



Report ITU-R BT.2207-1
(05/2011)

**Accessibility to broadcasting services
for persons with disabilities**

BT Series
Broadcasting service
(television)



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Foreword

The role of the Radiocommunication Sector is to ensure the rational, equitable, efficient and economical use of the radio-frequency spectrum by all radiocommunication services, including satellite services, and carry out studies without limit of frequency range on the basis of which Recommendations are adopted.

The regulatory and policy functions of the Radiocommunication Sector are performed by World and Regional Radiocommunication Conferences and Radiocommunication Assemblies supported by Study Groups.

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***Note:** This ITU-R Report was approved in English by the Study Group under the procedure detailed in Resolution ITU-R 1.*

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for persons with disabilities¹**

(2010-2011)

TABLE OF CONTENTS

	<i>Page</i>
Foreword	2
1 Hearing disabilities	3
2 Seeing disabilities	3
3 Aging disabilities	3
4 Receiver user-friendliness	4
Annex 1 – Speech, captioning and multimedia browsing technologies to improve accessibility to broadcasting services	4
1 Speech rate conversion technology for elderly people	4
2 Real-time closed-captioning using speech recognition	7
3 Multimedia browsing system for visually impaired people	9
Annex 2 – Machine translation to sign language with CG-animation technologies to improve accessibility to broadcasting services	12
1 Machine translation to sign language with CG-animation	12
Annex 3 – Audio processing technologies to improve accessibility to broadcasting services	15
1 Device for evaluating broadcast background sound balance for elderly listeners	15

¹ This matter should be communicated to the IEC and brought to the attention of ITU-T SG 16.

Foreword

There are 650 million people with disabilities in the world today – about 10% of the world's population – and their proportion and number are growing, as humanity lives longer. A disproportionately high number of those with disabilities are in developing countries. Television, radio, and Internet are an integral part of the fabric of society, and we cannot imagine a “full life” without them. Having a disability can deny normal access to the media, and this can limit life-choices, personal independence, personal fulfilment, sense of identity, enjoyment, and social cohesion.

In considering Resolution 70 (Johannesburg, 2008) of the World Telecommunication Standardization Assembly as well as Resolution 58 (Hyderabad, 2010) of the World Telecommunication Development Conference, on access to ICT for persons with disabilities, including age-related disabilities, the ITU Plenipotentiary Conference (Guadalajara, 2010) approved Resolution 175 that instructs all three ITU sectors, inter alia, “to take account of persons with disabilities in the work of ITU, and to collaborate in adopting a comprehensive action plan in order to extend access to telecommunications/ICTs to persons with disabilities, in collaboration with external entities and bodies concerned with this subject”.

The following is given in the UN Convention as an explanation of the principle of “disability”. “Persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which, in interaction with various barriers, may hinder their full and effective participation in society on an equal basis with others”.

Particularly important disabilities relevant for the media include:

- **hearing** disabilities;
- **seeing** disabilities;
- **aging** disabilities;
- **cognitive** disabilities;
- lack of controllability of the man-machine interface and ease of use of the **receiver or terminal**.

However, the structure of the broadcasting system, language/writing system and culture, broadcast formats vary from one country to another and affect what kind of services may be delivered.

The Convention does not ask that infinite resources be given over to providing services for those with disabilities, but it does call for “*reasonable accommodation*” for persons with disabilities. The interpretation of this is clearly a critical issue that needs much care.

The Convention offers the following explanation of *reasonable accommodation*: “necessary and appropriate modification and adjustments not imposing a disproportionate or undue burden, where needed in a particular case, to ensure to persons with disabilities the enjoyment or exercise on an equal basis with others of all human rights and fundamental freedoms”.

So, what is a proportionate burden on television, radio, and Internet to provide measures that will make it possible for those with hearing, sight, or aging disabilities to consume the same services as those without disabilities? In other words: What is “reasonable”?

Each country should establish its own accessibility programs in response to the wishes of its population with disabilities, broadcast standards, technical possibilities, resources available for investment and the management circumstances of its broadcasters.

The ITU-R may have a role to play in promoting the technical research and development that will make it possible to provide such accessible services and that will ease the burden of doing so on broadcasters, and/or in defining necessary conditions and specifications for broadcasting systems

and accessible receivers. The ITU-R also has a role to play in establishing a system for sharing worldwide the results of research and development along with information and know-how on the practical operation of accessible services.

What kind of accessible broadcast services may be introduced on what timescale depends on local conditions in each country as discussed above; the following sections are intended as examples of the kind of technology that may contribute to accessible services depending on local conditions.

1 Hearing disabilities

For television viewing, the main method of making programmes accessible is by providing optional **subtitles**.

Hearing impaired people prefer television programmes, broadcast, streamed, or downloaded which include optional subtitles in the language of the intended audience. Digital television systems have made it possible for the subtitles to be cut into the picture by a simple procedure on the remote control.

For television viewing, the secondary method of making programmes accessible is by having a **Signer “in screen”** providing a sign language version of the audio. This can be included permanently in the picture, or it may be possible in the future for it to be optionally cut into the picture, at the user’s choice, using a broadcast multimedia system.

For radio listening, the main method of making programmes accessible is by providing data which allows display of speech on a receiver screen (**speech-to-text conversion** data).

Digital radio (audio) programmes, broadcast, streamed, or downloaded, can now include data for speech-to-text display in the receiver. A text display may also be helpful for hearing impaired people to understand the radio program.

2 Seeing disabilities

For television viewing, the main method of making programmes accessible to those with seeing disabilities is to use **“audio descriptions”**. These are audio passages which explain what is happening visually in the picture. They are provided on a second audio channel which is mixed in the receiver with the normal audio in natural pauses in dialogue. Audio descriptions are particularly effective with drama.

Audio descriptions can also be helpful to those with aging disabilities to bring to their attention things they need to notice in the picture to follow the plot fully.

3 Aging disabilities

For the elderly, it can be difficult to follow the dialogue on the radio or on television because it appears to flow too quickly. The main method of making radio programmes accessible is to adjust electronically the natural silence periods in the dialogue, and thus to make the dialogue appear to be slower.

For the aged, because human response times are slower, it can be valuable to add “audio descriptions” to television programmes which help the viewer to follow the story line (e.g. a voice says “notice the clock on the wall is at five o’clock”) in the pauses in dialogue.

Radio programmes available via Internet with several speed adjustment options may help aged listeners to understand the programmes.

4 Receiver user-friendliness

Receivers should be available which have users with disabilities in mind. This can be done by the inclusion of facilities that include:

- simple and self evident controls, which operate in a similar way on all receivers;
- visual and audio guides to programme selection and choice;
- facilities for subtitle display, signer display, and audio descriptions.

It is important to note that the practicality of such features varies according to the local broadcasting system and formats, and obviously requires the cooperation of receiver manufacturers.

In Annex 1 is a report on the latest studies in Japan on technologies to improve accessibility to broadcasting services. There has been a growing interest in “universal-design products” that anyone can use with ease. And with the coming of the aging society, there will be an increasing need to develop products and services while having a good understanding of the physical characteristics of people with disabilities. The radio and television – the information devices most familiar to everyone – have become an indispensable part of daily life. A pressing issue here is how to convey broadcast information to people with disabilities. Achieving universal design in broadcasting will require a comprehensive study that examines program production techniques at the broadcasting station while also considering the ease of operating receivers, a fitting function for making viewing and listening easy for each user, etc.

In Annex 2 is a report on a study on machine translation to sign language with computer-generated (CG)-animation.

Annex 1 – Speech, captioning and multimedia browsing technologies to improve accessibility to broadcasting services

Annex 2 – Machine Translation to Sign Language with CG-animation technologies to improve accessibility to broadcasting services

Annex 1

Speech, captioning and multimedia browsing technologies to improve accessibility to broadcasting services

1 Speech rate conversion technology for elderly people

Elderly people often find that speech in contemporary broadcasts is too fast for comfortable listening. Although the use of hearing aids could be considered as one way of compensating for hearing difficulties when listening to radio or TV programs, this would not be effective for all hearing difficulties that afflict the elderly. At present, no hearing aid can effectively compensate for hearing difficulties in the face of rapid speaking. NHK considered the development of hearing assistance technology for the elderly specifically for listening to radio or television broadcasts [1].