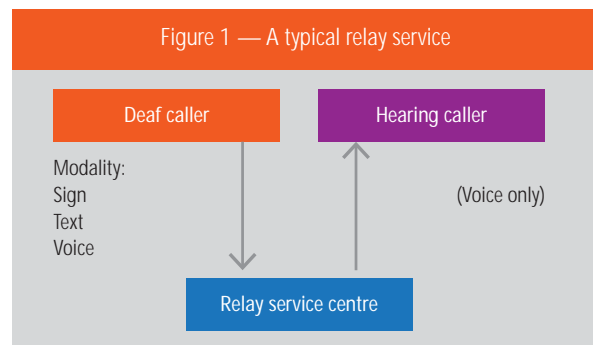
When deaf people need to communicate with hearing people who do not have text telephones, there is a problem. Based on the work of the early pioneers (see pages 36–37), who were all deaf, the response has been to develop a relay service.

As technology progressed and the Internet developed, it became possible for deaf people to communicate with each other using video. This works for deaf people who use sign language. Many deaf people who have sign language as their first language find it difficult to use text phones because they require written language. Videophones have become increasingly popular with these deaf users. They use them to communicate with each other, and with hearing people who can use sign language.

What is a relay service?

A relay service is simply a way of enabling a deaf person — using whatever modality they choose — to communicate with a hearing person, and vice versa (Figure 1).

The modality used by the deaf caller may be text, voice or sign. The different types of relay services meet the different individual needs. These different types of relay services for deaf people are: text relay service; text relay service with voice carry over; captioned telephone relay service; and video relay service.





Text relay service

In a traditional text telephone relay service (Figure 2), deaf callers use a bespoke text telephone terminal to type the words that they want to say. A more modern version uses the Internet, and is known as an Internet Protocol (IP) relay service. This can be accessed via a personal computer, laptop, personal digital assistant or smartphone. Both use the same operating method:

- ▶ The deaf caller types his or her communication to a text relay service centre, where a relay operator will read aloud the typed words to the hearing caller.
- ▶ The hearing caller speaks to the relay operator, who will transcribe the speech as text, transmitting the typing back to the deaf person's terminal, whether this is a text telephone or an Internet device such as a laptop or a smartphone.

Text relay service with voice carry over

For a deaf person who has speech that can be understood by the hearing caller, the deaf person can use a variant of a telephone relay service known as voice carry over (Figure 3). Instead of typing the words, the deaf person speaks directly to

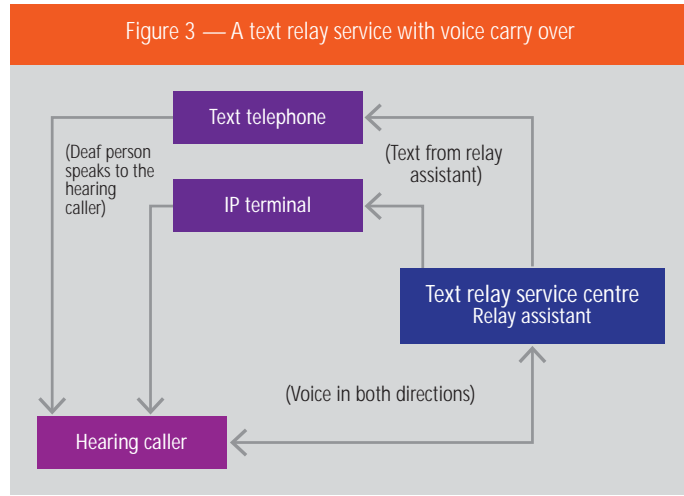
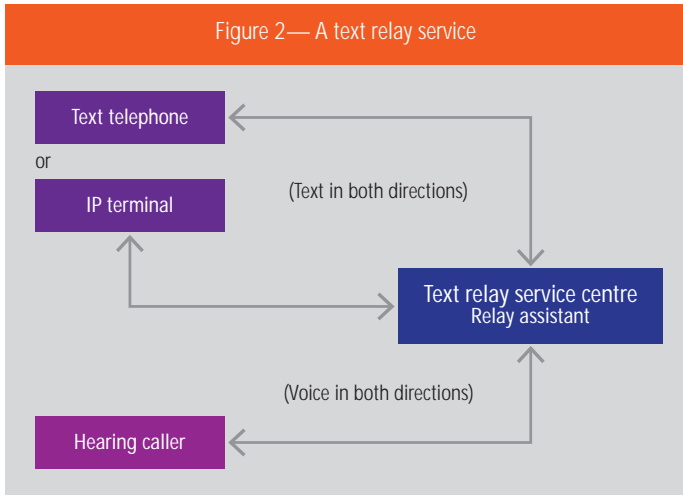
the hearing caller. The hearing caller speaks to the relay operator, who will transcribe the words as text, which goes back to the deaf person's display screen. The flow is either voice or text, but not both at the same time.

Text relay services are available in many countries, including the United States, Canada, Australia, New Zealand, the United Kingdom, Sweden and Denmark.

Captioned telephone relay service

A captioned telephone relay service (Figure 4) is the most functionally equivalent and appropriate type of relay service for people who are hard of hearing, people who have been deafened, and deaf people whose speech can be understood by hearing people. This is an enhanced voice carry over system where a deaf person has a normal telephone conversation in both directions with the hearing caller.

The hearing person's speech path is split into two: one path goes directly to the deaf caller, who may understand most, some or none of the speech, depending on their level of hearing loss or the level of background noise. The other path goes to



a captioned telephone relay service centre, where a captioning assistant will revoice everything the hearing person says, word for word, into a voice recognition engine. The transcribed text is transmitted to the deaf user's display, which could be a laptop or a smartphone.

A captioned telephone relay service can be accessed through the Internet using any browser device, such as a personal computer, laptop, netbook, tablet, personal digital assistant or smartphone.

Captioned telephone relay services are available in the United States every hour of the day and night, every day of the year. The cost to the user is the same as the cost of a standard telephone call. Australia is trialling a captioned telephone relay service, and New Zealand has issued a tender for one.

Many people with age-related disabilities cannot cope with computers; a bespoke captioned telephone is what they need. This looks like a normal telephone but with a large display to enable them to see transcribed text from the hearing caller.

Video relay service

A video relay service (Figure 5) is used by deaf people whose first language is sign language. Many of these people do not have sufficient written language skills to use text relay services. And they do not have sufficiently intelligible speech to use a captioned telephone relay service. They use either videophones or a webcam on their personal computer, laptop, tablet or smartphone (with the webcam in front), together with videophone software or apps. They sign their concepts to a video relay centre, where a sign language interpreter will translate from their sign language concepts into spoken language, then voice over to the hearing caller. The hearing caller speaks to the sign-language interpreter who translates this into sign language for the deaf caller.

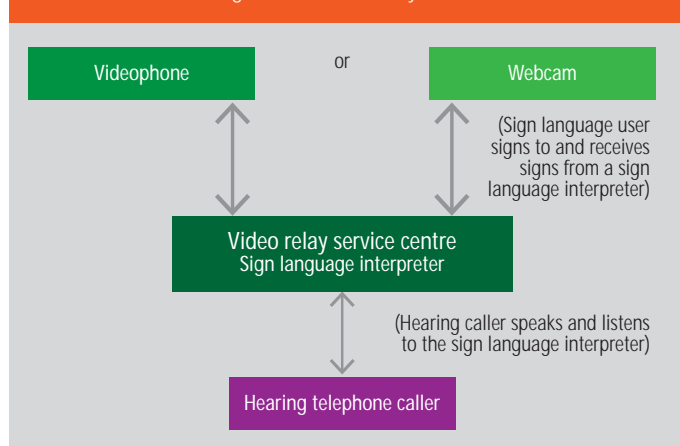
Funding of relay services

Because a human interface is needed between the deaf and hearing callers, relay services have to be funded. These human interfaces might be text relay service operators, captioned

Figure 4 — Captioned telephone relay service



Figure 5 — Video relay service





AFP/Josep Lago

A captioned telephone relay service can be accessed through the Internet using any browser device, such as a personal computer, laptop, netbook, tablet, personal digital assistant or smartphone

telephone relay service captioning assistants, or video relay service sign-language interpreters.

How can these services be funded? Each country has different ways of funding the services. In some countries, relay services are funded by government (as in Sweden), in others they are funded either by the telecommunications industry (for example, in the United States) or as part of universal service (as in the United Kingdom).

Costs in the United Kingdom

The text relay service in the United Kingdom is more than 27 years old and uses old technology. The service is currently under review, and a potential provider of services commissioned research on the economic benefits of a video relay service for deaf sign-language users. According to the results of the research, over a period of 10 years, providing a video relay service will cost between GBP 734 million and GBP 851 million, while

the economic benefits to society will amount to between GBP 996 million and GBP 1.1 billion.

Relay services do cost money, but the real benefits to society outweigh these costs. Providing relay services will result in increased employability and improved health benefits for deaf people, and their better integration into society.

Deaf children in developing countries

Imagine a rural village in Africa where a deaf child is born to hearing parents. The parents would need access to information about how to develop the language ability of their child. Without such information, the deaf child might remain isolated from everyone in the village, because no one would be able to communicate with him or her.

The power of telecommunications could break this mould. Mobile Internet and solar-powered Internet devices would offer the parents of the deaf child enhanced access to information. Most



Getty Images

importantly, the deaf child could take part in social interaction via video telephony, which could lead to better language and literacy development. This would enable deaf children to use future relay services, and would thus improve their lives through social integration, improved employability and better career prospects.

ITU's Telecommunication Development Sector (ITU-D) could work with the United Nations Children's Fund (UNICEF) to undertake an experimental project to provide relay services for deaf children in developing countries. This would be a powerful way of enhancing these deaf children's lives.

Conclusion

The technology of relay services has been established for many years. Now countries need to consider setting up relay services, where such services do not already exist. The work of ITU's Telecommunication Standardization Sector (ITU-T) on relay service standards is of paramount importance. It is crucial to ensure that all deaf people are able to communicate with anyone everywhere, just like their hearing peers. ■

About Christopher Jones

In the early 1970s, Christopher Jones, who is profoundly deaf, set up a local relay service using 24 teleprinters, having raised funds by making and selling soft toys. The teleprinters, precursors to text telephones, enabled local deaf people in the United Kingdom to communicate across the telephone network for the first time in their lives. Within a couple of years, this led to the development of the United Kingdom's second local text telephone relay service, many years before the establishment of a national text telephone relay service. Since 2007, Christopher Jones has been Director of AccEquE Ltd, a consulting company engaged in promoting enhanced accessibility and equality in electronic communications for deaf, deafened, deaf blind and hard-of-hearing people.