International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

F.791

(08/2018)

SERIES F: NON-TELEPHONE TELECOMMUNICATION SERVICES

Multimedia services

Accessibility terms and definitions

Recommendation ITU-T F.791

International Telecommunication Union

ITU-T F-SERIES RECOMMENDATIONS

NON-TELEPHONE TELECOMMUNICATION SERVICES

TELEGRAPH SERVICE	
Operating methods for the international public telegram service	F.1–F.19
The gentex network	F.20–F.29
Message switching	F.30–F.39
The international telemessage service	F.40–F.58
The international telex service	F.59–F.89
Statistics and publications on international telegraph services	F.90–F.99
Scheduled and leased communication services	F.100–F.104
Phototelegraph service	F.105–F.109
MOBILE SERVICE	
Mobile services and multidestination satellite services	F.110–F.159
TELEMATIC SERVICES	
Public facsimile service	F.160–F.199
Teletex service	F.200–F.299
Videotex service	F.300–F.349
General provisions for telematic services	F.350–F.399
MESSAGE HANDLING SERVICES	F.400–F.499
DIRECTORY SERVICES	F.500–F.549
DOCUMENT COMMUNICATION	
Document communication	F.550–F.579
Programming communication interfaces	F.580–F.599
DATA TRANSMISSION SERVICES	F.600–F.699
MULTIMEDIA SERVICES	**F.700–F.799**
ISDN SERVICES	F.800–F.849
UNIVERSAL PERSONAL TELECOMMUNICATION	F.850–F.899
ACCESSIBILITY AND HUMAN FACTORS	F.900–F.999

For further details, please refer to the list of ITU-T Recommendations.

Recommendation ITU-T F.791

Accessibility terms and definitions

Summary

Recommendation ITU-T F.791 defines terms describing accessibility, disability and technical vocabulary to be used for improving the drafting of standards, and to facilitate accurately the needs and the mainstreaming of accessibility in standards that will include persons with disabilities (PWDs), older persons with age-related disabilities and persons with specific needs. WTDC Res. 58, WTDC AD and Recommendation ITU-T F.790 provide additional background information

With the passage of the United Nations *Convention on the Rights of Persons with Disabilities* [b-UNCRPD] in 2006, and its ratification by numerous countries, many new terms and definitions were created, some of which at the behest of PWDs themselves, to eradicate terms that were demeaning, insulting and inaccurate.

Standards writers are able to mainstream accessibility features into standards, as well as to write specific standards for accessibility. To design products and services successfully, there needs to be a common language. Recommendation ITU-T F.791 gives definitions to make it easier for industries to implement these accessibility features and accessibility standards by establishing a common language and vocabulary. It is also important that governments, government agencies, non-government organizations (NGOs), the UN and its respective agencies be "normalized" in mainstream everyday language.

Article 9 of [b-UNCRPD] makes clear the need to include PWDs, older persons with age-related disabilities and persons with specific needs by mainstreaming them into all aspects of modern life. This can only be done by including PWDs in the design of modern technology and information and communication technologies (ICTs) using universal design as defined in [b-UNCRPD] and using a common language and vocabulary.

This edition updates some of the definitions based on feedback received from the user community.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T F.791	2015-11-29	16	11.1002/1000/12624
2.0	ITU-T F.791	2018-08-29	16	11.1002/1000/13661

Keywords

Closed captioning, open captioning, persons with disabilities, persons with specific needs, UNCRPD, universal design.

---

* To access the Recommendation, type the URL http://handle.itu.int/ in the address field of your web browser, followed by the Recommendation's unique ID. For example, http://handle.itu.int/11.1002/1000/11830-en.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, information and communication technologies (ICTs). The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure, e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at http://www.itu.int/ITU-T/ipr/.

Table of Contents

Recommendation ITU-T F.791

Accessibility terms and definitions

1 Scope

This Recommendation defines terms to describe accessibility and terms that are needed bystandards writers when drafting international standards. This Recommendation takes account of terms already used in existing ITU Recommendations and Resolutions, as well as those in the UN *Convention on the Rights of Persons with Disabilities* [b-UNCRPD]. These terms and definitions aim to reduce confusion, on the part of not only standards writers and implementers, but also the general public. This Recommendation also deprecates terminology that is no longer used, offensive or demeaning to persons with disabilities (PWDs) and others.

The terminology in this Recommendation is for use in international work when English is used to refer to telecommunication/information and communication technology (ICT) accessibility matters. This Recommendation also applies to everyday life and all usages, including website content and other literature, as well as ICT, telecommunications and broadcasting standardization. It should also be mainstreamed into future policy, regulatory and academic documents as to be consistent with global compatibility and understanding. In the future, work that is yet to be created, written or approved may have new terms that can be later added as appropriate by consensus in a revision.

NOTE – This drafting of this document complies with [b-ITU-T F.790].

2 References

None.

3 Definitions

This Recommendation uses the following terms:

3.1 access service; accessibility service: Provision of features intended to make primary audiovisual content accessible to users with specific needs, preferences or in specific environmental contexts.

3.2 accessibility: The degree to which a product, device, service or environment (virtual or real) is available to as many people as possible.

3.3 accessibility content: Content delivered by an audiovisual media solution, e.g., captions, subtitles, audio description, audio subtitles, and differentiated from the solution's interface accessibility, that is accessible to persons with disabilities (PWDs), as well as persons with specific needs.

NOTE – Access services are a primary means of delivering accessibility content.

3.4 accessibility feature: An additional content component that is intended to assist people hindered in their ability to perceive an aspect of the main content.

3.5 assistive listening device (ALD): Devices that enable persons who are hard of hearing to hear sounds and speech on an improved basis.

3.6 assistive listening system (ALS): Assistive technology (AT) systems utilizing electromagnetic radiation, commonly radio or light waves, or a combination of the two, enabling transmission of an acoustic signal from a sound source (e.g., a loudspeaker or a person talking) directly to the hearing aid or cochlear implant processor of a person who is hard of hearing.

3.7 assistive technology (AT): Piece of equipment, product system, hardware, software or service that is used to enable, maintain or improve functional capabilities of individuals with disabilities.

3.8 audio subtitles; spoken subtitles: Subtitle text rendered into speech by a human voice artist or a synthetic voice from text-to-speech software.

3.9 audio captions; audio captioning: Captions that are read aloud and reflected as speech. Audio captioning may also be called "audio subtitles" or "spoken subtitles" in the case of foreign language dialogue. Captions can also be used to designate the audio content of an audiovisual work or sequence in any language along with action. Captions are read aloud by a human or a specific apparatus that converts the text into speech.

3.10 audio description; video description; visual description; described video: An additional audio track to aid persons with visual impairments who cannot follow the visual content.

3.11 captions; captioning: A real-time transcription of spoken words, sound effects, relevant musical cues and other relevant audio information in live or pre-recorded events. Captions can be open, not adjustable by the user, or closed where they can be turned on and off by the users at will. See clause 3.13 for further explanation of open and closed accessible services.

3.12 clean audio: An enhanced audio signal by means of signal processing, with improved intelligibility of the dialogue with respect to ambient noise, background noise, music, etc. This can also apply to the quality of the audio used for audio captioning (see clause 3.9), audio description (see clause 3.10), and subtitles (see clause 3.40).

3.13 closed/open accessibility service: An accessibility service – audio description, audio subtitling, captioning and sign language – that can have the option of be selected by the end user. If this is the case, it is closed. If cannot be selected or turned of, by the user it is an open service, i.e., open caption.

3.14 design for all [deprecated]: The design of mainstream products or services that are accessible to and usable by all persons, especially including persons with disabilities (PWDs), and persons who were born with specific needs. This term is replaced by "universal design" (see clause 3.42 and Appendix I).

3.15 disability: An evolving concept, which refers to the interaction between persons with impairments, and attitudinal and environmental barriers that hinder their full and effective participation in society on an equal basis with others.

3.16 human factors; ergonomics: Factors relating to usability and proper interaction between persons and products and devices; services, systems or environments, both real and virtual.

3.17 impairment: Any loss or abnormality of psychological, physiological, or anatomical structure or function.

3.18 inclusive design [deprecated].

This term is replaced by "universal design" (see clause 3.42 and Appendix I).

3.19 interface accessibility: Accessibility of the set of provisions that allow a user to operate and control audiovisual media solutions.

3.20 keyboard emulator: Hardware or software input device that emulates the key press outputs of an alphanumeric keyboard.

3.21 lip reading; lip-reading interpretation: A form of communication or interpretation used by persons that are deaf or hard of hearing, regardless of whether they use sign language.

3.22 lip speaker; oral interpreter: A trained interpreter for persons who are deaf and hard of hearing, who speaks silently the dialogue in the audiovisual content or in any other event in real time,

so that the speech is clearly discernible for persons with hearing disabilities who can lip-read the words from the interpreter's mouth without the use of sign language.

3.23 mainstreaming: Inclusion of persons with disabilities (PWDs) in everyday life without segregation from the environment, education, technology, i.e., access to telephones, the Internet, the worldwide web and all information and communication technologies (ICTs).

3.24 person with age-related disabilities: A person with cognitive or physical disabilities caused by the aging process. Examples are impaired eyesight, deafness in varying degrees, reduced mobility or cognitive abilities.

3.25 person with disabilities (PWD): The correct way to refer to a person with a disability [b-UNCRPD].

3.26 person with specific needs: Includes persons with disabilities (PWDs), persons who are not literate, those with learning disabilities, children, indigenous people, older persons with age-related disabilities and anyone who has a temporary disability.

3.27 pixellation: Phenomenon caused by displaying a bitmap or a section of a bitmap at such a large size that individual pixels become visible, making the image blurred and more difficult to decipher.

3.28 platform accessibility feature: Accessibility functionality provided as standard on a particular hardware or software platform.

3..29 profile setting: The ability for users to store and retrieve multiple profiles containing sets of user interface preference settings without having to reset them each time, including accessibility settings.

3.30 real time: Data or services (e.g., broadcasting) that are transmitted with virtually no delay.

3.31 relay service: A telephone service that enables a person who is deaf or hard of hearing, or whose speech is not clearly understood, or who prefers to use sign language, to place and receive telephone calls in real time.

3.32 remote participation: [b-ITU-T A-Sup. 4]: Participation in a meeting from a separate geographical location, using communication technologies.

3.33 respeaking: A technique to produce captions where a person ("the respeaker") listens to the speech and respeaks it, such that the vocal input of the respeaker is processed by speech recognition software that transcribes it and produces captions.

3.34 screen magnification software: A software application used by a person with impaired vision to magnify a portion of the text or graphics displayed on a video screen sufficiently to enable reading and comprehension.

3.35 screen reader software: Software application used by a person who is blind or cannot easily read print to identify and interpret what is shown on a video display and read aloud using speech synthesis.

3.36 sign language; signed language; visual signing: A natural language that, instead of relying on acoustically conveyed sound patterns, uses signs made by moving the hands combined with facial expressions and postures of the body to convey meaning.

NOTE – Sign language varies from country to country, including many dialects, in a similar manner to spoken languages.

3.37 sign language interpretation: Synchronized showing of an interpreter who uses sign language to convey the main audio content and dialogue to people who use sign language.

3.37*bis* sign language presentation: The process of presenting, in a unidirectional manner, a topic to an audience using sign language.

NOTE – In certain cases, a synthetic construct (e.g., an animated avatar) can be used in place of an interpreter.

3.38 special needs: In the context of accessibility, term used only for countries, on a form or a sign to identify any accessibility accommodation that a person with disabilities (PWD) or a person with specific needs may require to help them be able to participate.

NOTE – This term is not used to refer to persons (see clauses 3.39, 6.38 and Appendix I). For reference to countries, see [b-ITU WTDC Res.58] and [b-ITU WTDC AP].

3.39 specific needs: This replaces the use of the term 'special needs'. This term refers to a wide range of categories including women, children, youth, indigenous people, older persons with age-related disabilities, persons with illiteracy, as well as persons with disabilities (PWDs). See [b-ITU PP Res.175], [b- ITU WTDC Res.58], [b- ITU WTDC AP] and clause 6.39.

3.40 subtitles: On-screen text translation of language(s) of the dialogue in any audiovisual content.

3.41 supplementary audio service: An additional audio soundtrack that provides additional features or function over and above that provided by the main audio stream.

3.42 universal design: The design of products, environments, programmes and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. Universal design shall not exclude assistive devices for particular groups or persons with disabilities where this is needed.

NOTE – See [b-UNCRPD]. This term succeeds "design for all" (see clause 3.14) and "inclusive design" (see clause 3.18). See also Appendix I.

3.43 barrier: Attitudinal or environmental factor that, in relation to an impairment, limits functioning and participation in society on an equal basis with others.

3.44 facilitator: Attitudinal or environmental factor, such as a person, environment or tool, that improves functioning and reduces disability through its absence or presence.

3.45 user experience: Person's perceptions and responses resulting from the use or anticipated use of a product, system or service, including navigation of physical and virtual environment.

NOTE 1 – User experience includes all the user's emotions, beliefs, preferences, perceptions, physical and psychological responses, behaviours and accomplishments that occur before, during and after use.

NOTE 2 – User experience is a consequence of brand image, presentation, functionality, system performance, interactive behaviour and assistive capabilities of the interactive system, the user's internal and physical state resulting from prior experiences, attitudes, skills and personality, as well as the context of use.

NOTE 3 – Usability, when interpreted from the perspective of the user's personal goals, can include the kind of perceptual and emotional aspects typically associated with user experience. Usability criteria can be used to assess aspects of user experience.

NOTE 4 – Adapted from [b-ISO 9241-210].

3.46 speech to text interpretation (STTI): A simultaneous form of text interpretation conveying spoken content.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

ALD Assistive Listening Device

ALS Assistive Listening System

AT Assistive Technology

CART Communication Access Real-Time Translation

EPG Electronic Programme Guide

HDTV High Definition Television

ICT Information and Communication Technology

IPTV Internet Protocol Television

PC Personal Computer

PWD Person with Disabilities

SA Supplementary Audio

5 Conventions

The terms and definitions in this Recommendation are matched in numbering across clauses 3 and 6, for easier reference to the reader. The essential definitions are provided in clause 3, while more nuanced considerations on the use of different terms associated with the definitions are provided in clause 6.

6 Terminology

6.1 Access service; accessibility service

See clause 3.1 for a concise definition.

Examples related to impairments include users who are deaf, hard of hearing, blind or partially sighted. Examples related to preferences include people who turn down the sound on a TV when others are trying to sleep. Examples related to environmental contexts of use include being unable to hear a phone in a loud environment or see a screen in strong light. Examples of common access services are captioning, subtitling, audio description and sign language interpretation. A service such as captioning, audio description or visual signing improves the accessibility of the audiovisual content for which it was made. Metadata shall be available in an electronic programme guide (EPG) to allow a user to be able to determine the access services available.

6.2 Accessibility

See clause 3.2 for a concise definition.

Accessibility can be viewed as the ability to access and possibly benefit from some system or entity. Accessibility is often used to focus on PWDs or to identify persons with specific needs who may or may not be PWDs and their right of access to entities directly or through use of AT or access services. Accessibility is the property of being accessible and usable upon demand by an authorized entity. Accessibility is strongly related to universal design (see article 2 of [b-UNCRPD]), when the approach involves "direct access". Universal design is about making (and designing) things, from concept to realization, to be accessible to as many people as possible, whether or not they have disabilities or specific needs. Using the principles of universal design at the beginning of the design process makes products, services and environments, both virtual and real, accessible to a greater number of people and prevents expensive reformulation later when accessibility is possibly required by regulation. An alternative method of providing accessibility is to provide "indirect access" by having the entity support the use of a person's AT to achieve access.

6.3 Accessibility content

See clause 3.3 for a concise definition.

In order for PWDs and those with specific needs to follow audiovisual content, certain technology must be implemented. Examples are as follow. For persons who are deaf or profoundly hard of hearing, open and closed captioning (including audio captioning) is necessary to understand dialogue and background noises. An example is sign language, which can also be open or closed. For persons

who are visually impaired, audio description is necessary to describe the non-spoken components of audiovisual content.

6.4 Accessibility feature

See clause 3.4 for a concise definition.

Examples of accessible features are: captions for persons who are deaf or hard of hearing, subtitles in various languages, as well as sign language interpretation for video and audio description for the visually impaired.

6.5 Assistive listening device

See clause 3.5 for a concise definition.

ALDs work with hearing aids or cochlear implant processors with or without radio assistance and radio communication systems comprising narrow band transmitter(s). These can be hand-held, placed on a table or worn physically around the neck. ALDs can have a wired or an inductive connection to a hearing aid.

6.6 Assistive listening system

See clause 3.6 for a concise definition.

Assistive listening systems (ALSs) are wireless sound systems designed specifically to help people with hearing loss to access a sound source via their hearing device so that they can hear more clearly. The function of an ALS is to eliminate the degradation of intelligibility, unwanted noise or acoustical distortion between the sound source and the person's hearing device. ALSs include a hearing loop (an audio inductive loop), infrared systems or radio frequency-based systems that are found in mobile phones. They can be found installed at shop counters and in large venues e.g., theatres, museums and conference centres.

6.7 Assistive technology

See clause 3.7 for a concise definition.

AT is an interface to an ICT device that allows access to technology. It also includes the process used in selecting, locating and using ICTs. The use of AT and AT devices promotes greater independence by enabling people to perform tasks that they were formerly unable to accomplish or had great difficulty accomplishing by providing enhancements to or changed methods of interacting with the technology. AT provides indirect access and this is supported by universal design. An example is a screen reader that enables persons who are blind to hear printed text read aloud.

6.8 Audio subtitles; spoken subtitles

See clause 3.8 for a concise definition.

Subtitles become the audio content of an audiovisual work or sequence in a foreign language through specific techniques that convert the text into speech from subtitles on the screen in the target language by text recognition. Conversion may be done at the source or on the user's device using speech synthesis.

6.9 Audio captions; audio captioning

See clause 3.9 for a concise definition.

Audio captioning may be done at the source or on the user's device using speech synthesis. This is for the benefit of blind or visually impaired persons when the only meaningful content comes from captions or subtitles.

6.10 Audio description; video description; visual description; described video

See clause 3.10 for a concise definition.

Audio description provides additional audible narrative and is mixed with the dialogue. This describes the significant aspects of the visual content, settings, actions and ambiguous sounds of the audiovisual media that cannot be understood from the main dialogue soundtrack alone. Audio description should be synchronous with this list to describe any actions and identify who is doing what, where and when. Special attention should be paid to the audio mix to make sure that the volume of the main dialogue and the audio description are not in conflict.

6.11 Captions; captioning

See clause 3.11 for a concise definition.

Captions provide a real-time on-screen transcript of the dialogue and any sound effects when an Internet or television broadcast is live. Ideally, users have some control over the position and size of the presentation. Captions can also be pre-recorded and synchronized with the dialogue of the content. [b-ITU-T Y.1901]. There are different ways to identify speakers, e.g., with different colours.

There is also real-time captioning [also referred to as communication access real-time translation (CART)], which is used for meetings to enable participation for PWDs. This service can be provided by means of either textual or graphical supplementary content. The captions and the dialogue are usually in the same language. The service is primarily to assist users having difficulty hearing the sound. They are also beneficial to those persons who do not understand the spoken language for other reasons e.g., the language is not that person's first language (including sign language).

At the time of publication, captions are created in two basic ways, either spoken or typed. Most commonly, text is produced by stenographic methods using technology similar to court reporting or using a respeaking technique through speech recognition software. There are technical forms of creating captions in foreign languages that do not have a script or keyboard, or for which speech technology solutions are still unavailable. Captions might require the use of different keyboards and techniques. One example is in Japan, where two captioners work together simultaneously using a specialized keyboard to render captions in their language.

6.12 Clean audio

See clause 3.12 for a concise definition.

Clean audio enables everyone to hear the sound of broadcast content clearly, including dialogue and narrative, audio description, audio captions and spoken subtitles, which is imperative for persons withe hearing difficulties (including those who are hard of hearing or with age-related hearing disabilities).

6.13 Closed/open accessibility services

See clause 3.13 for a concise definition.

There is a need for both the use of open and closed services. The user should have the ability to turn on and turn off a service, such as captioning or sign language, if it is not needed. Equally, when a person with disabilities is in situation away from home, they should be able to turn these services on or off at will. Open captions are also vital for announcing emergencies and other public announcements. It is necessary to have open services in giving the general public important live information as in news broadcasting. These open services are not in the control of the user for safety reasons, or as in the case of a live broadcast. There is also the possibility that technically, for whatever reason, it is not possible to provide closed services.

6.14 Design for all [deprecated]

See clause 3.14 and Appendix I on deprecated terminology. This term is replaced by "universal design" (see clause 3.42) as is "inclusive design" (see clause 3.18).

The term "design for all" was used before the creation of the term "universal design", but is not recognized or used in article 2 of [b-UNCRPD]. Unfortunately, its implied implementation is not practical from the industrial point of view; it is preferred to use UN language, but "design for all" does not carry a social stigma if it is used in addition to help explain the concept of universal design, which has a slightly more flexible meaning.

6.15 Disability

See clause 3.15 for a concise definition.

PWDs include those who have short- or long-term physical, sensory, cognitive or psychosocial impairments, which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others. See also clause 6.25 for more information on PWDs.

NOTE – For more detailed information about the definition of "disability", please refer to appropriate documents such as [b-WHO ICF].

6.16 Human factors; ergonomics

See clause 3.16 for a concise definition.

This category can deal with accessibility for PWD, but not exclusively. Examples of human factor accessibility in practical applications could be:

– curb cuts, which can be used by wheelchairs, motorized disability scooters and perambulators for babies;

– the tactile marker in the keypad "5" key in telephone sets conforming to [b-ITU-T E.161], that guide blind users in placing voice calls;

– captioning in audiovisual programmes, which helps an audience to understand its content in a noisy environment.

6.17 Impairment

See clause 3.17 for a concise definition. Qualifications of "impairment" include the following:

a) **age-related impairment**: Sensory or cognitive degeneration that increases with age, generally covering items such as the deterioration of sight and hearing, memory impairment or memory loss and motor impairment.

b) **cognitive impairment**: Deterioration that affects an individual's ability to think, concentrate, formulate ideas, reason and remember.

c) **dexterity impairment**: Reduction in function of the arms and hands that makes activities related to moving, turning or pressing objects difficult or impossible. If other motor features of the body do not function well, dexterity impairment may impair speech communication.

d) **functional impairment**: A person's loss of functional ability of an organ or physical or mental capability to perform its specified function. The existence of a medical condition may not necessarily restrict functional capacity and does not define disability. The [b-WHO ICI] definition of impairment is "any loss or abnormality of psychological or anatomical structure or function."

e) **hearing loss impairment**: Please see "hearing impairment" (deprecated) in Appendix I.

This term should not be used to cover both deaf and hard of hearing persons. Instead, "hearing disability" should be used as a general term. The terms to be used for those affected are "persons who are deaf" or "persons who are hard of hearing".

Hearing loss can affect the whole auditory range and can be profound, making hearing speech and sound impossible through auditory means; this type of hearing loss describes a person who is deaf. Alternatively, hearing loss can vary in degree affecting only a part of the auditory spectrum and in this case AT can assist (e.g., a hearing aid placed in one or both ears); this type of loss describes a person who is hard of hearing. The use of the word "profound" means severe. Technology is usually needed in both cases, but of different types. Persons who are deaf need visual solutions and persons who are hard of hearing need enhanced audio solutions often together with visual text content, see [b-WFD–IFHHP].

f) **visual impairment; vision impairment**: Vision loss (of a person) to such a degree as to qualify for additional support through a significant limitation of visual capability resulting from disease, trauma, age or congenital defect, all of which can include degenerative conditions that cannot be corrected by conventional means like glasses or refractive correction, medication or surgery. The loss may cover visual acuity, significant central or peripheral field defects, or reduced contrast sensitivity.

6.18 Inclusive design (deprecated)

See clause 3.18 and Appendix I on deprecated terminology. This term is replaced by "universal design" (see clause 3.42) as is "design for all" (clause 3.14).

The design of mainstream products or services that are accessible to and usable by as many people as reasonably possible without the need for special adaptation or specialized design. Inclusive design is a predecessor term to universal design, but is not recognized or used in article 2 of [b-UNCRPD]. The use of UN language is preferred, but "inclusive design" does not carry a social stigma if the term is used in addition to help explain the concept of universal design.

6.19 Interface accessibility

See clause 3.19 for a concise definition.

Interface accessibility is concerned with components and controls, such as those of the physical (hardware and remote) and virtual types, e.g., displays, menus, EPGs, windows and selection grids. An accessible interface does not automatically imply content accessibility.

6.20 Keyboard emulator

See clause 3.20 for a concise definition.

Keyboard emulators are used by individuals who are unable to physically enter text using a keyboard.

6.21 Lip reading; lip-reading interpretation

See clause 3.21 for a concise definition.

Many persons become profoundly or partially deaf later in life. Persons who do not have sign language skills often rely on recognizing the spoken words on the lips of others without sound and can .interpret speech if trained or are naturally able to lip read. This technique works better on a one to one basis in real time as lip reading is often guesswork. Dialects and moustaches sometimes get in the way, but with high definition television (HDTV), it is more feasible to virtually see speech that persons with hearing disabilities cannot recognize by sound on the mouths of speakers. Lip reading can make it possible to understand speech without sound only when the speaker is facing the camera. This is, of course, not always the case and many persons have to rely on captioning as well.

6.22 Lip speaker; oral interpreter

See clause 3.22 for a concise definition.

A lip speaker or oral interpreter is trained in a technique to relay spoken words silently through lip movements, providing communication support to deaf persons. This technique provides useful support for deaf people who are confident lip readers.

6.23 Mainstreaming

See clause 3.23 for a concise definition.

Whenever possible, mainstreaming should be transparent or give equivalent access using ATs. ATs can be necessary to assist inclusion, by recognizing and providing for specific needs or requirements, especially upon request. ATs will provide equivalency of integration. Mainstreaming is necessary to achieve integration, see [b-UNCRPD]. This also applies to the writing of accessibility features into mainstream standardization. See "accessibility features" (clause 3.4).

6.24 Person with age-related disabilities

See clause 3.24 for a concise definition.

People grow older but do not necessarily see themselves as old or elderly. They often resist seeing the changes and the diminishing capabilities that age brings as making them a person with disabilities. The use of the term elderly is discouraged and not accurate, especially when age-related disabilities can begin in the early forties. The simple beginning of wearing glasses due to the inability to focus or see distant objects clearly is a classic example. Deterioration of hearing with age and the loss of the ability to separate sounds makes it difficult to understand speech in noisy environments. Older persons can also be referred to as persons with specific needs, especially if there is a strong resistance to being labelled as an older person or a PWD.

6.25 Person with disabilities

See clause 3.25 for a concise definition.

It is incorrect to refer to a PWD as a disabled or handicapped person. This definition was at the behest of the consulting panel of PWDs when [b-UNCRPD] was created. The basis of this choice was that they were persons first and had a disability second. Many organizations use the term "people with disabilities", but [b-UNCRPD] uses "persons with disabilities".

6.26 Person with specific needs

See clause 3.26 for a concise definition.

The term "persons with specific needs" can be used for persons with age-related disabilities and others, i.e., women, youth, children and indigenous people as well as persons with impaired literacy, both with and without disabilities. Curb cuts are an example of mainstreaming for persons with specific needs that accommodate many people with and without disabilities. They were designed for the accommodation of wheel chair users and motorized scooters for PWDs. However, they are also invaluable to mothers with baby buggies or prams (see [b- ITU WTDC AP]). "Person with specific needs" covers everyone, but should not entirely replace the term "person with disabilities".

6.27 Pixellation

See clause 3.27 for a concise definition.

When a person with low vision tries to read text, view graphics or photos on a personal computer (PC) screen, the person may use screen magnification software to enlarge content. However, if the software is not well designed, the text in an image can become too "pixellated" to be legible when the

image is magnified. Pixellation (see clause 3.27) can occur, making the text or image indiscernible. This also applies when a person is without disabilities in general, if the image is poor.

6.28 Platform accessibility feature

See clause 3.28 for a concise definition.

Examples of platform accessibility features are screen magnification or "zoom" functionality provided within an operating system, as well as the sizes of font and icon for photos or items on a desktop. These are usually built into the operating system and can be activated without adding any other software.

6.29 Profile setting

See clause 3.29 for a concise definition.

Internet protocol television (IPTV) and EPG architecture are required to support the capability to store and retrieve multiple profiles containing sets of user interface preference settings and language settings so that it will be easy to switch to different personal preferences for different users without the user having to reset them each time. This should also include accessibility features in the settings for captioning, sign language and audio description.

6.30 Real time

See clause 3.30 for a concise definition.

Real time text, live television emissions, live voice telephone calls and text phone telephone calls are generally real time services. Instant messaging and e-mail are not delivered in real time as the transmission of messages must be activated by the user doing an action to send the data.

6.31 Relay service

See clause 3.31 for a concise definition.

A relay service is usually a human-operated service for media and mode (voice, text and video) translation during phone conversations. The provision of relay services that are well integrated into the phone system is an important capability of accessible phone services for persons who are deaf or hard of hearing, as well as those whose speech cannot be clearly understood.

Relay services are usually provided as community-supported services, as their operation requires many more human resources than regular person-to-person calls, see [b-ITU-G3ict].

Existing types of relay services are:

– video relay services, translating between sign language in video and speech in a voice phone;
– text relay services, translating between real-time text in the text part of a phone and speech in a voice phone, usually for persons with speech impairments, hearing disabilities, including those who are hard of hearing, deaf or deaf-blind;
– speech-to-speech relay services, supporting speech calls for people with speech impairments or cognitive disabilities;
– captioned speech relay services (captioned telephony), adding real-time text captions to a voice call, for people who are hard of hearing or deaf.

In all these cases, other media (voice, video, text) may also be handled in the call, ideally connected in two- or three-party call mode between the parties in the call who have terminals that can handle these media.

Integration of relay services in the phone system implies:

– calls to a number for a person with disabilities should be able to invoke a relay service selected by the user if the user so decides;
– calls from a person with disabilities to another number should be able to invoke a relay service selected by the user if the user so decides;
– calls between two users who can and want to use the same modes and media in the call should be possible without invoking any relay service.

Relay services should work with all commonly used handsets and terminals. Users need to be able to use the same terminal for calls directly in the modes they handle, as is used for calls through relay services and with emergency services. The relay and emergency services can only feasibly support a limited number of connection types or protocols. Thus, it is important to coordinate the specifications of access to relay services, emergency services and terminals used by people with disabilities so that maximum interoperability in all available media is achieved for all occurring call combinations.

6.32 Remote participation

See clause 3.32 for a concise definition.

The online process that enables a person to participate without actually being physically present at a meeting location by the use of online communication tools, including video, audio and text communication in chat boxes. Remote participation also allows for captioning to be included for those PWDs who cannot access sound.

More details concerning remote participation can be found in [b-ITU-T FSTP.ACC-RemPart] and [b-ITU-T A-Sup. 4].

6.33 Respeaking

See clause 3.33 for a concise definition.

This technique involves a longer delay in producing captions as there are three steps in producing the captions and the loss of synchronization is an issue to be considered.

Unless there is a supplementary typing input device, respeaking is not accurate when it comes to the reproduction of foreign names or nouns, unless they are programmed into the software in advance.

6.34 Screen magnification software

See clause 3.34 for a concise definition.

Screen magnification is an accessibility feature included in some hardware. An example can be found in mobile phones. This accessibility feature may already be included in computer operating systems. If this is not available, this accessibility feature can often be downloaded. Screen magnification is useful for persons with varying degrees of sight problems and is also used by those with learning difficulties.

6.35 Screen reader software

See clause 3.35 for a concise definition.

Screen readers can come in an audible format, in which a person can listen to a word printed on the screen, or in a refreshable braille display, enabling a person who is blind to read in braille what was printed on the screen,

6.36 Sign language; signed language; visual signing

See clause 3.36 for a concise definition.

As is the case with any language, sign language has its own distinct grammar and syntax. There is a different sign language for every spoken language, and dialects are found within each country just

like any spoken language. There does not exist an international sign language *per se*, but deaf individuals who use different signed languages adapt their signing to communicate with each other and make themselves understood. This has led some to misconstrue that there exists a single uniform signed language understood by all deaf persons. This is in fact an incorrect assumption. What does exist is a collection of very basic signs with a limited vocabulary that does not include specific terminology and is used to communicate between deaf persons who use different signed languages. This is referred to as International Sign. It is constantly changing and adapting to the specific needs of participants in specific situations. It is used primarily within the international deaf community to have a communication method that most can understand without having to resort to having so many different national sign languages present at a large international meeting for persons who are from many different countries. However, many deaf people do not use or know any form of International Sign and it is interpreted differently in every country. It can be used under certain circumstances when no other choice is available, but not in detailed technical discussions. There is no equivalent spoken language translation. Thus, a real true understandable International Sign is not standardized or consistent as explained above.

6.37 Sign language interpretation

See clause 3.37 for a concise definition.

Sign language interpretation is often done by human beings who are fluent in a particular national sign language. There must always be two persons for each language, just as there are two persons who interpret orally expressed languages. This can be done live with the interpreters present or remotely via video. There are avatars that have been created to simulate human sign language interpretation. However, the problem with avatars is that one of the functions for a sign language interpreter is to voice out what a person with disabilities is signing if that person does not speak.

6.37*bis* Sign language presentation

See clause 3.37*bis* for a concise definition.

No additional discussion is provided for this term.

6.38 Special needs

See clause 3.38 for a concise definition.

This term can be used only for countries or on a form to identify any special requirements that a person with disabilities or a person with specific needs requires to be able to participate. It should not be used to describe a person with disabilities. One cannot refer to a person having special needs. The term "specific needs" (see clause 3.39) is now used instead of "special needs" with regard to people, see [b-ITU WTDC AP] [b-WTDC Res.68].

The use of the term "special needs" to describe a person with disabilities countermands the desire of PWDs to be mainstreamed into technology, education, work and society. The use of this term to describe PWDs also indicates that they are deemed not capable and to include them would create huge difficulties. It gives industry the view that the word "special" means a market too small (and therefore not profitable) to be considered as a mainstream item for implementation of accessibility features in technology and services that if implemented would eliminate barriers to inclusiveness.

See Appendix I on deprecated terminology.

6.39 Specific needs

See clause 3.39 for a concise definition.

This term was created to cover a wider range of needs and includes more than just PWDs. It replaces the term "special needs" (see clause 6.38), which now refers to countries and not people. "Specific

needs" refers to a wide range of categories including women, children, youth, indigenous people, older persons with age-related disabilities, persons with illiteracy, as well as PWDs. It allows for the concept of mainstreaming, human factors and encompasses the needs of many, which supports the UNCRPD concept of universal design, see [b-UNCRPD], [b-ITU PP Res.175], [b-ITU WTDC Res.58], [b-ITU WTDC AP].

6.40 Subtitles

See clause 3.40 for a concise definition.

The assumed audience for subtitling is for persons who can hear, as well as those who cannot hear, and those who do not understand the language of the dialogue. Subtitles can be on smartphones, tablets, computers or any screen-based content. They can be produced manually or by respeaking. It is technically possible to choose their position on the screen, their size and colours. They should be synchronized with the spoken content. Subtitles in the past have usually been open in content for the purpose of language translation or to clarify the speech of any language spoken that is unclear and was separate from closed captioning or subtitling that is superimposed later for the entire dialogue and captioned audio on the content for accessibility.

Subtitle text is not always a real-time dialogue text transcription. Sometimes it is pre-embedded in the content and may not follow all the dialogue when translating the speech of one individual speaking a language other than the main language of the content. If captions or captioning is introduced later, which translates all the main dialogue and sound effects with text, care needs to be taken to place the two forms of text successfully on the screen without one interfering with the placement of the other.

NOTE – This service can be provided by means of either textual or graphical supplementary content.

Subtitles are the translation of spoken words only, while captions include spoken words plus any meaningful sound whose perception is important to understanding the content of the audiovisual program. See clause 3.11.

6.41 Supplementary audio service

See clause 3.41 for a concise definition.

Supplementary audio (SA) can be an audio description that describes the scenario and the unspoken action of the content for the benefit of persons with disabilities who cannot see the content. It is in addition to the spoken dialogue. It can also be audio captioning or spoken subtitles in which the text written on the screen is read out audibly for persons with reading or visual difficulties.

The SA stream may be provided using one of two schemes (see [b-ETSI TS 101-154]) as follows.

– Broadcast mixed: Pre-mixed by the broadcaster and offered as an alternative audio stream, as in open accessibility services.

– Receiver mixed: Mixed in the receiver under the control of signalling provided by the broadcaster plus some limited control of the user, as in closed accessibility services.

6.42 Universal design

See clause 3.42 for a concise definition.

No additional discussion is provided for this term.

6.43 Barrier

See clause 3.43 for a concise definition.

No additional discussion is provided for this term.

6.44 Facilitator

See clause 3.44 for a concise definition.

No additional discussion is provided for this term.

6.45 User experience

See clause 3.45 for a concise definition.

No additional discussion is provided for this term.

6.46 Speech to text interpretation (STTI)

See clause 3.46 for a concise definition.

This form of interpretation has been developed in North European countries. A trained professional interprets a spoken language into text in another language. Example: a conference with an English speaker is translated into Finnish in text form for the deaf or hard of hearing delegates.

Appendix I

Deprecated terminology

(This appendix does not form an integral part of this Recommendation.)

The following is terminology that should be avoided when referring to accessibility issues.

Elderly: Not to be used, as the term is deemed to be offensive to "older persons". See "person with age-related disabilities (clause 3.24). The word "elderly" is a negative term that is counterproductive to assisting older persons in dealing with age degenerative problems.

Handicapped: Not to be used unless it is in colloquial use for a specific language translation purpose. See "person with disabilities" (clause 3.25).

Hearing impairment: The use of the word "impairment" is restricted and cannot be used for those with hearing disabilities because the solutions are completely the opposite for persons who are deaf and persons who are hard of hearing. If a person is deaf, they need visual communication or assistive technologies as in captioning or text that can be read and video for sign language. If a person is hard of hearing, they need improved audio communication or assistive technologies that enhance audio i.e., hearing aids and ALDs see [b-WFD–IFHHP]. See also clause 3.17.

Inclusive design, design for all or accessible design: These terms were previously used in place of and to mean "universal design", which is the correct UN language taken from [b-UNCRPD]. These terms have many different definitions in the various documents from the range of organizations that used them. Migration to recognized UN terminology is recommended. See the disclaimer in [b-ITU-T H-Sup. 17].

Persons with special needs: The term "special needs" is not to be applied to a person because it has been found to be offensive to PWDs. It also gives the wrong impression to industry that the market of PWDs is small and thus marginalizes these persons with regards to standardization and implementation of accessibility features in standardization. The term "special needs" can be used in the context of a registration form in order to indicate anyone who needed special access of some kind, for instance, to attend a meeting or to access a building. It should not be used to define a person. "Special needs" can be used for countries, as in "countries with special needs" see [b-ITU WTDC AP], (see also clauses 3.23, 3.25, 3.38, 6.23, 6.38).

Bibliography

[b-ITU-T A-Sup. 4] ITU-T A-series Recommendations – Supplement 4 (2015), *Supplement on guidelines for remote participation*.

[b-ITU-T E.161] Recommendation ITU-T E.161 (2001), *Arrangement of digits, letters and symbols on telephones and other devices that can be used for gaining access to a telephone network.*

[b-ITU-T F.790] Recommendation ITU-T F.790 (2007), *Telecommunications accessibility guidelines for older persons and persons with disabilities.*

[b-ITU-T H-Sup. 17] Recommendation ITU-T H-Series Supplement 17 (2014), *Guide for addressing accessibility in standards*.

[b-ITU-T Y.1901] Recommendation ITU-T Y.1901 (2009), *Requirements for the support of IPTV services*.

[b-ITU-T FSTP.ACC-RemPart] ITU-T Technical Paper FSTP.ACC-RemPart (2015), *Guidelines for supporting remote participation in meetings for all*.

[b-ITU-G3ict] ITU (Internet). *G3ict e-accessibility policy toolkit for persons with disabilities*. Available [viewed 2018-11-09] at: http://www.e-accessibilitytoolkit.org/toolkit/technology_areas/landline_phones#Relay

[b-ITU PP Res.175] ITU Plenipotentiary Conference Resolution 175 (Busan, 2014), *Telecommunication/information and communication technology accessibility for persons with disabilities and persons with specific needs*.

[b-ITU WTDC AP] ITU World Telecommunication Development Conference (2014), Action plan. In: *Final Report World Telecommunication Development Conference (WTDC-14)*, Dubai, United Arab Emirates, 2014-03-30/04-10, pp. 43-144.
Available [viewed 2019-01-09] at https://itu.int/en/ITU-D/Conferences/WTDC/Documents/D-TDC-WTDC-2014-PDF-E.pdf

[b-ITU WTDC Res.58] ITU World Telecommunication Development Conference Resolution 58 (Rev Dubai 2014), Telecommunication/information and communication technology accessibility for persons with disabilities, including persons with age-related disabilities. In: *Final Report World Telecommunication Development Conference (WTDC-14)*, Dubai, United Arab Emirates, 2014-03-30/04-10, pp. 396-410
Available [viewed 2019-01-09] at: https://itu.int/en/ITU-D/Conferences/WTDC/Documents/D-TDC-WTDC-2014-PDF-E.pdf

[b-ITU WTDC Res.68] ITU World Telecommunication Development Conference Resolution 68 (Rev. Dubai, 2014), Assistance to indigenous peoples within the activities of the Telecommunication Development Bureau in its related programmes. In: *Final Report World Telecommunication Development Conference (WTDC-14)*, Dubai, United Arab Emirates, 2014-03-30/04-10, pp. 461-464
Available [viewed 2019-01-09] at: https://itu.int/en/ITU-D/Conferences/WTDC/Documents/D-TDC-WTDC-2014-PDF-E.pdf

[b-ETSI TS 101-154] ETSI TS 101-154 v.1.11.1 (2012), *Digital video broadcasting (DVB); Specification for the use of video and audio coding in broadcasting applications based on the MPEG-2 transport stream*.

[b-ISO 9241-210] ISO 9241-210:2010, *Ergonomics of human–system interaction – Part 210: Human-centred design for interactive systems*.

[b-UNCRPD] United Nations (2006), *Convention on the Rights of Persons with Disabilities*. New York, NY: United Nations. 28 pp. Available [viewed 2019-01-09] at: http://www.un.org/disabilities/documents/convention/convention_accessible_pdf.pdf

[b-WFD–IFHHP] WFD, IFHHP (2013). *Co-operation agreement between World Federation of the Deaf and the International Federation of Hard of Hearing People*. Available [viewed 2019-01-09] at: https://wfdeaf.org/news/resources/wfd-international-federation-deaf-hard-hearing-cooperation-agreement/

[b-WHO ICF] World Health Organization (2017). *International classification of functioning, disability and health (ICF)*. Geneva: WHO. Available [viewed 2018-11-09] at: http://apps.who.int/classifications/icfbrowser/ .

[b-WHO ICI] World Health Organization (1980). *International classification of impairments, disabilities, and handicaps*. Geneva: WHO. 207 pp. Available [viewed 2019-01-09] at: http://apps.who.int/iris/bitstream/handle/10665/41003/9241541261_eng.pdf;jsessionid=50649198D21FCD7FB7589BC70329A59A?sequence=1

SERIES OF ITU-T RECOMMENDATIONS

Series A	Organization of the work of ITU-T
Series D	Tariff and accounting principles and international telecommunication/ICT economic and policy issues
Series E	Overall network operation, telephone service, service operation and human factors
Series F	**Non-telephone telecommunication services**
Series G	Transmission systems and media, digital systems and networks
Series H	Audiovisual and multimedia systems
Series I	Integrated services digital network
Series J	Cable networks and transmission of television, sound programme and other multimedia signals
Series K	Protection against interference
Series L	Environment and ICTs, climate change, e-waste, energy efficiency; construction, installation and protection of cables and other elements of outside plant
Series M	Telecommunication management, including TMN and network maintenance
Series N	Maintenance: international sound programme and television transmission circuits
Series O	Specifications of measuring equipment
Series P	Telephone transmission quality, telephone installations, local line networks
Series Q	Switching and signalling, and associated measurements and tests
Series R	Telegraph transmission
Series S	Telegraph services terminal equipment
Series T	Terminals for telematic services
Series U	Telegraph switching
Series V	Data communication over the telephone network
Series X	Data networks, open system communications and security
Series Y	Global information infrastructure, Internet protocol aspects, next-generation networks, Internet of Things and smart cities
Series Z	Languages and general software aspects for telecommunication systems

Printed in Switzerland
Geneva, 2019