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Accessibility — ICT products and services

Part 1: Requirements

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Accessibility — ICT products and services

Part 1: Requirements

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Foreword

This Kenya Standard was prepared by the Joint Working Group on Accessibility of ICT Products and Services for Persons with Disabilities under the guidance of the Standards Projects Committee, and it is in accordance with the procedures of the Kenya Bureau of Standards.

Technology is making it possible for people to accomplish many things more efficiently and independently. In order to accommodate all people in the society, inclusive design and universal design principles should be integrated in products and services. Assistive Technology (AT) is widely adopted to ensure that Persons with Disabilities are able to access products and services. A combination of accessible ICT and AT enhances function, independence and overall wellbeing of Persons with Disabilities. This standard specifies requirements for ensuring that ICT products, services and opportunities are made accessible to all, including Persons with Disabilities.

This standard is intended for use by policy makers, regulators, providers, procurers and users of ICT products and services. The development of this standard is in response to the National Information, Communications and Technology (ICT) Policy of Kenya of 2019.

This KS 2952 consists of the following series of standards with the general title Accessibility — ICT Products and Services.

- Part 1, Requirements
- Part 2, Conformance

This standard sets out in a single source, detailed, practical and quantifiable functional accessibility requirements that take note of global initiatives in that field and which are applicable to all Information and Communication Technology (ICT) products and services identified usable in public procurement.

This standard contains the necessary functional requirements and provides a reference document such that if procedures are followed by different actors, the results of testing are similar and the interpretation of those results is clear. The test descriptions and evaluation methodology covered in part 2 of the standard are elaborated to a level of detail compliant with ISO/IEC 17007, so that conformance testing can give conclusive results.

During the preparation of this standard, reference was made to the following documents:

EN 301-549 V3.2.1:2021-03, Accessibility Requirements for ICT Products and Services

The National Information, Communications and Technology (ICT) Policy, 2019.

The Data protection Act, 2019, Part IV — Principles and Obligations of personal data Protection

Acknowledgement is hereby made for the assistance derived from these sources.

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PUBLIC REVIEW DRAFT

Accessibility — ICT products and services: Part: 1 Requirements

1 Scope

This Draft Kenya standard specifies the functional accessibility requirements applicable to ICT products and services.

This standard covers both software and hardware as well as services and it intended to be used with web-based , non-web and hybrid technologies.

2 Normative references

The following referenced documents referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ANSI/IEEE C63.19 (2011): American National Standard Method of Measurement of Compatibility between Wireless Communication Devices and Hearing Aids

ANSI/TIA-4965: Telecommunications telephone terminal equipment receive volume control requirements for digital and analog wireline handset terminals.

ETSI ES 200 381-1 (V1.2.1) (October 2012): Telephony for hearing impaired people; Inductive coupling of telephone earphones to hearing aids; Part 1: Fixed-line speech terminals.

ETSI ES 200 381-2 (V1.1.1) (October 2012): Telephony for hearing impaired people; Inductive coupling of telephone earphones to hearing aids; Part 2: Cellular speech terminals.

ETSI ETS 300 381 (Edition 1) (December 1994): Telephony for hearing impaired people; Inductive coupling of telephone earphones to hearing aids.

ETSI ES 202 975: Human Factors (HF); Requirements for relay services Web Content Accessibility Guidelines 2.0 (WCAG) 2.0.

IETF RFC 4103 (2005): "RTP Payload for Text Conversation".

ISO/IEC 40500:2012: Information technology — W3C Web Content Accessibility Guidelines (WCAG) 2.0

KS ISO 21542: "Building construction - Accessibility and usability of the built environment

Recommendation ITU-T V.18 (2000): "Operational and interworking requirements for DCEs operating in the text telephone mode".

Web Content Accessibility Guidelines (WCAG) 2.1

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1

accessibility

extent to which products, systems, services, environments and facilities can be used by people from a population with the widest range of user needs, characteristics and capabilities, to achieve identified goals in identified contexts of use [KS **ISO 9241-11:2018**]

Note to entry 1: Context of use includes direct use or use supported by assistive technologies.

Note to entry 2: The context in which the ICT is used may affect its overall accessibility. This context could include other products and services with which the ICT may interact.

3.2

access space

space intended to be occupied by the person, including their assistive technology, while they are using the product

3.3

Assistive Listening Devices (ALDs)

devices that help separate the sounds, particularly speech, that a person wants to hear from background noise by bringing sound directly into the ear

Note to entry: These are often found in meetings and public venues such as plays, concerts and places of worship. They can also be used at home with televisions and other products with auditory output.

3.4

Assistive Technology (AT)

equipment, product system, hardware, software or service that is used to increase, maintain or improve capabilities of individuals [ISO/IEC Guide 71:2014]

Note to entry 1: Assistive technology is an umbrella term that is broader than assistive products.

Note to entry 2: Assistive technology can include assistive services, and professional services needed for assessment, recommendation and provision.

Note to entry 3: Where ICT does not support directly connected assistive technology, but which can be operated by a system connected over a network or other remote connection, such a separate system (with any included assistive technology) can also be considered assistive technology. This is an additional note, not included in **ISO/IEC Guide 71:2014**

3.5

assistive product

any product (including devices, equipment, instruments and software), especially produced or generally available, used by or for persons with disability for participation, to protect, support, train, measure or substitute for body functions/structures and activities, or to prevent impairments, activity limitations or participation restrictions

3.6

audio description

additional audible narrative, interleaved with the dialogue, which describes the significant aspects of the visual content of audio-visual media that cannot be understood from the main soundtrack alone

Note to entry: This is also variously described using terms such as "video description" or variants such as "descriptive narration".

3.7

authoring tool

software that can be used to create or modify content

Note to entry 1: An authoring tool may be used by a single user or multiple users working collaboratively.

Note to entry 2: An authoring tool may be a single stand-alone application or be comprised of collections of applications.

Note to entry 3: An authoring tool may produce content that is intended for further modification or for use by end-users.

3.8

caption

synchronized visual and/or text alternative for both speech and non-speech audio information needed to understand the media content

Note to entry: This is also variously described using terms such as "subtitles" or variants such as "subtitles for the deaf and hard-of-hearing".

3.9

closed functionality

functionality that is limited by characteristics that prevent a user from attaching, installing or using assistive technology

3.10

communications assistant

person working in a relay service with major conversions, as a human intermediary (including sign language interpreters for video relay services)

Note to entry: also known as interpreter, operator, call handler, telephone operator, etc

3.11

content

information and sensory experience to be communicated to the user by means of software, including code or mark-up that defines the content's structure, presentation, and interactions

Note to entry: Content occurs in three places: web pages, documents and software. When content occurs in a web page or a document, a user agent is needed in order to communicate the content's information and sensory experience to the user. When content occurs in software, a separate user agent is not needed in order to communicate the content's information and sensory experience to the user - the software itself performs that function.

3.12

context of use

combination of users, goals and tasks, resources, and environment. [ISO 9241-11:2018]

Note to entry: The "environment" in a context of use includes the technical, physical, social, cultural and organizational environments.

3.13

document

logically distinct assembly of content (such as a file, set of files, or streamed media) that functions as a single entity rather than a collection, that is not part of software and that does not include its own user agent

Note to entry 1: A document always requires a user agent to present its content to the user.

Note to entry 2: Letters, e-mail messages, spreadsheets, books, pictures, presentations, and movies are examples of documents.

Note to entry 3: Software configuration and storage files such as databases and virus definitions, as well as computer instruction files such as source code, batch/script files, and firmware, are examples of files that function as part of software and thus are not examples of documents. If and where software retrieves "information and sensory experience to be communicated to the user" from such files, it is just another part of the content that occurs in software and is covered by WCAG2ICT like any other parts of the software. Where such files contain one or more embedded documents, the embedded documents remain documents under this definition.

Note to entry 4: A collection of files zipped together into an archive, stored within a single virtual hard drive file, or stored in a single encrypted file system file, do not constitute a single document when so collected together. The software that archives/encrypts those files or manages the contents of the virtual hard drive does not function as a user agent for the individually collected files in that collection because that software is not providing a fully functioning presentation of that content.

Note to entry 5: Anything that can present its own content without involving a user agent, such as a self-playing book, is not a document but is software.

Note to entry 6: A single document may be composed of multiple files such as the video content and closed caption text.

This fact is not usually apparent to the end-user consuming the document/content.

Note to entry 7: An assembly of files that represented the video, audio, captions and timing files for a movie is an example of a document.

Note to entry 8: A binder file used to bind together the various exhibits for a legal case would not be a document.

Note to entry 9: Documents may contain sub-documents.

3.14 embedded

directly included in the content that is downloaded to the user agent and its extension, and is intended to be used in rendering the web page

Note to entry: Something that is downloaded using a mechanism on the web page but is not used in rendering the page is not "embedded" in the page.

3.15 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 to entry: Examples of ICT are web pages, electronic content, telecommunications products, computers and ancillary equipment, software including mobile applications, information kiosks and transaction machines, videos, IT services, and multifunction office machines which copy, scan, and fax documents.

3.15.1 ICT network

technology and resources supporting the connection and operation of interconnected ICT

3.16 mechanically operable part

operable part that has a mechanical interface to activate, deactivate, or adjust the ICT

Note to entry: Examples of mechanically operable parts include scanner covers, notebook docking stations and lids as well as physical switches and latches.

3.17 mechanism for private listening

auditory output designed so that only the current user can receive the sound

Note to entry: Personal headsets, directional speakers and audio hoods are examples of mechanisms for private listening.

3.18 non-text content

content that is not a sequence of characters that can be programmatically determined or where the sequence is not expressing something in human language

3.19 non-web document

document that is not a web page, not embedded in web pages nor used in the rendering or functioning of the page

3.20**non-web software**

software that is not a web page, not embedded in web pages nor used in the rendering or functioning of the page

3.21**open functionality**

functionality that supports access by assistive technology

Note to entry: This is the opposite of closed functionality.

3.22**operable part**

component of ICT used to activate, deactivate, or adjust the ICT

Note to entry 1: Operable parts can be provided in either hardware (see mechanically operable parts, above) or software.

An on-screen button is an example of an operable part provided by software.

Note to entry 2: Operable parts do not include parts involved only in maintenance or repair or other actions that are not expected of a typical user if the product is not malfunctioning. These actions include: clearing paper jams internal to the machine, replacing items or parts internal to the machine that may expose the end user to sharp or hot surfaces, replacing or repairing items designated by manufacturers as service or maintenance items in user documentation.

3.23**platform software (platform)**

collection of software components that runs on an underlying software or hardware layer, and that provides a set of software services to other software components that allows those applications to be isolated from the underlying software or hardware layer [ISO/IEC 13066-1]

Note to entry: A particular software component might play the role of a platform in some situations and a client in others.

3.24**programmatically determinable**

able to be read by software from developer-supplied data in a way that other software, including assistive technologies, can extract and present this information to users in different modalities

Note to entry: WCAG 2.1 uses "determined" where this definition uses "able to be read" (to avoid ambiguity with the word "determined").

3.25**relay service**

electronic communications service that enables users of different modes of communication (e.g text, sign, or speech) to interact by providing conversion between different modes of communication, usually through a communications assistant

3.26**Real-Time Text (RTT)**

form of a text conversation in point to point situations or in multipoint conferencing where the text being entered is sent in such a way that the communication is perceived by the user as being continuous

Note to entry 1: Users will perceive communication as continuous if the delay between text being created by the sender and received by the recipient is less than 500 ms. However, the actual delay will be dependent on the communication network.

Note to entry 2: The creation of text will differ between systems where text is entered on a word-by-word basis (e.g. speech-to-text and predictive-text based systems) and systems where each character is separately generated (e.g. typing on a physical keyboard).

3.27

satisfies a success criterion

success criterion does not evaluate to "false" when applied to the ICT

3.28

single user connection

connection that consists of sound, RTT or video (or a combination of two or three of those media) that is established by a single user action

Note to entry: Even though the different media may travel over different channels, and more than one piece of hardware may be involved, it appears to the user like a single connection, and is treated by any intermediate technologies (e.g. network, auto-reception) as a single connection for purposes such as transfer.

3.29

spoken captions/subtitles audio captions/subtitles

captions/subtitles that are voiced over the audio visual content (from ISO/IEC TS 20071-25)

3.30

stationary ICT

ICT that stands on the floor, or is mounted on a wall or other immovable structure, and is not intended to be moved by its user

Note to entry 1: Typically, stationary ICT rests on the ground (such as an information kiosk) or is installed in a wall (such as a machine that dispenses cash or performs other banking services).

Note to entry 2: A manufacturer cannot control the height of ICT that is put on a table by someone else, but they are able to control the reach dimensions of self-contained ICT that rests on the ground and can specify the heights for installation in walls.

3.31

terminal

combination of hardware and/or software with which the end user directly interacts and that provides the user interface

Note to entry 1: The hardware may consist of more than one device working together e.g. a mobile device and a computer.

Note to entry 2: For some systems, the software that provides the user interface may reside on more than one device such as a telephone and a server.

3.32

turn-taking

type of organization in conversation and discourse where participants speak one at a time in alternating turns

3.32

user agent

software that retrieves and presents content for users

Note to entry 1: Software that only displays the content contained within it is treated as software and not considered to be a user agent.

Note to entry 2: An example of software that is not a user agent is a calculator application that does not retrieve the calculations from outside the software to present it to a user. In this case, the calculator software is not a user agent, it is simply software with a user interface.

Note to entry 3: Software that only shows a preview of content such as a thumbnail or other non-fully functioning presentation is not providing user agent functionality.

3.33**user interface**

all components of an interactive system (software or hardware) that provide information and/or controls for the user to accomplish specific tasks with the interactive system (from ISO 9241-110)

3.34**user interface element**

entity of the user interface that is presented to the user by the software [ISO 9241-171]

Note to entry 1: This term is also known as "user interface component".

Note to entry 2: User-interface elements can be interactive or not.

3.35**web content**

content that belongs to a web page, and that is used in the rendering or that is intended to be used in the rendering of the web page

3.36**web page**

non-embedded resource obtained from a single URI using HTTP plus any other resources that are used in the rendering or intended to be rendered together with it by a user agent

4 Symbols (and abbreviated terms)

For the purposes of the standard, the following abbreviations apply:

ANSI American National Standards Institute

AT Assistive Technology

ATAG Authoring Tool Accessibility Guidelines (of W3C)

CEN Comité Européen de Normalisation

CSS Cascading Style Sheets

DOM Document Object Model

EFTA European Free Trade Area

ETSI European Telecommunications Standards Institute

EU European Union

FPS Frames Per Second

FXML XML-based user interface markup language

HTML HyperText Markup Language

HTTP HyperText Transfer Protocol

ICT Information and Communication Technology

IETF Internet Engineering Task Force

IMS IP Multimedia System

IP Internet Protocol

ISO International Organization for Standardization

ITU-T International Telecommunication Union - Telecommunication standardization sector

JWG Joint Working Group (of CEN/CENELEC/ETSI)

LED Light Emitting Device

ODF Open Document Format

OOXML Office Open eXtensible Markup Language

PSTN Public Switched Telephone Network

QVGA Quarter Video Graphics Array

RFC Request For Comment

RTTReal-Time Text

SIP Session Initiation Protocol

UAAG User Agent Accessibility Guidelines (of W3C)

URI Uniform Resource Identifier

USB Universal Serial Bus

VGA Video Graphics Array

VOIP Voice Over IP

W3C World Wide Web Consortium

WAI Web Accessibility Initiative

WCAG Web Content Accessibility Guidelines (of W3C)

WLAN Wireless Local Access Network

XML eXtensible Markup Language

XULXML User interface Language

URL Uniform Resource Locator

5 Functional performance principles

5.1 General

The principles set out in clause 5.2 are intended to describe the functional performance of ICT enabling people to locate, identify, and operate ICT functions, and to access the information provided, regardless of physical, cognitive or sensory abilities. Any differences in ability may be permanent, temporary or situational.

The requirements in clauses 6 to 14 provide specific testable criteria for accessible ICT, corresponding to the user needs reflected in 5.2.

NOTE 1: The relationship between the requirements from clauses 6 to 14 and the functional performance principles is set out in Annex A.

NOTE 2: The intent of clause 5.2 is to describe the ICT performance in enabling users to access the full functionality and documentation of the product or the service with or without the use of assistive technologies.

NOTE 3: The methods of meeting the accessibility needs of users with multiple access needs will depend on the specific combination of needs. Meeting these user accessibility needs may be addressed by considering multiple clauses in clause 5.2.

NOTE 4: Several users' accessibility needs rely on ICT providing specific modes of operation. If a user is to activate, engage or switch to the mode that complies with his or her user accessibility needs, the method for activating, engaging or switching to that mode would need to comply with the same user accessibility needs.

5.2 Functional performance principles

5.2.1 Usage without vision

Where ICT provides visual modes of operation, the ICT should provide at least one mode of operation that does not require vision. This is essential for users without vision and benefits many more users in different situations.

NOTE 1: A web page or application with a well-formed semantic structure can allow users without vision to identify, navigate and interact with a visual user interface.

NOTE 2: Audio and tactile user interfaces may contribute towards complying with the requirements of this clause.

5.2.2 Usage with limited vision

Where ICT provides visual modes of operation, the ICT should provide features that enable users to make better use of their limited vision. This is essential for users with limited vision and benefits many more users in different situations.

NOTE 1: Magnification, reduction of required field of vision and control of contrast, brightness and intensity can contribute towards compliance with this clause.

NOTE 2: Where significant features of the user interface are dependent on depth perception, the provision of additional methods of distinguishing between the features may contribute towards compliance with this clause.

NOTE 3: Users with limited vision may also benefit from non-visual access (see clause 5.2.1).

5.2.3 Usage without perception of colour

Where ICT provides visual modes of operation, the ICT should provide a visual mode of operation that does not require user perception of colour. This is essential for users with limited colour perception and benefits many more users in different situations.

NOTE Where significant features of the user interface are colour-coded, the provision of additional methods of distinguishing between the features may contribute towards compliance with this clause.

5.2.4 Usage without hearing

Where ICT provides auditory modes of operation, the ICT should provide at least one mode of operation that does not require hearing. This is essential for users without hearing and benefits many more users in different situations.

NOTE Visual, haptic and tactile user interfaces, including those based on sign language or vibrations may contribute towards compliance with this clause

5.2.5 Usage with limited hearing

Where ICT provides auditory modes of operation, the ICT should provide enhanced audio features. This is essential for users with limited hearing and benefits many more users in different situations.

NOTE 1: Enhancement of the audio clarity, reduction of background noise, providing a joint monaural option, adjustment of balance of both audio channels, increased range of volume and greater volume in the higher frequency range can contribute towards compliance with this clause.

NOTE 2: Allowing the use of assistive listening devices, such as headsets with noise cancellation (connected by cable, Bluetooth or WLAN) can contribute towards compliance with this clause.

NOTE 3: Users with limited hearing may also benefit from non-hearing access (see clause 5.2.4).

5.2.6 Usage with no or limited vocal capability

Where ICT requires vocal input from users, the ICT should provide at least one mode of operation that does not require them to generate vocal output. This is essential for users with no or limited vocal capability and benefits many more users in different situations.

NOTE 1: Vocal output includes speech and other orally generated sounds, such as whistles and clicks.

NOTE 2: Keyboard, pen or touch user interfaces may contribute towards compliance with this clause.

5.2.7 Usage with limited manipulation or strength

Where ICT requires manual actions, the ICT should provide features that enable users to make use of the ICT through alternative actions not requiring manipulation, simultaneous action or hand strength. This is essential for users with limited manipulation or strength and benefits many more users in different situations.

NOTE 1: Examples of operations that users may not be able to perform include those that require fine motor control, path dependent gestures, pinching, twisting of the wrist, tight grasping, or simultaneous manual actions.

NOTE 2: One-handed operation, sequential key entry, speech user interfaces and eye control may contribute towards compliance with this clause.

NOTE 3: Some users have limited hand strength and may not be able to achieve the level of strength to perform an operation. Alternative user interface solutions that do not require hand strength may contribute towards compliance with this clause.

5.2.8 Usage with limited reach

Where ICT products are free-standing or installed, all the elements required for operation should be within reach of all users. This is essential for users with limited reach and benefits many more users in different situations.

NOTE Considering the needs of wheelchair users and the range of user statures in the placing of operational elements of the user interface may contribute towards compliance with this clause.

5.2.9 Usage with photosensitive seizures

Where ICT provides visual modes of operation, the ICT should provide at least one mode of operation that minimizes the potential for triggering photosensitive seizures. This is essential for users with photosensitive seizure triggers.

NOTE Limiting the area and number of flashes per second may contribute towards compliance with this clause.

5.2.10 Usage with limited cognition, language or learning

The ICT should provide features and/or presentation that makes it simpler and easier to understand, operate and use. This is essential for users with limited cognition, language or learning, and benefits many more users in different situations.

NOTE 1: Adjustable timings, error indication and suggestion, and a logical focus order are examples of design features that may contribute towards compliance with this clause.

NOTE 2: Providing an audio output of the text is an example of providing support for people with limited reading abilities.

NOTE 3: Providing spelling aid and word prediction of the text is an example of providing support for people with limited writing abilities.

NOTE 4: Interaction with content can be made easier, and less prone to errors, by presenting tasks in steps that are easy to follow.

5.2.11 Privacy

Where ICT provides features for accessibility, the ICT should maintain the privacy of users of these features at the same level as other users.

NOTE: Enabling the connection of personal headsets for private listening, not providing a spoken version of characters being masked and enabling user control of legal, financial and personal data are examples of design features that may contribute towards compliance with this clause.

6 Generic requirements

6.1 Closed functionality

6.1.1 Introduction

ICT has closed functionality for many reasons, including design or policy. Some of the functionality of products can be closed because the product is self-contained and users are precluded from adding peripherals or software in order to access that functionality.

ICT may have closed functionality in practice even though the ICT was not designed, developed or supplied to be closed.

Computers that do not allow end-users to adjust settings or install software are functionally closed.

6.1.2 General

6.1.2.1 Closed functionality

Where ICT has closed functionality, it shall meet the requirements set out in clauses 6.2 to 14, as applicable.

NOTE 1: ICT may close some, but not all, of its functionalities. Only the closed functionalities have to conform to the requirements of 6.1.

NOTE 2: The requirements within this clause replace those in **clauses 6.2 to 14** that specifically state that they do not apply to closed functionality. This may be because they relate to compatibility with assistive technology or to the ability for the user to adjust system accessibility settings in products with closed functionality (for example, products that prevent access to the system settings control panel).

6.1.2.2 Assistive technology

Where ICT has closed functionality, that closed functionality shall be operable without requiring the user to attach, connect or install assistive technology and shall comply with the generic requirements of **6.1.3 to 6.1.6** as applicable.

Personal headsets and personal induction loops shall not be classified as assistive technology for the purpose of this clause.

6.1.3 Non-visual access

6.1.3.1 Audio output of visual information

Where visual information is needed to enable the use of those functions of ICT that are closed to assistive technologies for screen reading, ICT shall provide at least one mode of operation using non-visual access to enable the use of those functions.

NOTE 1: Non-visual access may be in an audio form, including speech, or a tactile form such as braille for deaf- blind users.

NOTE 2: The visual information needed to enable use of some functions may include operating instructions and orientation, transaction prompts, user input verification, error messages and non-text content.

6.1.3.2 Auditory output delivery including speech

Where auditory output is provided as non-visual access to closed functionality, the auditory output shall be delivered:

- a) either directly by a mechanism included in or provided with the ICT; or
- b) by a personal headset that can be connected through a 3.5 mm audio jack, or an industry standard connection, without requiring the use of vision.

NOTE 1: Mechanisms included in or provided with ICT may be, but are not limited to, a loudspeaker, a built-in handset/headset, or other industry standard coupled peripheral.

NOTE 2: An industry standard connection could be a wireless connection.

NOTE 3: Some users may benefit from the provision of an inductive loop.

6.1.3.3 Auditory output correlation

Where auditory output is provided as non-visual access to closed functionality, and where information is displayed on the screen, the ICT should provide auditory information that allows the user to correlate the audio with the information displayed on the screen.

NOTE 1: An audio alternative that is both complete and complementary includes all visual information such as focus or highlighting, so that the audio can be correlated with information that is visible on the screen at any point in time.

NOTE 2: Examples of auditory information that allows the user to correlate the audio with the information displayed on the screen include structure and relationships conveyed through presentation.

6.1.3.4 Speech output user control

Where speech output is provided as non-visual access to closed functionality, the speech output shall be capable of being interrupted and repeated when requested by the user, where permitted by security requirements.

NOTE 1: It is recommended to allow the user to pause speech output rather than just allowing them to interrupt it.

NOTE 2: It is recommended to allow the user to repeat only the most recent portion rather than requiring play to start from the beginning.

NOTE 3: The user should be able to select the content length of the speech output they want to repeat. This includes by character, word, line or paragraph. It is now common on text to speech engines such as screen readers.

6.1.3.5 Speech output automatic interruption

Where speech output is provided as non-visual access to closed functionality, the ICT shall interrupt current speech output when a user action occurs and when new speech output begins.

NOTE: Where it is essential that the user hears the entire message, for example, a safety instruction or warning, the ICT may need to block all user action so that speech is not interrupted.

6.1.3.6 Speech output for non-text content

Where ICT presents non-text content, the alternative for non-text content shall be presented to users via speech output unless the non-text content is purely for decoration or is used only for visual formatting. The speech output for non-text content shall follow the guidance for "text alternative" described in WCAG 2.1, Success Criterion 1.1.1.

6.1.3.7 Speech output for video information

Where pre-recorded video content is needed to enable the use of closed functions of ICT and where speech output is provided as non-visual access to closed functionality, the speech output shall present equivalent information for the pre-recorded video content.

NOTE: This speech output can take the form of an audio description or an auditory transcript of the video content.

6.1.3.8 Masked entry

Where auditory output is provided as non-visual access to closed functionality, and the characters displayed are masking characters, the auditory output shall not be a spoken version of the characters entered unless the auditory output is known to be delivered only to a mechanism for private listening, or the user explicitly chooses to allow non-private auditory output.

NOTE 1: Masking characters are usually displayed for security purposes and include, but are not limited to asterisks representing personal identification numbers.

NOTE 2: Unmasked character output may be preferred when closed functionality is used, for example, in the privacy of the user's home. A warning highlighting privacy concerns may be appropriate to ensure that the user has made an informed choice.

6.1.3.9 Private access to personal data

Where auditory output is provided as non-visual access to closed functionality, and the output contains data that is considered to be private according to the applicable privacy policy, the corresponding auditory output shall only be delivered through a mechanism for private listening that can be connected without requiring the use of vision, or through any other mechanism explicitly chosen by the user.

NOTE 1: This requirement does not apply in cases where data is not defined as being private according to the applicable privacy policy or where there is no applicable privacy policy.

NOTE 2: Non-private output may be preferred when closed functionality is used, for example, in the privacy of the user's home. A warning highlighting privacy concerns may be appropriate to ensure that the user has made an informed choice.

6.1.3.10 Non-interfering audio output

Where auditory output is provided as non-visual access to closed functionality, the ICT shall not automatically play at the same time, any interfering audible output that lasts longer than three seconds.

6.1.3.11 Private listening volume

Where auditory output is provided as non-visual access to closed functionality and is delivered through a mechanism for private listening, ICT shall provide at least one non-visual mode of operation for controlling the volume.

6.1.3.12 Speaker volume

Where auditory output is provided as non-visual access to closed functionality and is delivered through speakers on ICT, a non-visual incremental volume control shall be provided with output amplification up to a level of at least 65 dBA.

NOTE: For noisy environments, 65 dBA may not be sufficient, but should not exceed 85 dBA.

6.1.3.13 Volume reset

Where auditory output is provided as non-visual access to closed functionality, a function that resets the volume to be at a level of 65 dBA or less after every use, shall be provided, unless the ICT is dedicated to a single user.

NOTE: A feature to disable the volume reset function may be provided in order to enable the single-user exception to be met.

6.1.3.14 Spoken languages

Where speech output is provided as non-visual access to closed functionality, speech output shall be in the same human language as the displayed content provided, except:

- a) for proper names, technical terms, words of indeterminate language, and words or phrases that have become part of the vernacular of the immediately surrounding text;
- b) where the content is generated externally and not under the control of the ICT vendor, this clause shall not be required to apply for languages not supported by the ICT's speech synthesizer;
- c) for displayed languages that cannot be selected using non-visual access; and
- d) where the user explicitly selects a speech language that is different from the language of the displayed content.

6.1.3.15 Non-visual error identification

Where speech output is provided as non-visual access to closed functionality and an input error is automatically detected, speech output shall identify and describe the item that is in error.

6.1.3.16 Receipts, tickets, and transactional outputs

Where ICT is closed to visual access and provides receipts, tickets or other outputs as a result of a self-service transaction, speech output shall be provided which shall include all information necessary to complete or verify the transaction.

In the case of ticketing machines, printed copies of itineraries and maps shall not be required to be audible.

NOTE: The speech output may be provided by any element of the total ICT system.

6.1.4 Functionality closed to text enlargement

Where any functionality of ICT is closed to the text enlargement features of platform or assistive technology, the ICT shall provide a mode of operation where the text and images of text necessary for all functionality is displayed in such a way that a non-accented capital "H" subtends an angle of at least 0.7 degrees at a viewing distance specified by the supplier.

The subtended angle, in degrees, may be calculated from:

$$\Psi = (180 \times H) / (\pi \times D)$$

Where:

ψ is the subtended angle in degrees

H is the height of the text

D is the viewing distance

D and H are expressed in the same units

NOTE 1: The intent is to provide a mode of operation where text is large enough to be used by most users with low vision.

NOTE 2: Table 1 and Figure 1 illustrate the relationship between the maximum viewing distance and minimum character height at the specified minimum subtended angle.

Table 1 — Relationship between maximum design viewing distance and minimum character height at the limit of subtended angle

Minimum subtended angle	Maximum design viewing distance (mm)	Minimum character height (mm)
0.7 degrees	100	1.2
	200	2.4
	250	3.1
	300	3.7
	350	4.3
	400	4.9
	450	5.5
	500	6.1
	550	6.7
	600	7.3



Figure 1 — Relationship between minimum character height and maximum design viewing distance

6.1.5 Visual output for auditory information

Where auditory information is needed to enable the use of closed functions of ICT, the ICT shall provide visual information that is equivalent to the auditory output.

NOTE: This visual information can take the form of captions or text transcripts.

6.1.6 Operation without keyboard interface

6.1.6.1 Closed functionality

Where ICT functionality is closed to keyboards or keyboard interfaces, all functionality shall be operable without vision as required in 6.1.3.

6.1.6.2 Input focus

Where ICT functionality is closed to keyboards or keyboard interfaces and where input focus can be moved to a user interface element, it shall be possible to move the input focus away from that element using the same mechanism, in order to avoid trapping the input focus.

6.1.7 Access without speech

Where speech is needed to operate closed functions of ICT, the ICT shall provide at least one mode of operation using an alternative input mechanism that does not require speech.

6.2 Activation of accessibility features

Where ICT has documented accessibility features, it shall be possible to activate those documented accessibility features that are required to meet a specific need without relying on a method that does not support that need.

6.3 Biometrics

Where ICT uses biological characteristics, it shall not rely on the use of a particular biological characteristic as the only means of user identification or for control of ICT.

NOTE 1: Alternative means of user identification or for control of ICT could be non-biometric or biometric.

NOTE 2: Biometric methods based on dissimilar biological characteristics increase the likelihood that individuals with disabilities possess at least one of the specified biological characteristics. Examples of dissimilar biological characteristics are fingerprints, eye retinal patterns, voice, and face.

6.4 Preservation of accessibility information during conversion

Where ICT converts information or communication, it shall preserve all documented non-proprietary information that is provided for accessibility, to the extent that such information can be contained in or supported by the destination format.

6.5 Operable parts

6.5.1 Means of operation

Where ICT has operable parts that require grasping, pinching, or twisting of the wrist to operate, an accessible alternative means of operation that does not require these actions shall be provided.

NOTE: One-handed operation, sequential key entry, speech user interfaces and eye control may contribute towards compliance with this clause.

6.5.2 Operable parts discernibility

Where ICT has operable parts, it shall provide a means to discern each operable part, without requiring vision and without performing the action associated with the operable part.

NOTE: Ways of complying with this requirement include but not limited to by making the operable parts tactilely discernible, use of tactics or vibrations.

6.6 Locking or toggle controls

6.6.1 Tactile or auditory status

Where ICT has a locking or toggle control and the status of that control is visually presented to the user, the ICT shall provide at least one mode of operation where the status of the control can be determined either through touch or sound without operating the control.

NOTE 1: Locking or toggle controls are those controls that can only have two or three states and that keep their state while being used.

NOTE 2: An example of a locking or toggle control is the "Caps Lock" key found on most keyboards. Another example is the volume button on a pay telephone, which can be set at normal, loud, or extra loud volume.

6.6.2 Visual status

Where ICT has a locking or toggle control and the status of the control is non-visually presented to the user, the ICT shall provide at least one mode of operation where the status of the control can be visually determined when the control is presented.

NOTE 1: Locking or toggle controls are those controls that can only have two or three states and that keep their state while being used.

NOTE 2: An example of a locking or toggle control is the "Caps Lock" key found on most keyboards. An example of making the status of a control determinable is a visual status indicator on a keyboard.

6.7 Key repeat

Where ICT has a key repeat function that cannot be turned off:

- a) the delay before the key repeat shall be adjustable to at least two seconds; and
- b) the key repeat rate shall be adjustable down to one character per two seconds.

6.8 Double-strike key acceptance

Where ICT has a keyboard or keypad, the delay after any keystroke during which an additional key-press will not be accepted if it is identical to the previous keystroke, shall be adjustable up to at least 0.5 seconds.

6.9 Simultaneous user actions

Where ICT has a mode of operation requiring simultaneous user actions for its operation, such ICT shall provide at least one mode of operation that does not require simultaneous user actions to operate the ICT.

NOTE: Having to use both hands to open the lid of a laptop, having to press two or more keys at the same time or having to touch a surface with more than one finger are examples of simultaneous user actions.

7 ICT with two-way voice communication

7.1 Audio bandwidth for speech

Where ICT provides two-way voice communication, in order to provide good audio quality, the ICT shall be able to encode and decode two-way voice communication with a frequency range with an upper limit of at least 7000 Hz.

NOTE 1: For the purposes of interoperability, support of Recommendation ITU-T G.722 is widely used.

NOTE 2: Where codec negotiation is implemented, other standardized codecs such as Recommendation ITU-T.G.722.2 are sometimes used so as to avoid transcoding.

7.2 Real-Time Text (RTT) functionality

7.2.1 RTT provision

7.2.1.1 RTT communication

Where ICT is in a mode that provides a means for two-way voice communication, the ICT shall provide a means for two-way RTT communication, except where this would require design changes to add input or output hardware to the ICT.

NOTE 1: This requirement includes those products which do not have physical display or text entry capabilities but have the capability to connect to devices that do have such capabilities. It also includes intermediate ICT between the endpoints of the communication.

NOTE 2: There is no requirement to add: a hardware display, a hardware keyboard, or hardware to support the ability to connect to a display or keyboard, wired or wirelessly, if this hardware would not normally be provided.

NOTE 3: For the purposes of interoperability, support of Recommendation ITU-T T.140 is widely used.

NOTE 4 :This is to enable the recipient to read the message as it is being written, and respond in real-time simultaneously.

7.2.1.2 Concurrent voice and text

Where ICT provides a means for two-way voice communication and for users to communicate by RTT, it shall allow concurrent voice and text through a single user connection.

NOTE 1: With many-party communication, as in a conference system, it is allowed (but not required or necessarily recommended) that RTT be handled in a single display field and that "turn-taking" be necessary to avoid confusion (in the same way that turn-taking is required for those presenting/talking with voice).

NOTE 2: With many-party communication, best practice is for hand-raising for voice users and RTT users to be handled in the same way, so that voice and RTT users are in the same queue.

NOTE 3: With a many-party conference system that has chat as one of its features - the RTT (like the voice) would typically be separate from the chat so that RTT use does not interfere with chat (i.e. people can be messaging in the chat field while the person is presenting/talking with RTT - in the same manner that people message using the chat feature while people are talking with voice). RTT users would then use RTT for presenting and use the chat feature to message while others are presenting (via voice or RTT).

NOTE 4: The availability of voice and RTT running concurrently (and separately from chat) can also allow the RTT field to support text captioning when someone is speaking (and it is therefore not being used for RTT since it is not the RTT user's turn to speak).

NOTE 5: Where both server-side software and local hardware and software are required to provide voice communication, where neither part can support voice communication without the other and are sold as a unit for the voice communication function, the local and server-side components are considered a single product.

7.2.2 Display of RTT

7.2.2.1 Visually distinguishable display

Where ICT has RTT send and receive capabilities, displayed sent text shall be visually differentiated from, and separated from, received text.

NOTE: The ability of the user to choose between having the send and receive text be displayed in-line or separately, and with options to select, allows users to display RTT in a form that works best for them. This would allow Braille users to use a single field and take turns and have text appear in the sequential way that they may need or prefer.

7.2.2.2 Programmatically determinable send and receive direction

Where ICT has RTT send and receive capabilities, the send/receive direction of transmitted/received text shall be programmatically determinable, unless the RTT is implemented as closed functionality.

NOTE: This enables screen readers to distinguish between incoming text and outgoing text when used with RTT functionality.

7.2.2.3 Speaker identification

Where ICT has RTT capabilities, and provides speaker identification for voice, the ICT shall provide speaker identification for RTT.

NOTE: This is necessary to enable both voice and RTT participants to know who is currently communicating, whether it be in RTT or voice.

7.2.2.4 Visual indicator of audio with RTT

Where ICT provides two-way voice communication, and has RTT capabilities, the ICT shall provide a real-time visual indicator of audio activity on the display.

NOTE 1: The visual indicator may be a simple character position on the display that flickers on and off to reflect audio activity, or presentation of the information in another way that can be both visible to sighted users and passed on to deaf-blind users who are using a braille display.

NOTE 2: Without this indication, a person who lacks the ability to hear does not know when someone is talking.

7.2.3 Interoperability

Where ICT with RTT functionality interoperates with other ICT with RTT functionality (as required by clause 7.2.1.1) they shall support the applicable RTT interoperability mechanisms described below:

- a) ICT interoperating with other ICT directly connected to the Public Switched Telephone Network (PSTN), using Recommendation ITU-T V.18 or any of its annexes for text telephony signals at the PSTN interface;
- b) ICT interoperating with other ICT using VOIP with Session Initiation Protocol (SIP) and using RTT that conforms to IETF RFC 4103. For ICT interoperating with other ICT using the IP Multimedia Sub-System (IMS) to implement VOIP, the set of protocols specified in ETSI TS 126 114, ETSI TS 122 173 and ETSI TS 134 229 describe how IETF RFC 4103 would apply;
- c) ICT interoperating with other ICT using technologies other than a) or b), above, using a relevant and applicable common specification for RTT exchange that is published and available for the environments in which they will be operating. This common specification shall include a method for indicating loss or corruption of characters; and
- d) ICT interoperating with other ICT using a standard for RTT that has been introduced for use in any of the above environments, and is supported by all of the other active ICT that support voice and RTT in that environment.

NOTE 1: In practice, new standards are introduced as an alternative codec/protocol that is supported alongside the existing common standard and used when all end-to-end components support it while technology development, combined with other reasons including societal development and cost efficiency, may make others become obsolete.

NOTE 2: Where multiple technologies are used to provide voice communication, multiple interoperability mechanisms may be needed to ensure that all users are able to use RTT.

EXAMPLE: A conferencing system that supports voice communication through an internet connection might provide RTT over an internet connection using a proprietary RTT method (option c). However, regardless of whether the RTT method is proprietary or non-proprietary, if the conferencing system also offers telephony communication it will also need to support options a) or b) to ensure that RTT is supported over the telephony connection.

7.2.4 RTT responsiveness

Where ICT utilises RTT input, that RTT input shall be transmitted to the ICT network or platform on which the ICT runs within 500 ms of the time that the smallest reliably composed unit of text entry is available to the ICT for transmission. Delays due to platform or network performance shall not be included in the 500 ms limit.

NOTE 1: For character by character input, the "smallest reliably composed unit of text entry" would be a character. For word prediction it would be a word. For some voice recognition systems - the text may not exit the recognition software until an entire word (or phrase) has been spoken. In this case, the smallest reliably composed unit of text entry available to the ICT would be the word (or phrase).

NOTE 2: The 500 ms limit allows buffering of characters for this period before transmission so character by character transmission is not required unless the characters are generated more slowly than 1 per 500 ms.

NOTE 3: A delay of 300 ms, or less, produces a better impression of flow to the user.

7.3 Caller ID

Where ICT provides caller identification or similar telecommunications functions, the caller identification and similar telecommunications functions shall be available in text form as well as being programmatically determinable, unless the functionality is closed.

7.4 Alternatives to access voice-based services

Where ICT provides real-time voice-based communication and also provides voice mail, auto-attendant, or interactive voice response facilities, the ICT shall offer users a means to access the information and carry out the tasks provided by the ICT without the use of hearing or speech.

NOTE 1: Tasks that involve both operating the interface and perceiving the information would require that both the interface and information be accessible without use of speech or hearing.

NOTE 2: Solutions capable of handling audio, RTT and video media could comply with the above requirement.

7.5 Video communication

7.5.1 General

7.5.1.1 This clause provides performance requirements that support users who communicate using sign language and lip-reading. For these users, good usability is achieved with a resolution of at least Quarter Video Graphics Array (QVGA, 320 x 240), a frame rate of 20 frames per second and over, with a time difference between speech audio and video that does not exceed 100 ms.

7.5.1.2 Increasing the resolution and frame rate further improves both sign language and lip-reading, with frame rate being more important than resolution.

7.5.1.3 Time differences between audio and video (asynchronicity) can have a great impact on lip-reading - with video that lags behind audio having greater negative effect.

7.5.1.4 End-to-end latency can be a problem in video (sign) communication. Overall delay values below 400 ms are preferred, with an increase in preference down to 100 ms. Overall delay depends on multiple factors, including e.g. network delay and video processing. For this reason, a testable requirement on minimum values for overall delay cannot be produced.

NOTE: Recommendation ITU-T F.703 defines and gives requirements for Total Conversation that relate to the integration of audio, RTT and video in a single user connection.

7.5.2 Resolution

Where ICT that provides two-way voice communication includes real-time video functionality, the ICT:

- a) shall support at least QVGA resolution; and
- b) should preferably support at least VGA resolution.

7.5.3 Frame rate

Where ICT that provides two-way voice communication includes real-time video functionality, the ICT:

- a) shall support a frame rate of at least 20 Frames Per Second (FPS); and

- b) should preferably support a frame rate of at least 30 Frames Per Second (FPS) with or without sign language in the video stream.

7.5.4 Synchronization between audio and video

Where ICT that provides two-way voice communication includes real-time video functionality, the ICT shall ensure a maximum time difference of 100 ms between the speech and video presented to the user.

7.5.5 Visual indicator of audio with video

Where ICT provides two-way voice communication, and includes real-time video functionality, the ICT shall provide a real-time visual indicator of audio activity.

NOTE 1: The visual indicator may be a simple visual dot or LED, or other type of on/off indicator, that flickers to reflect audio activity.

NOTE 2: Without this indication a person who lacks the ability to hear does not know when someone is talking.

7.5.6 Speaker identification with video (sign language) communication

Where ICT provides speaker identification for voice users, it shall provide a means for speaker identification for real-time signing and sign language users once the start of signing has been indicated.

NOTE 1: The speaker ID can be in the same location as for voice users for multiparty calls.

NOTE 2: This mechanism might be triggered manually by a user, or automatically where this is technically achievable.

7.6 Alternatives to access video-based services

Where ICT provides real-time video-based communication and also provides answering machine, auto attendant or interactive response facilities, the ICT should offer users a means to access the information and carry out the tasks related to the following facilities:

- a) for audible information, without the use of hearing;
- b) for spoken commands, without the use of speech;
- c) for visual information, without the use of vision: and
- d) For signing information, without use of speech /hearing .

NOTE: Solutions capable of generating real-time captions or handling RTT could comply with the above requirement.

8 ICT with video capabilities

8.1 Caption processing technology

8.1.1 Captioning playback

Where ICT displays video with synchronized audio, it shall have a mode of operation to display the available captions. Where closed captions are provided as part of the content, the ICT shall allow the user to choose to display the captions.

NOTE 1: Captions may contain information about timing, colour and positioning. This caption data is necessary for caption users. Timing is used for caption synchronization. Colour can be used for speaker identification. Position can be used to avoid obscuring important information.

NOTE 2: If a Braille device is connected, the ICT should provide an option to display captions on the Braille device.

NOTE 3: This clause refers to the ability of the player to display captions. Clauses 10.2.2.2, 11.2.2.2 and 12.2.2.2 refer to the provision of captions for the content (the video).

8.1.2 Captioning synchronization

Where ICT displays captions, the mechanism to display captions shall preserve synchronization between the audio and the corresponding captions as follows:

- a) Captions in recorded material: within 100 ms of the time stamp of the caption.
- b) Live captions: within 100 ms of the availability of the caption to the player.

8.1.3 Preservation of captioning

Where ICT transmits, converts or records video with synchronized audio, it shall preserve caption data such that it can be displayed in a manner consistent with 8.1.1 and 8.1.2.

8.1.4 Captions characteristics

Where ICT displays captions, it shall provide a way for the user to adapt the displayed characteristics of captions to their individual requirements, except where the captions are displayed as unmodifiable characters.

NOTE 1: Defining the background and foreground colour of subtitles, font type, size opacity of the background box of subtitles, and the contour or border of the fonts can contribute to compliance with this requirement.

NOTE 2: Subtitles that are bitmap images are examples of unmodifiable characters.

8.1.5 Spoken subtitles

Where ICT displays video with synchronized audio, it shall have a mode of operation to provide a spoken output of the available captions, except where the content of the displayed captions is not programmatically determinable.

NOTE 1: Being able to manage speech output range for spoken subtitles independently from general ICT speech is preferable for most users. That is possible when the audio file with spoken subtitle is delivered in a separate audio track and mixed in the end users device.

NOTE 2: Presenting the separate audio track with spoken subtitles in synchronization with the displayed subtitles/captions improves understandability of the subtitles.

NOTE 3: Providing subtitles/captions as separate text-streams, facilitates converting the respective texts into audio.

NOTE 4: Subtitles that are bitmap images are examples where the content of the displayed captions will not be programmatically determinable.

8.2 Audio description technology

8.2.1 Audio description playback

Where ICT displays video with synchronized audio, it shall provide a mechanism to select and play available audio description to the default audio channel.

Where video technologies do not have explicit and separate mechanisms for audio description, an ICT is deemed to comply with this requirement if the ICT enables the user to select and play several audio tracks.

NOTE 1: In such cases, the video content can include the audio description as one of the available audio tracks.

NOTE 2: Audio descriptions in digital media sometimes include information to allow descriptions that are longer than the gaps between dialogue. Support in digital media players for this "extended audio description" feature is useful, especially for digital media that is viewed personally.

8.2.2 Audio description synchronization

Where ICT has a mechanism to play audio description, it shall preserve the synchronization between the audio/visual content and the corresponding audio description.

8.2.3 Preservation of audio description

Where ICT transmits, converts, or records video with synchronized audio, it shall preserve audio description data such that it can be played in a manner consistent with 8.2.1 and 8.2.2.

8.3 User controls for captions and audio description

Where ICT primarily displays materials containing video with associated audio content, user controls to activate subtitling and audio description shall be provided to the user at the same level of interaction (i.e. the number of steps to complete the task) as the primary media controls.

NOTE 1: Primary media controls are the set of controls that the user most commonly uses to control media.

NOTE 2: Products that have a general hardware volume control, such as a telephone, or a laptop which can be configured to display video through software but which is not its primary purpose, would not need dedicated hardware controls for captions and descriptions; however software controls, or hardware controls mapped through software, would need to be at the same level of interaction.

NOTE 3: It is recommended for ICT to include additional controls enabling the user to select whether captions and audio description are turned on or off by default.

9 Hardware

9.1 General

9.1.1 Generic requirements

The generic requirements of clause 6 also apply to ICT that is hardware.

9.1.2 Standard connections

Where an ICT provides user input or output device connection points, the ICT shall provide at least one input and/or output connection that conforms to an industry standard non-proprietary format, directly or through the use of commercially available adapters.

NOTE 1: The intent of this requirement is to ensure compatibility with assistive technologies by requiring the use of standard connections on ICT.

NOTE 2: The word connection applies to both physical and wireless connections.

NOTE 3: Current examples of industry standard non-proprietary formats are USB and Bluetooth.

9.1.3 Colour

Where the ICT has hardware aspects that use colour, colour shall not be used as the only visual means of conveying information, indicating an action, prompting a response, or distinguishing a visual element.

9.2 Hardware products with speech output

9.2.1 Speech volume gain

9.2.1.1 Speech volume range

Where ICT hardware has speech output, it shall provide a means to adjust the speech output volume level over a range of at least 18 dBA but should not exceed 85 dBA.

NOTE: Fixed-line handsets and headsets fulfilling the requirements of ANSI/TIA-4965 are deemed to comply with this requirement.

9.2.1.2 Incremental volume control

Where ICT hardware has speech output and its volume control is incremental, it shall provide at least one intermediate step of 12 dBA gain above the lowest volume setting.

9.2.2 Magnetic coupling

9.2.2.1 Fixed-line devices

Where ICT hardware is a fixed-line communication device with speech output and which is normally held to the ear, it shall provide a means of magnetic coupling which meets the requirements of ETSI ES 200 381-1 and shall carry the "T" symbol specified in ETSI ETS 300 381.

NOTE 1: ICT fulfilling the requirements of TIA-1083-A is deemed to comply with the requirements of this clause.

NOTE 2: Magnetic coupling is also known as inductive coupling for T-coil.

9.2.2.2 Wireless communication devices

Where ICT hardware is a wireless communication device with speech output which is normally held to the ear, it shall provide a means of magnetic coupling to hearing technologies which meets the requirements of ETSI ES 200 381-2.

NOTE: ICT fulfilling the requirements of ANSI/IEEE C63.19 is deemed to comply with the requirements of this clause.

9.3 Stationary ICT

9.3.1 General

This clause defines the dimensions for accessing stationary ICT that can be placed in a built environment, but does not define the dimensions of the built environment in general.

The scope includes stationary ICT, of which floors and circulation spaces are "an integral part", and where there are external reach ranges relevant for operating the stationary ICT.

Clauses 9.3.3 to 9.3.5 specify mandatory limits for the maximum and minimum height of operable parts and displays. Based on dimensions shown in Figure 53 of KS ISO 21542, it is recommended that the possible height range is reduced to:

- a) minimum and maximum heights of operable parts: 800 mm and 1 100 mm respectively, and

b) minimum and maximum heights of displays: 1 200 mm and 1 400 mm respectively.

9.3.2 Forward or side reach

Stationary ICT shall comply with either clause 9.3.3 or clause 9.3.4.

NOTE 1: This does not preclude conforming to both clauses.

NOTE 2: Physical access to stationary ICT is dependent on the dimensions of both the ICT and the environment in which it is installed and operated. Clause 9.3 does not apply to the accessibility of the physical environment external to the ICT.

9.3.3 Forward reach

9.3.3.1 Unobstructed high forward reach

Where no part of the stationary ICT obstructs the forward reach, at least one of each type of operable part shall not be located higher than 1 220 mm above the floor of the access space. (See Figure 2).

9.3.3.2 Unobstructed low forward reach

Where no part of the stationary ICT obstructs the forward reach, at least one of each type of operable part shall not be located lower than 380 mm above the floor of the access space. (See Figure 2).

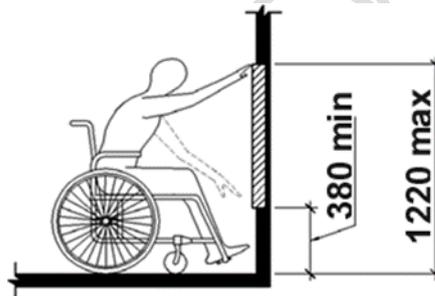


Figure 2 — Unobstructed forward reach

9.3.3.3 Obstructed forward reach

9.3.3.3.1 Clear space

Where an obstruction is an integral part of the stationary ICT and hinders the access to any type of operable part, the ICT shall provide a clear space which extends beneath the obstructing element for a distance not less than the required reach depth over the obstruction.

NOTE: Ensuring that there will be unhindered "access to any type of operable part" guarantees that a user will be able to access at least one of each type of operable part.

9.3.3.3.2 Obstructed (< 510 mm) forward reach

Where the stationary ICT has an obstruction which is an integral part of the ICT and which is less than 510 mm the forward reach to at least one of each type of operable part shall not be higher than 1 220 mm above the floor contact of the ICT. (See Figure 3 (a)).

9.3.3.3.3 Obstructed (< 635 mm) forward reach

Where the stationary ICT has an obstruction which is an integral part of the ICT and which is not less than 510 mm but is less than 635 mm maximum, the forward reach to at least one of each type of operable part shall be no higher than 1 120 mm above the floor contact of the ICT. (See Figure 3 (b)).

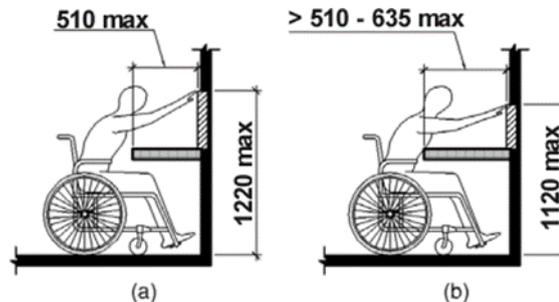


Figure 3a) and 3b) — Obstructed forward reach

9.3.3.4 Knee and toe clearance width

Where the space under an obstacle that is an integral part of the stationary ICT is part of access space, the clearance shall be at least 760 mm wide.

9.3.3.5 Toe clearance

Where an obstacle is an integral part of the stationary ICT, a space under the obstacle that is less than 230 mm above the floor is considered toe clearance and shall:

- extend 635 mm maximum under the whole obstacle;
- provide a space at least 430 mm deep and 230 mm above the floor under the obstacle; and
- extend not more than 150 mm beyond any obstruction at 230 mm above the floor. (See Figure 4)

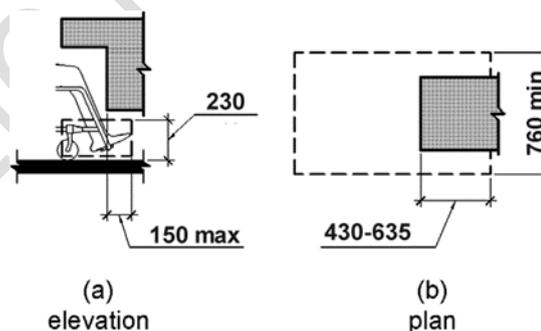


Figure 4 — Toe clearance

9.3.3.6 Knee clearance

Where an obstacle is an integral part of the stationary ICT, the space under the obstacle that is between 230 mm and 685 mm above the floor is considered knee clearance and shall:

- extend not more than 635 mm under the obstacle at a height of 230 mm above the floor;
- extend at least 280 mm under the obstacle at a height of 230 mm above the floor;
- extend at least 205 mm under the obstacle at a height of 685 mm above the floor; and

d) be permitted to be reduced in depth at a rate of 25 mm for each 150 mm in height. (See Figure 5.)

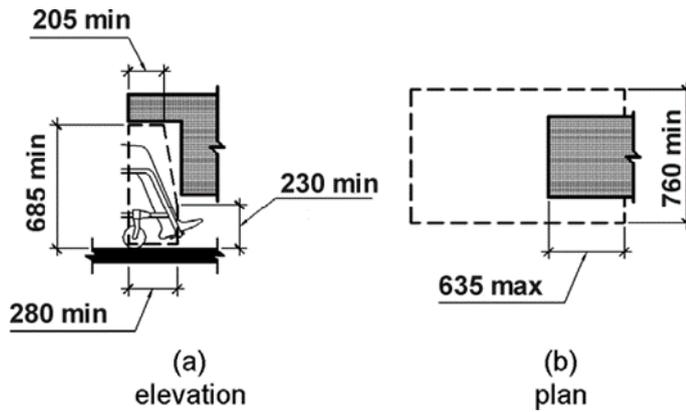


Figure 5 — Knee clearance

9.3.4 Side reach

9.3.4.1 Unobstructed high side reach

Where the side reach is unobstructed or obstructed by an element that is an integral part of the stationary ICT and which is less than 255 mm at least one of each type of operable part shall be within a high side reach which is less than or equal to 1 220 mm above the floor of the access space. (See Figure 6).

9.3.4.2 Unobstructed low side reach

Where the side reach is unobstructed or obstructed by an element that is an integral part of the stationary ICT and which is less than 255 mm at least one of each type of operable part shall be within a low side reach which is greater than or equal to 380 mm above the floor of the access space. (See Figure 6).

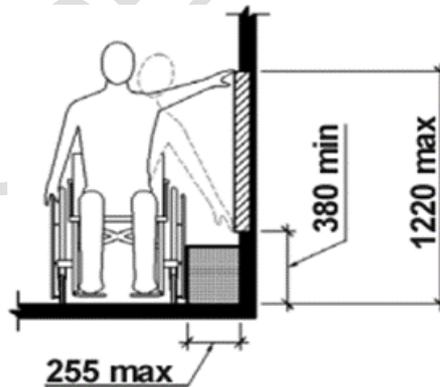


Figure 6 — Unobstructed side reach

9.3.4.3 Obstructed side reach

9.3.4.3.1 Obstructed (≤ 255 mm) side reach

Where stationary ICT has an obstruction which is an integral part of the ICT, the height of the obstruction shall be less than 865 mm. Where the depth of the obstruction is less than or equal to 255 mm the high side reach to at least one of each type of operable part shall not be higher than 1 220 mm above the floor of the access space. (See Figure 7 (a)).

9.3.4.3.2 Obstructed (≤ 610 mm) side reach

Where stationary ICT has an obstruction which is an integral part of the ICT, the height of the obstruction shall be less than 865 mm. Where the depth of the obstruction is greater than 255 mm with a maximum depth of 610 mm the high side reach to at least one of each type of operable part shall not be higher than 1170 mm above the floor of the access space. (See Figure 7 (b)).

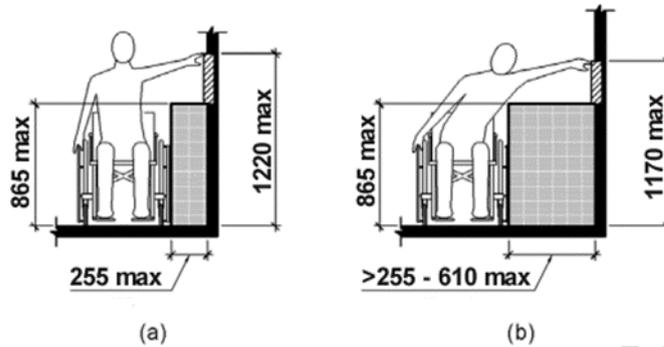


Figure 7(a) and 7(b) — Obstructed high side reach

9.3.5 Clear floor or ground space

9.3.5.1 Change in level

Where stationary ICT has a floor within it, then any change of floor level within it or entering it shall be ramped with a slope not steeper than 1:48.

Exceptions:

- a) If the change in floor level is less than or equal to 6.4 mm the change may be vertical as shown in Figure 8.
- b) If the change in floor level is less than or equal to 13 mm the change may have a slope not steeper than 1:2 as shown in Figure 9.

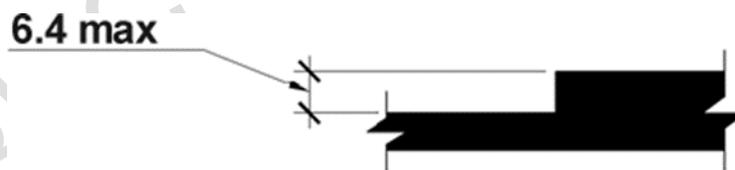


Figure 8 — Vertical change in level

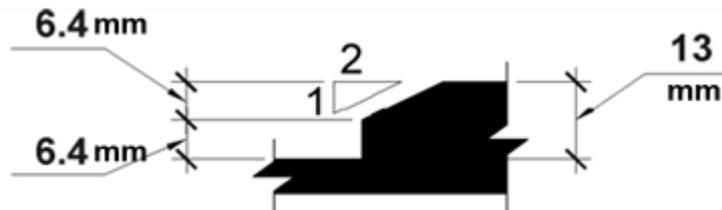


Figure 9 — Bevelled change in level

9.3.5.2 Level ground space

Where stationary ICT has an operating area within it, it shall provide a clear floor area that has the minimum dimensions of 760 mm by 1 220 mm from which to operate the ICT. (See Figure 10).

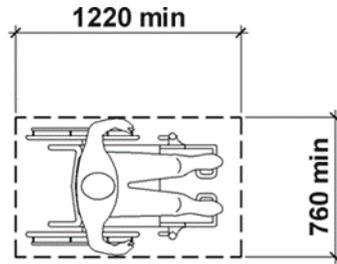


Figure 10 — Level ground space

9.3.5.3 Approach

9.3.5.3.1 General

Where stationary ICT has an access space inside it, at least one full side of the space shall be unobstructed.

9.3.5.3.2 Forward approach

Where the operating area is inside an alcove within the stationary ICT, the alcove is deeper than 610 mm, and where a forward approach is necessary, the dimension of the access space shall be a minimum of 915 mm wide. (See Figure 11).

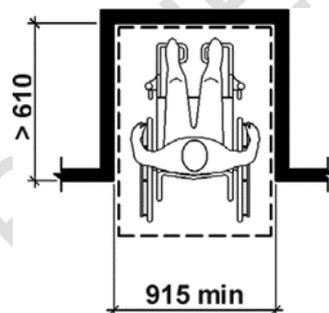


Figure 11 — Manoeuvring clearance in an Alcove, Forward Approach

9.3.5.3.3 Parallel approach

Where the operating area is inside an alcove within the stationary ICT, the alcove is deeper than 380 mm, and where a parallel approach is possible, the dimension of the access space shall be a minimum of 1 525 mm wide. (See Figure 12).

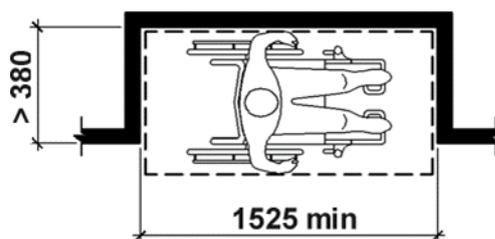


Figure 12 — Manoeuvring clearance in an alcove, Parallel Approach

9.3.6 Visibility

Where stationary ICT provides one or more display screens, at least one of each type of display screen shall be positioned such that the information on the screen is legible from a point located 1 015 mm above the centre of the floor of the operating area.

NOTE: The intent of this requirement is that the information on the screen can be read by users with normal vision and appropriate language skills, when seated in a wheelchair.

9.3.7 Installation instructions

Installation instructions shall be made available for all stationary ICT. These instructions shall give guidance on how to install the ICT in a manner that takes into account applicable requirements for accessibility of the built environment as they apply to the installation of the ICT. Where there are no such requirements the instructions shall require that the dimensions of the installed ICT comply with clauses 9.3.3 to 9.3.6.

9.4 Mechanically operable parts

9.4.1 Numeric keys

Where provided, physical numeric keys arranged in a rectangular keypad layout shall have the number five key tactilely distinct from the other keys of the keypad.

NOTE: Recommendation ITU-T E.161 describes the 12-key telephone keypad layout and provides further details of the form of tactile markers.

9.4.2 Operation of mechanical parts

9.4.2.1 Means of operation of mechanical parts

Where a control requires grasping, pinching, or twisting of the wrist to operate it, an accessible alternative means of operation that does not require these actions shall be provided.

9.4.2.2 Force of operation of mechanical parts

Where a control requires a force greater than 22.2 N to operate it, an accessible alternative means of operation that requires a force less than 22.2 N shall be provided.

NOTE: KS ISO 21542, recommends a value between 2.5 and 5 Newtons.

9.4.3 Keys, tickets and fare cards

Where ICT provides keys, tickets or fare cards, and their orientation is important for further use, they shall have an orientation that is tactilely discernible and with text in a familiar language .

NOTE: ETSI ETS 300 767, Human Factors (HF); Requirements for relay services defines suitable tactile indications for plastic cards.

9.5 Tactile indication of speech mode

Where ICT is designed for shared use and speech output is available, a tactile indication of the means to initiate the speech mode of operation shall be provided.

NOTE: The tactile indication could include Braille instructions.

10 Web

10.1 General

Requirements in clause 10 apply to web pages (as defined in clause 3) including:

- a) Conformance with W3C Web Content Accessibility Guidelines (WCAG 2.0) Level AA is equivalent to conforming with clauses 10.2.1, 10.2.2, 10.2.3.1 to 10.2.3.3, 10.2.4.1 to 10.2.4.5, 10.3.1.1, 10.3.1.2, 10.3.2, 10.3.3, 10.3.4, 10.4, 10.5.1.1, 10.5.1.2 and the conformance requirements of clause 10.7 of this standard.
- b) Conformance with W3C Web Content Accessibility Guidelines (WCAG 2.1) Level AA is equivalent to conforming with all of clauses 10.2 to 10.5 and the conformance requirements of clause 10.7 of this standard.
- c) Requirements for non-web documents and non-web software are given in clauses 11 and 12 respectively.

NOTE 1: When evaluating websites they are evaluated as individual web pages. Web applications, including mobile web applications, are covered under the definition of web page which is quite broad and covers all web content types.

NOTE 2: WCAG 2.0 is identical to ISO/IEC 40500:2012: "Information technology - W3C Web Content Accessibility Guidelines (WCAG) 2.0"

The requirements in clauses 10.2 to 10.5 are written using the concept of complying with success criteria (defined in clause 3). A web page satisfies a WCAG success criterion when the success criterion does not evaluate to false when applied to the web page. This implies that if the success criterion puts conditions on a specific feature and that specific feature does not occur in the web page, then the web page satisfies the success criterion.

NOTE 3: For example, a web page that does not contain pre-recorded audio content in synchronized media will automatically comply with WCAG success criterion 1.2.2 (captions - pre-recorded) and, in consequence, will also conform to 10.2.2.2.

In addition to Level AA success criteria, the Web Content Accessibility Guidelines also include success criteria for Level AAA. These are listed in 10.6 of this standard. Web authors and procurement accessibility specialists should consider whether any of the WCAG Level AAA success criteria offer suggestions that may be applicable and relevant to their project, as well as potentially beneficial to some users.

NOTE 4: The W3C states that "It is not recommended that Level AAA conformance be required as a general policy for entire sites because it is not possible to comply with all Level AAA Success Criteria for some content".

10.2 Perceivable

10.2.1 Text alternatives

10.2.1.1 Non-text content

Where ICT is a web page, it shall comply with WCAG 2.1 Success Criterion 1.1.1, Non-text content.

10.2.2 Time-based media

10.2.2.1 Audio-only and video-only (pre-recorded)

Where ICT is a web page, it shall comply with WCAG 2.1 Success Criterion, 1.2.1, Audio-only and Video-only (Pre-recorded).

10.2.2.2 Captions (pre-recorded)

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion, 1.2.2, Captions (Pre-recorded).

10.2.2.3 Audio description or media alternative (pre-recorded)

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 1.2.3, Audio Description or Media Alternative (Pre-recorded).

10.2.2.4 Captions (live)

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 1.2.4, Captions (Live).

10.2.2.5 Audio description (pre-recorded)

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 1.2.5 Audio Description (Pre-recorded).

10.2.3 Adaptable

10.2.3.1 Info and relationships

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 1.3.1, Info and Relationships.

10.2.3.2 Meaningful sequence

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 1.3.2, Meaningful Sequence.

10.2.3.3 Sensory characteristics

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 1.3.3, Sensory Characteristics.

10.2.3.4 Orientation

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 1.3.4, Orientation.

10.2.3.5 Identify input purpose

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 1.3.5, Identify Input Purpose.

10.2.4 Distinguishable

10.2.4.1 Use of colour

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 1.4.1 Use of Colour.

10.2.4.2 Audio control

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 1.4.2 Audio Control.

10.2.4.3 Contrast (minimum)

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 1.4.3 Contrast (Minimum).

10.2.4.4 Resize text

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 1.4.4 Resize text.

10.2.4.5 Images of text

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 1.4.5 Images of Text.

10.2.4.6 Reflow

Where ICT is a web page, it shall comply with WCAG 2.1 Success Criterion 1.4.10 Reflow.

10.2.4.7 Non-text contrast

Where ICT is a web page, it shall comply with WCAG 2.1 Success Criterion 1.4.11 Non-text Contrast.

10.2.4.8 Text spacing

Where ICT is a web page, it shall comply with WCAG 2.1 Success Criterion 1.4.12 Text spacing.

10.2.4.9 Content on hover or focus

Where ICT is a web page, it shall comply with WCAG 2.1 Success Criterion 1.4.13 Content on Hover or Focus.

10.3 Operable

10.3.1 Keyboard accessible

10.3.1.1 Keyboard

Where ICT is a web page, it shall comply with WCAG 2.1 Success Criterion 2.1.1 Keyboard.

10.3.1.2 No keyboard trap

Where ICT is a web page, it shall comply with WCAG 2.1 Success Criterion 2.1.2 No Keyboard Trap.

10.3.1.3 Character key shortcuts

Where ICT is a web page, it shall comply with WCAG 2.1 Success Criterion 2.1.4 Character Key Shortcuts.

10.3.2 Enough time

10.3.2.1 Timing adjustable

Where ICT is a web page, it shall comply with WCAG 2.1 Success Criterion 2.2.1 Timing Adjustable.

10.3.2.2 Pause, stop, hide

Where ICT is a web page, it shall comply with WCAG 2.1 Success Criterion 2.2.2 Pause, Stop, Hide.

10.3.3 Seizures and physical reactions

10.3.3.1 Three flashes or below threshold

Where ICT is a web page, it shall comply with WCAG 2.1 Success Criterion 2.3.1, Three Flashes or Below Threshold.

10.3.4 Navigable**10.3.4.1 Bypass blocks**

Where ICT is a web page, it shall comply with WCAG 2.1 Success Criterion 2.4.1 Bypass Blocks.

10.3.4.2 Page titled

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 2.4.2 Page Titled.

10.3.4.3 Focus Order

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 2.4.3 Focus Order.

10.3.4.4 Link purpose (in context)

Where ICT is a web page, it shall comply with WCAG 2.1 Success Criterion 2.4.4 Link Purpose (In Context).

10.3.4.5 Multiple ways

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 2.4.5 Multiple Ways.

10.3.4.6 Headings and labels

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 2.4.6 Headings and Labels.

10.3.4.7 Focus visible

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 2.4.7 Focus Visible.

10.3.5 Input modalities**10.3.5.1 Pointer gestures**

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 2.5.1 Pointer Gestures.

10.3.5.2 Pointer cancellation

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 2.5.2 Pointer Cancellation.

10.3.5.3 Label in name

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 2.5.3 Label in Name.

10.3.5.4 Motion actuation

Where ICT is a web page, it shall comply with WCAG 2.1 Success Criterion 2.5.4, Motion Actuation.

10.4 Understandable

10.4.1 Readable

10.4.1.1 Language of page

Where ICT is a web page, it shall comply with WCAG 2.1 Success Criterion 3.1.1, Language of Page.

10.4.1.2 Language of parts

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 3.1.2, Language of Parts.

10.4.2 Predictable

10.4.2.1 On focus

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 3.2.1 On Focus.

10.4.2.2 On input

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 3.2.2 On Input.

10.4.2.3 Consistent navigation

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 3.2.3 Consistent Navigation.

10.4.2.4 Consistent identification

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 3.2.4 Consistent Identification.

10.4.3 Input assistance

10.4.3.1 Error identification

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 3.3.1 Error Identification.

10.4.3.2 Labels or instructions

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 3.3.2 Labels or Instructions.

10.4.3.3 Error suggestion

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 3.3.3 Error Suggestion.

10.4.3.4 Error prevention (legal, financial, data)

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 3.3.4 Error Prevention (Legal, Financial, Data).

10.5 Robust

10.5.1 Compatible

10.5.1.1 Parsing

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 4.1.1 Parsing.

10.5.1.2 Name, role, value

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 4.1.2 Name, Role, Value.

10.5.1.3 Status messages

Where ICT is a web page, it shall comply with WCAG 2.1, Success Criterion 4.1.3 Status Messages.

10.6 WCAG 2.1, AAA Success Criteria

In addition to the Level AA success criteria, included in clauses 10.2 to 10.5, the Web Content Accessibility Guidelines include success criteria for Level AAA. These are listed in Table 2. Web authors and procurement accessibility specialists should consider the WCAG 2.1 Level AAA success criteria that, when it is possible to apply them, may provide access beyond that required in this standard.

NOTE: The W3C states that "It is not recommended that Level AAA conformance be required as a general policy for entire sites because it is not possible to comply with all Level AAA Success Criteria for some content"

Table 2 — WCAG 2.1 Level AAA Success Criteria

No.	Guideline	Success Criterion Number	Success Criteria Name
1	Time-based media	1.2.6	Sign Language (Prerecorded)
2	Time-based media	1.2.7	Extended Audio Description (Prerecorded)
3	Time-based media	1.2.8	Media Alternative (Prerecorded)
4	Time-based media	1.2.9	Audio-only (Live)
5	Adaptable	1.3.6	Identify Purpose
6	Distinguishable	1.4.6	Contrast (Enhanced)
7	Distinguishable	1.4.7	Low or No Background Audio
8	Distinguishable	1.4.8	Visual Presentation
9	Distinguishable	1.4.9	Images of Text (No Exception)
10	Keyboard Accessible	2.1.3	Keyboard (No Exception)
11	Enough time	2.2.3	No Timing
12	Enough time	2.2.4	Interruptions
13	Enough time	2.2.5	Re-authenticating
14	Enough time	2.2.6	Timeouts
15	Seizures and physical reactions	2.3.2	Three Flashes
16	Seizures and physical reactions	2.3.3	Animation form Interactions
17	Navigable	2.4.8	Location
18	Navigable	2.4.9	Link Purpose (Link Only)
19	Navigable	2.4.10	Section Headings
20	Input modalities	2.5.5	Target Size
21	Input modalities	2.5.6	Concurrent Input Mechanisms
22	Readable	3.1.3	Unusual Words
23	Readable	3.1.4	Abbreviations
24	Readable	3.1.5	Reading Level
25	Readable	3.1.6	Pronunciation
26	Predictable	3.2.5	Change on Request
27	Input assistance	3.3.5	Help
28	Input assistance	3.3.6	Error Prevention (All)

10.7 WCAG conformance requirements

Where ICT is a web page, it shall comply with all the following five WCAG 2.1 conformance requirements at Level AA.

- a) conformance level;
- b) full pages;
- c) complete processes;

- d) only accessibility-supported ways of using technologies; and
- e) non-interference.

NOTE 1: A Web page that meets all the requirements given in 10.2 to 10.5, or where a Level AA conforming alternate version (as defined in WCAG 2.1) is provided, will meet conformance requirement (a) above.

NOTE 2: According to W3C: "WCAG 2.1 extends Web Content Accessibility Guidelines 2.0 which was published as a W3C Recommendation December 2008. Content that conforms to WCAG 2.1 also conforms to WCAG 2.0, and therefore to policies that reference WCAG 2.0"

NOTE 3: Conformance requirement (e) above states that all content on the page, including content that is not otherwise relied upon to meet conformance, meets clauses 10.2.4.2, 10.3.1.2, 10.3.2.2 and 10.3.3.1.

11 Non-web documents

11.1 General

11.1.1 Requirements in this clause 11 apply to:

- a) documents that are not web pages;
- b) documents that are not embedded in web pages; and
- c) documents that are provided with web pages but are neither embedded nor rendered together with the web page from which they are provided (i.e. clause 11 applies to downloadable documents).

11.1.2 Clause 10 provides requirements for documents that are in web pages or that are embedded in web pages and that are used in the rendering or that are intended to be rendered together with the web page in which they are embedded.

NOTE 1: Some examples of non-web documents are letters, spreadsheets, emails, books, pictures, presentations, and movies that have an associated user agent such as a document reader, editor or media player.

NOTE 2: A single document may be composed of multiple files such as the video content and closed caption text. This fact is not usually apparent to the end-user consuming the document/content.

NOTE 3: Documents require a user agent in order for the content to be presented to users. The requirements for user agents can be found in clause 12.

NOTE 4: The requirements for content that is part of software, can be found in clause 12.

NOTE 5: Requirements in this clause also apply to documents that are protected using mechanisms such as digital signatures, encryption, password protection, and watermarks when they are presented to the user.

11.2 Perceivable

11.2.1 Text alternatives

11.2.1.1 Non-text content

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 1.1.1, Non-text Content.

NOTE: CAPTCHAs do not currently appear outside of the Web. However, if they do appear, this guidance is accurate.

11.2.2 Time-based media

11.2.2.1 Audio-only and video-only (pre-recorded)

Where ICT is a non-web document, it shall comply with WCAG 2.1, Success Criterion 1.2.1, Audio-only and Video-only (Pre-recorded).

NOTE: The alternative can be provided directly in the document - or provided in an alternate version that meets the success criterion.

11.2.2.2 Captions (pre-recorded)

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 1.2.2 Captions (Pre-recorded).

NOTE: Per the definition in WCAG 2.1, to meet this success criterion, the captions have to provide "synchronized visual and / or text alternative for both speech and non-speech audio information needed to understand the media content" where non-speech information includes "sound effects, music, laughter, speaker identification and location".

11.2.2.3 Audio description or media alternative (pre-recorded)

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 1.2.3, Audio Description or Media Alternative (Pre-recorded).

NOTE 1: The WCAG 2.1 definition of "audio description" says that "audio description" is "Also called 'video description' and 'descriptive narration'".

NOTE 2: Secondary or alternate audio tracks are commonly used for this purpose.

11.2.2.4 Captions (live)

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 1.2.4, Captions (Live).

NOTE: The WCAG 2.1 definition of "captions" notes that "in some countries, captions are called subtitles". They are also sometimes referred to as "subtitles for the hearing impaired". Per the definition in WCAG 2.1, to meet this success criterion, whether called captions or subtitles, they would have to provide "synchronized visual and / or text alternative for both speech and non-speech audio information needed to understand the media content" where non-speech information includes "sound effects, music, laughter, speaker identification and location".

11.2.2.5 Audio description (pre-recorded)

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 1.2.5, Audio Description (Pre-recorded).

NOTE 1: The WCAG 2.1 definition of "audio description" says that audio description is "Also called 'video description' and 'descriptive narration'".

NOTE 2: Secondary or alternate audio tracks are commonly used for this purpose.

11.2.3 Adaptable

11.2.3.1 Info and relationships

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 1.3.1, Info and Relationships.

NOTE: Where documents contain non-standard structure types (roles), it is best practice to map them to a standard structure type as a fall-back solution for the reader.

11.2.3.2 Meaningful sequence

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 1.3.2, Meaningful Sequence.

11.2.3.3 Sensory characteristics

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 1.3.3, Sensory Characteristics.

11.2.3.4 Orientation

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 1.3.4, Orientation.

11.2.3.5 Identify input purpose

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 1.3.5, Identify Input Purpose.

11.2.4 Distinguishable

11.2.4.1 Use of colour

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 1.4.1, Use of Colour.

11.2.4.2 Audio control

Where ICT is a non-web document, it shall comply with the success criterion given in Table 3.

Table 3 — Document success criterion: Audio control

<p>If any audio in a document plays automatically for more than 3 seconds, either a mechanism is available to pause or stop the audio, or a mechanism is available to control audio volume independently from the overall system volume level.</p>
<p>NOTE 1: Since any part of a document that does not meet this success criterion can interfere with a user's ability to use the whole document, all content in the document (whether or not it is used to meet other success criteria) shall meet this success criterion.</p>
<p>NOTE 2: This success criterion is identical to the WCAG 2.1, Success Criterion 1.4.2, Audio Control replacing "on a Web page" with "in a document", "any content" with "any part of a document", "whole page" with "whole document", "on the Web page" with "in the document", removing "See Conformance Requirement 10.7.(e): Non-Interference" and adding Note 1.</p>

11.2.4.3 Contrast (minimum)

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 1.4.3, Contrast (Minimum).

11.2.4.4 Resize text

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 1.4.4, Resize Text.

NOTE 1: Content for which there are software players, viewers or editors with a 200 % zoom feature would automatically meet this success criterion when used with such players, unless the content will not work with zoom.

NOTE 2: This success criterion is about the ability to allow users to enlarge the text on screen at least up to 200 % without needing to use assistive technologies. This means that the application provides some means for enlarging the text 200 %

(zoom or otherwise) without loss of content or functionality or that the application works with the platform features that meet this requirement.

NOTE 3: It is recommended to use only fonts that allow for scaling without loss of quality (e.g. pixelized presentation). This applies in particular to embedded fonts.

11.2.4.5 Images of text

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 1.4.5, Images of Text.

11.2.4.6 Reflow

Where ICT is a non-web document, it shall comply with the success criterion given in Table 4.

Table 4 — Document success criterion: Reflow

Content can be presented without loss of information or functionality, and without requiring scrolling in two dimensions for: <ul style="list-style-type: none">• Vertical scrolling content at a width equivalent to 320 CSS pixels.• Horizontal scrolling content at a height equivalent to 256 CSS pixels. Except for parts of the content which require two-dimensional layout for usage or meaning.
NOTE 1: 320 CSS pixels is equivalent to a starting viewport width of 1 280 CSS pixels wide at 400 % zoom. For documents which are designed to scroll horizontally (e.g. with vertical text), the 256 CSS pixels is equivalent to a starting viewport height of 1 024 pixels at 400 % zoom.
NOTE 2: Examples of content which require two-dimensional layout are images, maps, diagrams, video, games, presentations, data tables, and interfaces where it is necessary to keep toolbars in view while manipulating content.
NOTE 3: This success criterion is identical to the WCAG 2.1 Success Criterion 1.4.10 Reflow replacing the original WCAG 2.1 notes with notes 1 and 2, above.

11.2.4.7 Non-text contrast

Where ICT is a non-web document, it shall comply with WCAG 2.1, Success Criterion 1.4.11, Non-text Contrast.

11.2.4.8 Text spacing

Where ICT is a non-web document that does not have a fixed size content layout area that is essential to the information being conveyed, it shall comply with WCAG 2.1, Success Criterion 1.4.12, Text spacing.

11.2.4.9 Content on hover or focus

Where ICT is a non-web document, it shall comply with WCAG 2.1, Success Criterion 1.4.13, Content on Hover or Focus.

11.3 Operable

11.3.1 Keyboard accessible

11.3.1.1 Keyboard

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 2.1.1, Keyboard.

11.3.1.2 No keyboard trap

Where ICT is a non-web document, it shall comply with the success criterion in Table 5.

Table 5: Document success criterion: No keyboard trap

<p>If keyboard focus can be moved to a component of the document using a keyboard interface, then focus can be moved away from that component using only a keyboard interface, and, if it requires more than unmodified arrow or tab keys or other standard exit methods, the user is advised of the method for moving focus away.</p>
<p>NOTE 1: Since any part of a document that does not meet this success criterion can interfere with a user's ability to use the whole document, it is necessary for all content in the document (whether or not it is used to meet other success criteria) to meet this success criterion.</p>
<p>NOTE 2: Standard exit methods may vary by platform. For example, on many desktop platforms, the Escape key is a standard method for exiting.</p>
<p>NOTE 3: This success criterion is identical to the WCAG 2.1 Success Criterion 2.1.2 No Keyboard Trap replacing "page" and "Web page" with "document", removing "See Conformance Requirement 10.7.(e): Non-Interference" and with the addition of note 2 above and with note 1 above re-drafted to avoid the use of the word "must".</p>

11.3.1.3 Character key shortcuts

Where ICT is a non-web document, it shall comply with WCAG 2.1, Success Criterion 2.1.4, Character Key Shortcuts.

11.3.2 Enough time

11.3.2.1 Timing adjustable

Where ICT is a non-web document, it shall comply with the success criterion given in Table 6.

Table 6 — Document success criterion: Timing adjustable

<p>For each time limit that is set by the document, at least one of the following is true:</p> <ul style="list-style-type: none"> • Turn off: The user is allowed to turn off the time limit before encountering it; or • Adjust: The user is allowed to adjust the time limit before encountering it over a wide range that is at least ten times the length of the default setting; or • Extend: The user is warned before time expires and given at least 20 seconds to extend the time limit with a simple action (for example, "press the space bar"), and the user is allowed to extend the time limit at least ten times; or • Real-time Exception: The time limit is a required part of a real-time event (for example, an auction), and no alternative to the time limit is possible; or • Essential Exception: The time limit is essential and extending it would invalidate the activity; or • 20 Hour Exception: The time limit is longer than 20 hours.
<p>NOTE 1: This success criterion helps ensure that users can complete tasks without unexpected changes in content or context that are a result of a time limit. This success criterion should be considered in conjunction with WCAG 2.1 Success Criterion 3.2.1, which puts limits on changes of content or context as a result of user action.</p>
<p>NOTE 2: This success criterion is identical to the WCAG 2.1, Success Criterion 2.2.1 Timing Adjustable replacing "the content" with "documents" and with the words "WCAG 2.1" added before the word "Success Criterion" in note 1 above.</p>

11.3.2.2 Pause, stop, hide

Where ICT is a non-web document, it shall comply with the success criterion given in Table 7.

Table 7: Document success criterion: Pause, stop, hide

<p>For moving, blinking, scrolling, or auto-updating information, all of the following are true:</p> <ul style="list-style-type: none"> • Moving, blinking, scrolling: For any moving, blinking or scrolling information that (1) starts automatically, (2) lasts more than five seconds, and (3) is presented in parallel with other content, there is a mechanism for the user to pause, stop, or hide it unless the movement, blinking, or scrolling is part of an activity where it is essential; and • Auto-updating: For any auto-updating information that (1) starts automatically and (2) is presented in parallel with other content, there is a mechanism for the user to pause, stop, or hide it or to control the frequency of the update unless the auto-updating is part of an activity where it is essential.
<p>NOTE 1: For requirements related to flickering or flashing content, refer to WCAG 2.1 Guideline 2.3.</p> <p>NOTE 2: Since any part of a document that does not meet this success criterion can interfere with a user's ability to use the whole document, it is necessary for all content in the document (whether it is used to meet other success criteria or not) to meet this success criterion.</p> <p>NOTE 3: Content that is updated periodically by software or that is streamed to the user agent is not required to preserve or present information that is generated or received between the initiation of the pause and resuming presentation, as this may not be technically possible, and in many situations could be misleading to do so.</p> <p>NOTE 4: An animation that occurs as part of a preload phase or similar situation can be considered essential if interaction cannot occur during that phase for all users and if not indicating progress could confuse users or cause them to think that content was frozen or broken.</p> <p>NOTE 5: This success criterion is identical to the WCAG 2.1 Success Criterion 2.2.2 Pause, Stop, Hide replacing "page" and "Web page" with "document", removing "See Conformance Requirement 10.7.(e): Non-Interference" in note 2 of the success criterion, with the words "WCAG 2.1" added before the word "Guideline" in note 1 above and with note 2 above re-drafted to avoid the use of the word "must".</p>

11.3.3 Seizures and physical reactions

11.3.3.1 Three flashes or below threshold

Where ICT is a non-web document, it shall comply with the success criterion given in Table 8.

Table 8: Document success criterion: Three flashes or below threshold

<p>Documents do not contain anything that flashes more than three times in any one second period, or the flash is below the general flash and red flash thresholds.</p>
<p>NOTE 1: Since any part of a document that does not meet this success criterion can interfere with a user's ability to use the whole document, it is necessary for all content in the document (whether it is used to meet other success criteria or not) to meet this success criterion.</p> <p>NOTE 2: This success criterion is identical to the WCAG 2.1 Success Criterion 2.3.1 Three Flashes or Below Threshold replacing "Web pages" with "documents", "the whole page" with "the whole document", "the Web page" with "the document" and removing "See Conformance Requirement 10.7.(e): Non-Interference" and with note 1 above re-drafted to avoid the use of the word "must".</p>

11.3.4 Navigable

11.3.4.1 Document titled

Where ICT is a non-web document, it shall comply with the success criterion given in Table 9.

Table 9: Document success criterion: Document titled

Documents have titles that describe topic or purpose.
NOTE 1: The name of a document (e.g. document, media file) is a sufficient title if it describes the topic or purpose.
NOTE 2: This success criterion is identical to the WCAG 2.1 Success Criterion 2.4.2 Page Titled replacing "Web pages" with "documents" and with the addition of note 1 above.

11.3.4.2 Focus order

Where ICT is a non-web document, it shall comply with the success criterion given in Table 10.

Table 10: Document success criterion: Focus order

If a document can be navigated sequentially and the navigation sequences affect meaning or operation, focusable components receive focus in an order that preserves meaning and operability.
NOTE: This success criterion is identical to the WCAG 2.1 Success Criterion 2.4.3 Focus Order replacing "Web page" with "document".

11.3.4.3 Link purpose (in context)

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 2.4.4, Link Purpose (In Context).

11.3.4.4 Headings and labels

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 2.4.6, Headings and Labels.

11.3.4.5 Focus visible

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 2.4.7, Focus Visible.

11.3.5 Input modalities**11.3.5.1 Pointer gestures**

Where ICT is a non-web document, it shall comply with the success criterion given in Table 11.

Table 11: Document success criterion: Pointer gestures

All functionality that uses multipoint or path-based gestures for operation can be operated with a single pointer without a path-based gesture, unless a multipoint or path-based gesture is essential.
NOTE 1: This requirement applies to documents that interpret pointer actions (i.e. this does not apply to actions that are required to operate the user agent or assistive technology).
NOTE 2: This success criterion is identical to the WCAG 2.1 Success Criterion 2.5.1 Pointer Gestures replacing the original WCAG 2.1 note with note 1 above.

11.3.5.2 Pointer cancellation

Where ICT is a non-web document, it shall comply with the success criterion given in Table 12.

Table 12: Document success criterion: Pointer cancellation

For functionality that can be operated using a single pointer, at least one of the following is true: <ul style="list-style-type: none">• No Down-Event: The down-event of the pointer is not used to execute any part of the function;• Abort or Undo: Completion of the function is on the up-event, and a mechanism is available to abort the function before completion or to undo the function after completion;• Up Reversal: The up-event reverses any outcome of the preceding down-event;• Essential: Completing the function on the down-event is essential.
NOTE 1: Functions that emulate a keyboard or numeric keypad key press are considered essential.
NOTE 2: This requirement applies to a document that interprets pointer actions (i.e. this does not apply to actions that are required to operate the user agent or assistive technology).
NOTE 3: This success criterion is identical to the WCAG 2.1 Success Criterion 2.5.2 Pointer Cancellation replacing the original WCAG 2.1 note with notes 1 and 2 above.

11.3.5.3 Label in name

Where ICT is a non-web document, it shall comply with WCAG 2.1, Success Criterion 2.5.3, Label in Name.

11.3.5.4 Motion actuation

Where ICT is a non-web document, it shall comply with WCAG 2.1, Success Criterion 2.5.4, Motion Actuation.

11.4 Understandable

11.4.1 Readable

11.4.1.1 Language of document

Where ICT is a non-web document, it shall comply with the success criterion given in Table 13.

Table 13: Document success criterion: Language of document

The default human language of each document can be programmatically determined.
NOTE: This success criterion is identical to the WCAG 2.1, Success Criterion 3.1.1, Language of Page replacing "web page" with "document".

11.4.1.2 Language of parts

Where ICT is a non-web document, it shall comply with the success criterion given in Table 14.

Table 14: Document success criterion: Language of parts

The human language of each passage or phrase in the document can be programmatically determined except for proper names, technical terms, words of indeterminate language, and words or phrases that have become part of the vernacular of the immediately surrounding text.
NOTE 1: There are some document technologies where there is no assistive technology supported method for marking the language for the different passages or phrases in the document, and it would not be possible to meet this success criterion with those technologies.
NOTE 2: Inheritance is one common method. For example a document provides the language that it is using and it can be assumed that all of the text or user interface elements within that document will be using the same language unless it is indicated.
NOTE 3: This success criterion is identical to the WCAG 2.1, Success Criterion 3.1.2, Language of Parts replacing "content" with "document" and with the addition of notes 1 and 2 above.

11.4.2 Predictable

11.4.2.1 On focus

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 3.2.1, On Focus.

NOTE: Some compound documents and their user agents are designed to provide significantly different viewing and editing functionality depending upon what portion of the compound document is being interacted with (e.g. a presentation that contains an embedded spreadsheet, where the menus and toolbars of the user agent change depending upon whether the user is interacting with the presentation content, or the embedded spreadsheet content). If the user uses a mechanism other than putting focus on that portion of the compound document with which they mean to interact (e.g. by a menu choice or special keyboard gesture), any resulting change of context would not be subject to this success criterion because it was not caused by a change of focus.

11.4.2.2 On input

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 3.2.2, On Input.

11.4.3 Input assistance

11.4.3.1 Error identification

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 3.3.1, Error Identification.

11.4.3.2 Labels or instructions

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 3.3.2, Labels or Instructions.

11.4.3.3 Error suggestion

Where ICT is a non-web document, it shall comply with the WCAG 2.1, Success Criterion 3.3.3, Error Suggestion.

11.4.3.4 Error prevention (legal, financial, data)

Where ICT is a non-web document, it shall comply with the success criterion given in Table 15.

Table 15: Document success criterion: Error prevention (legal, financial, data)

<p>For documents that cause legal commitments or financial transactions for the user to occur, that modify or delete user-controllable data in data storage systems, or that submit user test responses, at least one of the following is true:</p> <ol style="list-style-type: none"> 1) Reversible: Submissions are reversible. 2) Checked: Data entered by the user is checked for input errors and the user is provided an opportunity to correct them. 3) Confirmed: A mechanism is available for reviewing, confirming, and correcting information before finalizing the submission.
<p>NOTE: This success criterion is identical to the WCAG 2.1, Success Criterion 3.3.4, Error Prevention (Legal, Financial, Data) replacing "web pages" with "documents".</p>

11.5 Robust

11.5.1 Compatible

11.5.1.1 Parsing

Where ICT is a non-web document, it shall comply with the success criterion given in Table 16.

Table 16: Document success criterion: Parsing

For documents that use markup languages, in such a way that the markup is separately exposed and available to assistive technologies and accessibility features of software or to a user-selectable user agent, elements have complete start and end tags, elements are nested according to their specifications, elements do not contain duplicate attributes, and any IDs are unique, except where the specifications allow these features.
NOTE 1: Start and end tags that are missing a critical character in their formation, such as a closing angle bracket or a mismatched attribute value quotation mark are not complete.
NOTE 2: Markup is not always available to assistive technology or to user selectable user agents such as browsers. In such cases, conformance to this [requirement] would have no impact on accessibility as it can for web content where it is exposed.
NOTE 3: Examples of markup that is separately exposed and available to assistive technologies and to user agents include but are not limited to: documents encoded in HTML, ODF, and OOXML. In these examples, the markup can be parsed entirely in two ways: a) by assistive technologies which may directly open the document, b) by assistive technologies using DOM APIs of user agents for these document formats.
NOTE 4: This success criterion is identical to the WCAG 2.1 Success Criterion 4.1.1 Parsing replacing "In content implemented using markup languages" with "For documents that use markup languages, in such a way that the markup is separately exposed and available to assistive technologies and accessibility features of software or to a user-selectable user agent" with the addition of notes 2 and 3 above.

11.5.1.2 Name, role, value

Where ICT is a non-web document, it shall comply with the success criterion in given Table 17.

Table 17: Document success criterion: Name, role, value

For all user interface components (including but not limited to: form elements, links and components generated by scripts), the name and role can be programmatically determined; states, properties, and values that can be set by the user can be programmatically set; and notification of changes to these items is available to user agents, including assistive technologies.
NOTE 1: This success criterion is primarily for software developers who develop or use custom user interface components. Standard user interface components on most accessibility-supported platforms already meet this success criterion when used according to specification.
NOTE 2: For document formats that support interoperability with assistive technology, standard user interface components often meet this success criterion when used according to the general design and accessibility guidance for the document format.
NOTE 3: This success criterion is identical to the WCAG 2.1, Success Criterion 4.1.2, Name, Role, Value replacing the original WCAG 2.1 note with: "This success criterion is primarily for software developers who develop or use custom user interface components. For example, standard user interface components on most accessibility-supported platforms already meet this success criterion when used according to specification." and with the addition of note 2 above.

11.5.1.3 Status messages

Where ICT is a non-web document, it shall comply with WCAG 2.1, Success Criterion 4.1.3, Status Messages.

11.6 Caption positioning

Where ICT is a non-web document that contains synchronized media with captions, the captions should not obscure relevant information in the synchronized media.

11.7 Audio description timing

Where ICT is a non-web document that contains synchronized media with audio description, the audio description should not interfere with relevant audio information in the synchronized media.

12 Software

12.1 General

This clause provides requirements for:

- a) platform software;
- b) software that provides a user interface including content that is in the software;
- c) authoring tools;
- d) software that operates as assistive technology; and
- e) mobile applications.

NOTE 1: User agents are examples of software that provide a user interface. They retrieve, render and facilitate end user interaction with authored content. User agents play a necessary role in the accessibility of authored content rendered in the user interface. UAAG 2.0 provides additional advice for those who are creating user agents and want to increase functionality when rendering authored content in an accessible way.

NOTE 2: The requirements for Web content, including software that is Web content, can be found in clause 10.

NOTE 3: The requirements for documents, that may be presented by user agents, can be found in clause 11.

NOTE 4: Although the accessibility of command line interfaces is not dealt with in this standard, accessibility may be achieved by context specific requirements, some of which may be found in clauses 6 or 12.

Requirements in clauses 12.2 to 12.6 apply to software:

- a) that is not a web page;
- b) not embedded in web pages nor used in the rendering or functioning of the page.

Clause 10 provides requirements for software that is in web pages or that is embedded in web pages and that is used in the rendering or that is intended to be rendered together with the web page in which it is embedded.

Some requirements in clauses 12.2 to 12.6 have different versions for open or closed functionality. In those cases, the corresponding clause will be divided into two subclauses.

NOTE 5: Software that provides a user interface includes its own content. Some examples of content in software include: the controls and text displayed in a menu bar of a graphical user interface application, images that appear in a toolbar, prompts spoken in an auditory user interface, other user interaction controls, and other text, graphics or material that is not loaded from outside the software.

12.2 Perceivable

12.2.1 Text alternatives

12.2.1.1 Non-text content

12.2.1.1.1 Non-text content (open functionality)

Where ICT is non-web software that provides a user interface and that supports access to assistive technologies for screen reading, it shall comply with WCAG 2.1, Success Criterion 1.1.1, Non-text Content.

NOTE: CAPTCHAs do not currently appear outside of the Web. However, if they do appear, this guidance is accurate.

12.2.1.1.2 Non-text content (closed functionality)

Where ICT is non-web software that provides a user interface which is closed to assistive technologies for screen reading, it shall meet requirement given in 6.1.3.6 (Speech output for non-text content).

12.2.2 Time-based media

12.2.2.1 Audio-only and video-only (pre-recorded)

12.2.2.1.1 Audio-only and video-only (pre-recorded - open functionality)

Where ICT is non-web software that provides a user interface and that supports access to assistive technologies for screen reading and where pre-recorded auditory information is not needed to enable the use of closed functions of ICT, it shall comply with the WCAG 2.1, Success Criterion 1.2.1, Audio-only and Video-only (Pre-recorded).

NOTE: The alternative can be provided directly in the software - or provided in an alternate version that meets the success criterion.

12.2.2.1.2 Audio-only and video-only (pre-recorded - closed functionality)

12.2.2.1.2.1 Pre-recorded audio-only (closed functionality)

Where ICT is non-web software that provides a user interface which is closed to assistive technologies for screen reading and where pre-recorded auditory information is needed to enable the use of closed functions of ICT, the functionality of software that provides a user interface shall meet the requirement given in 6.1.5 (Visual output for auditory information).

12.2.2.1.2.2 Pre-recorded video-only (closed functionality)

Where ICT is non-web software that provides a user interface which is closed to assistive technologies for screen reading, it shall meet requirement given in 6.1.3.7 (Speech output for video information)

12.2.2.2 Captions (pre-recorded)

Where ICT is non-web software that provides a user interface, it shall comply with the WCAG 2.1, Success Criterion 1.2.2, Captions (Pre-recorded).

NOTE: . Per the definition in WCAG 2.1, to meet this success criterion, the captions have to provide "synchronized visual and / or text alternative for both speech and non-speech audio information needed to understand the media content" where non-speech information includes "sound effects, music, laughter, speaker identification and location".

12.2.2.3 Audio description or media alternative (pre-recorded)

12.2.2.3.1 Audio description or media alternative (pre-recorded - open functionality)

Where ICT is non-web software that provides a user interface and that supports access to assistive technologies for screen reading, it shall comply with the WCAG 2.1, Success Criterion 1.2.3, Audio Description or Media Alternative (Pre-recorded).

NOTE 1: The WCAG 2.1 definition of "audio description" says that "audio description" is "also called 'video description' and 'descriptive narration'".

NOTE 2: Secondary or alternate audio tracks are commonly used for this purpose.

12.2.2.3.2 Audio description or media alternative (pre-recorded - closed functionality)

Where ICT is non-web software that provides a user interface which is closed to assistive technologies for screen reading, it shall meet the requirement given in clause 6.1.3.7 (Speech output for video information).

12.2.2.4 Captions (live)

Where ICT is non-web software that provides a user interface, it shall comply with the WCAG 2.1, Success Criterion 1.2.4, Captions (Live).

NOTE: Per the definition in WCAG 2.1, to meet this success criterion, the captions have to provide "synchronized visual and / or text alternative for both speech and non-speech audio information needed to understand the media content" where non-speech information includes "sound effects, music, laughter, speaker identification and location".

12.2.2.5 Audio description (pre-recorded)

Where ICT is non-web software that provides a user interface, it shall comply with the WCAG 2.1, Success Criterion 1.2.5, Audio Description (Pre-recorded).

NOTE 1: The WCAG 2.1 definition of "audio description" says that audio description is "Also called 'video description' and 'descriptive narration'".

NOTE 2: Secondary or alternate audio tracks are commonly used for this purpose.

12.2.3 Adaptable

12.2.3.1 Info and relationships

12.2.3.1.1 Info and relationships (open functionality)

Where ICT is non-web software that provides a user interface and that supports access to assistive technologies for screen reading, it shall comply with the WCAG 2.1, Success Criterion 1.3.1, Info and Relationships.

NOTE: In software, programmatic determinability is best achieved through the use of accessibility services provided by platform software to enable interoperability between software and assistive technologies and accessibility features of software. (see 12.6 Interoperability with assistive technology).

12.2.3.1.2 Info and relationships (closed functionality)

Where ICT is non-web software that provides a user interface which is closed to assistive technologies for screen reading and where information is displayed on the screen, the ICT should provide auditory information that allows the user to correlate the audio with the information displayed on the screen.

NOTE 1 An audio alternative that is both complete and complementary includes all visual information such as focus or highlighting, so that the audio can be correlated with information that is visible on the screen at any point in time.

NOTE: Examples of auditory information that allows the user to correlate the audio with the information displayed on the screen include structure and relationships conveyed through presentation.

12.2.3.2 Meaningful sequence

12.2.3.2.1 Meaningful sequence (open functionality)

Where ICT is non-web software that provides a user interface and that supports access to assistive technologies for screen reading, it shall comply with the WCAG 2.1, Success Criterion 1.3.2, Meaningful Sequence.

12.2.3.2.2 Meaningful sequence (closed functionality)

Where ICT is non-web software that provides a user interface which is closed to assistive technologies for screen reading and where information is displayed on the screen, the ICT should provide auditory information that allows the user to correlate the audio with the information displayed on the screen.

NOTE 1An audio alternative that is both complete and complementary includes all visual information such as focus or highlighting, so that the audio can be correlated with information that is visible on the screen at any point in time.

NOTE : Examples of auditory information that allows the user to correlate the audio with the information displayed on the screen include structure and relationships conveyed through presentation.

12.2.3.3 Sensory characteristics

Where ICT is non-web software that provides a user interface, it shall comply with the WCAG 2.1, Success Criterion 1.3.3, Sensory Characteristics.

12.2.3.4 Orientation

Where ICT is non-web software that provides a user interface, it shall comply with the WCAG 2.1, Success Criterion 1.3.4, Orientation.

12.2.3.5 Identify input purpose

12.2.3.5.1 Identify input purpose (open functionality)

Where ICT is non-web software that provides a user interface and supports access to assistive technologies for screen reading, it shall comply with the WCAG 2.1, Success Criterion 1.3.5, Identify Input Purpose.

12.2.3.5.2 Identify input purpose (closed functionality)

Where ICT is non-web software that provides a user interface and is closed to assistive technologies, in at least one mode of operation the ICT shall present to the user, in an audio form, the purpose of each input field collecting information about the user when the input field serves a purpose identified in the WCAG 2.1, Input Purposes for User Interface Components section.

12.2.4 Distinguishable

12.2.4.1 Use of colour

Where ICT is non-web software that provides a user interface, it shall comply with the WCAG 2.1, Success Criterion 1.4.1, Use of Colour.

12.2.4.2 Audio control

Where ICT is non-web software that provides a user interface, it shall comply with the success criterion given in Table 18.

Table 18: Software success criterion: Audio control

<p>If any audio in a software plays automatically for more than 3 seconds, either a mechanism is available to pause or stop the audio, or a mechanism is available to control audio volume independently from the overall system volume level.</p>
<p>NOTE 1: Since any part of a software that does not meet this success criterion can interfere with a user's ability to use the whole software, all content in the software (whether or not it is used to meet other success criteria) shall meet this success criterion</p>
<p>NOTE 2: This success criterion is identical to the WCAG 2.1 Success Criterion 1.4.2 Audio Control replacing "on a Web page" with "in a software", "any content" with "any part of a software", "whole page" with "whole software", "on the Web page" with "in the software", removing "See Conformance Requirement 10.7(e): Non-Interference" and adding note 1.</p>

12.2.4.3 Contrast (minimum)

Where ICT is non-web software that provides a user interface, it shall comply with the WCAG 2.1, Success Criterion 1.4.3, Contrast (Minimum).

12.2.4.4 Resize text**12.2.4.4.1 Resize text (open functionality)**

Where ICT is non-web software that provides a user interface and that supports access to enlargement features of platform or assistive technology, it shall comply with the WCAG 2.1, Success Criterion 1.4.4, Resize Text.

NOTE 1: Content for which there are software players, viewers or editors with a 200 % zoom feature would automatically meet this success criterion when used with such players, unless the content will not work with zoom.

NOTE 2: This success criterion is about the ability to allow users to enlarge the text on screen at least up to 200 % without needing to use assistive technologies. This means that the application provides some means for enlarging the text 200 % (zoom or otherwise) without loss of content or functionality or that the application works with the platform features that meet this requirement.

12.2.4.4.2 Resize text (closed functionality)

Where ICT is non-web software that provides a user interface which is not able to access the enlargement features of platform or assistive technology, it shall meet the requirement given in 6.1.4 (Functionality closed to text enlargement).

NOTE: Because the text rendering support in a closed environment may be more limited than the support found in user agents for the Web, meeting the requirements of this clause in a closed environment may place a much heavier burden on the content author.

12.2.4.5 Images of text**12.2.4.5.1 Images of text (open functionality)**

Where ICT is non-web software that provides a user interface and that supports access to assistive technologies for screen reading, it shall comply with the WCAG 2.1, Success Criterion 1.4.5, Images of Text.

12.2.4.5.2 Images of text (closed functionality)

Where ICT is non-web software that provides a user interface which is closed to assistive technologies for screen reading, it shall meet the requirement given in 6.1.3.6 (Speech output for non-text content).

12.2.4.6 Reflow

Where ICT is non-web software that provides a user interface, it shall comply with the success criterion given in Table 19.

Table 19: Software success criterion: Reflow

Content can be presented without loss of information or functionality, and without requiring scrolling in two dimensions for: <ul style="list-style-type: none">• Vertical scrolling content at a width equivalent to 320 CSS pixels;• Horizontal scrolling content at a height equivalent to 256 CSS pixels; Except for parts of the content which require two-dimensional layout for usage or meaning.
NOTE 1: 320 CSS pixels is equivalent to a starting viewport width of 1 280 CSS pixels wide at 400 % zoom. For non-web software which are designed to scroll horizontally (e.g. with vertical text), the 256 CSS pixels is equivalent to a starting viewport height of 1 024 px at 400 % zoom.
NOTE 2: Examples of content which require two-dimensional layout are images, maps, diagrams, video, games, presentations, data tables, and interfaces where it is necessary to keep toolbars in view while manipulating content.
NOTE 3: This success criterion is identical to the WCAG 2.1, Success Criterion 1.4.10, Reflow replacing the original WCAG 2.1 notes with notes 1 and 2, above.

12.2.4.7 Non-text contrast

Where ICT is non-web software that provides a user interface, it shall comply with WCAG 2.1, Success Criterion 1.4.11, Non- text Contrast.

12.2.4.8 Text spacing

Where ICT is non-web software that provides a user interface and that does not have a fixed size content layout area that is essential to the information being conveyed, it shall comply with WCAG 2.1, Success Criterion 1.4.12, Text spacing.

12.2.4.9 Content on hover or focus

Where ICT is a non-web software that provides a user interface, it shall comply with WCAG 2.1, Success Criterion 1.4.13, Content on hover or focus.

12.3 Operable

12.3.1 Keyboard accessible

12.3.1.1 Keyboard

12.3.1.1.1 Keyboard (open functionality)

Where ICT is non-web software that provides a user interface and that supports access to keyboards or a keyboard interface, it shall comply with the WCAG 2.1, Success Criterion 2.1.1, Keyboard.

NOTE: This does not imply that software is required to directly support a keyboard or "keyboard interface". Nor does it imply that software is required to provide a soft keyboard. Underlying platform software may provide device independent input services to applications that enable operation via a keyboard. Software that supports operation via such platform device independent services would be operable by a keyboard and would comply.

12.3.1.1.2 Keyboard (closed functionality)

Where ICT is non-web software that provides a user interface which is closed to keyboards or keyboard interface, it shall meet the requirement given in 6.1.6.1 (Operation without keyboard interface: Closed functionality).

12.3.1.2 No keyboard trap

Where ICT is non-web software that provides a user interface, it shall comply with the success criterion given in Table 20.

Table 20: Software success criterion: No keyboard trap

<p>If keyboard focus can be moved to a component of the software using a keyboard interface, then focus can be moved away from that component using only a keyboard interface, and, if it requires more than unmodified arrow or tab keys or other standard exit methods, the user is advised of the method for moving focus away.</p>
<p>NOTE 1: Since any part of a software that does not meet this success criterion can interfere with a user's ability to use the whole software, it is necessary for all content in the software (whether or not it is used to meet other success criteria) to meet this success criterion.</p>
<p>NOTE 2: Standard exit methods may vary by platform. For example, on many desktop platforms, the Escape key is a standard method for exiting.</p>
<p>NOTE 3: This success criterion is identical to the WCAG 2.1 Success Criterion 2.1.2 No Keyboard Trap replacing "content", "page" and "Web page" with "software", removing "See Conformance Requirement 10.7 (e) : Non- Interference" and with the addition of note 2 above and with note 1 above re-drafted to avoid the use of the word "must".</p>

12.3.1.4 Character key shortcuts

12.3.1.4.1 Character key shortcuts (open functionality)

Where ICT is non-web software that provides a user interface, it shall comply with WCAG 2.1, Success Criterion 2.1.4, Character Key Shortcuts.

12.3.1.4.2 Character key shortcuts (closed functionality)

Where ICT is non-web software that provides a user interface which is closed to keyboards or keyboard interface, it shall meet requirement 6.1.6.1 (Operation without keyboard interface: Closed functionality).

12.3.2 Enough time

12.3.2.1 Timing adjustable

Where ICT is non-web software that provides a user interface, it shall comply with the success criterion given in Table 21.

Table 21: Software success criterion: Timing adjustable

<p>For each time limit that is set by the software, at least one of the following is true:</p> <ul style="list-style-type: none">• Turn off: The user is allowed to turn off the time limit before encountering it; or• Adjust: The user is allowed to adjust the time limit before encountering it over a wide range that is at least ten times the length of the default setting; or• Extend: The user is warned before time expires and given at least 20 seconds to extend the time limit with a simple action (for example, "press the space bar"), and the user is allowed to extend the time limit at least ten times; or• Real-time Exception: The time limit is a required part of a real-time event (for example, an auction), and no alternative to the time limit is possible; or• Essential Exception: The time limit is essential and extending it would invalidate the activity; or• 20 Hour Exception: The time limit is longer than 20 hours.
<p>NOTE 1: This success criterion helps ensure that users can complete tasks without unexpected changes in content or context that are a result of a time limit. This success criterion should be considered in conjunction with WCAG 2.1 Success Criterion 3.2.1, which puts limits on changes of content or context as a result of user action.</p>
<p>NOTE 2: This success criterion is identical to the WCAG 2.1 Success Criterion 2.2.1 Timing Adjustable replacing "the content" with "software" and with the words "WCAG 2.1" added before the word "Success Criterion" in note 1 above.</p>

12.3.2.2 Pause, stop, hide

Where ICT is non-web software that provides a user interface, it shall comply with the success criterion in given Table 22.

Table 22: Software success criterion: Pause, stop, hide

<p>For moving, blinking, scrolling, or auto-updating information, all of the following are true:</p> <ul style="list-style-type: none">a) Moving, blinking, scrolling: For any moving, blinking or scrolling information that<ul style="list-style-type: none">i) starts automatically,ii) lasts more than five seconds, andiii) is presented in parallel with other content, there is a mechanism for the user to pause, stop, or hide it unless the movement, blinking, or scrolling is part of an activity where it is essential; andb) Auto-updating: For any auto-updating information that<ul style="list-style-type: none">i) starts automatically andii) is presented in parallel with other content, there is a mechanism for the user to pause, stop, or hide it or to control the frequency of the update unless the auto-updating is part of an activity where it is essential.
<p>NOTE 1: For requirements related to flickering or flashing content, refer to WCAG 2.1 Guideline 2.3.</p>
<p>NOTE 2: This success criteria is applicable to all content in the software (whether or not there is an alternate accessible mode of operation of the software) since any part of a software that does not meet this success criterion can interfere with a user's ability to use the whole software (including a user interface element that enables the user to activate the alternate accessible mode of operation).</p>
<p>NOTE 3: Content that is updated periodically by software or that is streamed to the user agent is not required to preserve or present information that is generated or received between the initiation of the pause and resuming presentation, as this may not be technically possible, and in many situations could be misleading to do so.</p>
<p>NOTE 4: An animation that occurs as part of a preload phase or similar situation can be considered essential if interaction cannot occur during that phase for all users and if not indicating progress could confuse users or cause them to think that content was frozen or broken.</p>
<p>NOTE 5: This is to be applied to all content. Any content, whether informative or decorative, that is updated automatically, blinks, or moves may create an accessibility barrier.</p>

NOTE 6: This success criterion is identical to the WCAG 2.1 Success Criterion 2.2.2 Pause, Stop, Hide replacing "page" and "Web page" with "software", removing "See Conformance Requirement 10.7.(e) : Non-Interference" in note 2 of the success criterion, with the words "WCAG 2.1" added before the word "Guideline" in note 1 above, with note 2 above re-drafted to avoid the use of the word "must" and with the addition of note 5 above.

12.3.3 Seizures and physical reactions

12.3.3.1 Three flashes or below threshold

Where ICT is non-web software that provides a user interface, it shall comply with the success criterion given in Table 23.

Table 23: Software success criterion: Three flashes or below threshold

Software does not contain anything that flashes more than three times in any one second period, or the flash is below the general flash and red flash thresholds.
NOTE 1: This success criteria is applicable to all content in the software (whether or not there is an alternate accessible mode of operation of the software) since any part of a software that does not meet this success criterion can interfere with a user's ability to use the whole software (including a user interface element that enables the user to activate the alternate accessible mode of operation).
NOTE 2: This success criterion is identical to the WCAG 2.1 Success Criterion 2.3.1 Three Flashes or Below Threshold replacing "Web pages" with "software", "the whole page" with "the whole software", "the Web page" with "the software" and removing "See Conformance Requirement 10.7(e): Non-Interference" and with note 1 above re-drafted to avoid the use of the word "must".

12.3.4 Navigable

12.3.4.1 Focus order

Where ICT is non-web software that provides a user interface, it shall comply with the success criterion in given Table 24.

Table 24: Software success criterion: Focus order

If software can be navigated sequentially and the navigation sequences affect meaning or operation, focusable components receive focus in an order that preserves meaning and operability.
NOTE: This success criterion is identical to the WCAG 2.1 Success Criterion 2.4.3 Focus order replacing "Web page" with "software".

12.3.4.2 Link purpose (in context)

Where ICT is non-web software that provides a user interface, it shall comply with WCAG 2.1, Success Criterion 2.4.4, Link Purpose (In Context).

12.3.4.3 Headings and labels

Where ICT is non-web software that provides a user interface, it shall comply with the WCAG 2.1, Success Criterion 2.4.6, Headings and Labels.

In software, headings and labels are used to describe sections of content and controls respectively. In some cases, it may be unclear whether a piece of static text is a heading or a label. But whether treated as a label or a heading, the requirement is the same: that if they are present, they describe the topic or purpose of the item(s) they are associated with.

12.3.4.4 Focus visible

Where ICT is non-web software that provides a user interface, it shall comply with the WCAG 2.1, Success Criterion 2.4.7, Focus Visible.

12.3.5 Input modalities

12.3.5.1 Pointer gestures

Where ICT is non-web software that provides a user interface, it shall comply with the success criterion given in Table 25.

Table 25: Software success criterion: Pointer gestures

All functionality that uses multipoint or path-based gestures for operation can be operated with a single pointer without a path-based gesture, unless a multipoint or path-based gesture is essential.
NOTE 1: This requirement applies to non-web software that interprets pointer actions (i.e. this does not apply to actions that are required to operate the user agent or assistive technology).
NOTE 2: This success criterion is identical to the WCAG 2.1 Success Criterion 2.5.1 Pointer Gestures replacing the original WCAG 2.1 note with note 1 above.

12.3.5.2 Pointer cancellation

Where ICT is non-web software that provides a user interface, it shall comply with the success criterion in Table 26.

Table 26: Software success criterion: Pointer cancellation

For functionality that can be operated using a single pointer, at least one of the following is true: <ul style="list-style-type: none">• No Down-Event: The down-event of the pointer is not used to execute any part of the function.• Abort or Undo: Completion of the function is on the up-event, and a mechanism is available to abort the function before completion or to undo the function after completion.• Up Reversal: The up-event reverses any outcome of the preceding down-event.• Essential: Completing the function on the down-event is essential.
NOTE 1: Functions that emulate a keyboard or numeric keypad key press are considered essential.
NOTE 2: This requirement applies to non-web software that interprets pointer actions (i.e. this does not apply to actions that are required to operate the user agent or assistive technology).
NOTE 3: This success criterion is identical to the WCAG 2.1, Success Criterion 2.5.2, Pointer Cancellation replacing the original WCAG 2.1 note with notes 1 and 2 above.

12.3.5.3 Label in name

12.3.5.3.1 Label in name (open functionality)

Where ICT is non-web software that provides a user interface, it shall comply with WCAG 2.1, Success Criterion 2.5.3, Label in Name.

12.3.5.3.2 Label in name (closed functionality)

Where ICT is non-web software that provides a user interface which is closed to assistive technologies for screen reading, it should meet requirement 6.1.3.3 (Auditory output correlation).

12.3.5.4 Motion actuation

Where ICT is non-web software that provides a user interface, it shall comply with WCAG 2.1, Success Criterion 2.5.4, Motion Actuation.

12.4 Understandable

12.4.1 Readable

12.4.1.1 Language of software

12.4.1.1.1 Language of software (open functionality)

Where ICT is non-web software that provides a user interface and that supports access to assistive technologies for screen reading, it shall comply with the success criterion given in Table 27.

Table 27: Software success criterion: Language of software

The default human language of software can be programmatically determined.
NOTE 1: Where software platforms provide a "locale / language" setting, applications that use that setting and render their interface in that "locale / language" would comply with this success criterion. Applications that do not use the platform "locale / language" setting but instead use an accessibility-supported method for exposing the human language of the software would also comply with this success criterion. Applications implemented in technologies where assistive technologies cannot determine the human language and that do not support the platform "locale / language" setting may not be able to meet this success criterion in that locale / language.
NOTE 2: This success criterion is identical to the WCAG 2.1 Success Criterion 3.1.1 Language of page , replacing "each web page" with "software" and with the addition of note 1 above.

12.4.1.1.2 Language of software (closed functionality)

Where ICT is non-web software that provides a user interface which is closed to assistive technologies for screen reading, it shall meet requirement 6.1.3.14 (Spoken languages).

12.4.2 Predictable

12.4.2.1 On focus

Where ICT is non-web software that provides a user interface, it shall comply with the WCAG 2.1, Success Criterion 3.2.1, On Focus.

NOTE: Some compound documents and their user agents are designed to provide significantly different viewing and editing functionality depending upon what portion of the compound document is being interacted with (e.g. a presentation that contains an embedded spreadsheet, where the menus and toolbars of the user agent change depending upon whether the user is interacting with the presentation content, or the embedded spreadsheet content). If the user uses a mechanism other than putting focus on that portion of the compound document with which they mean to interact (e.g. by a menu choice or special keyboard gesture), any resulting change of context would not be subject to this success criterion because it was not caused by a change of focus.

12.4.2.2 On input

Where ICT is non-web software that provides a user interface, it shall comply with the WCAG 2.1, Success Criterion 3.2.2, On Input.

12.4.3 Input assistance

12.4.3.1 Error identification

12.4.3.1.1 Error identification (open functionality)

Where ICT is non-web software that provides a user interface and that supports access to assistive technologies for screen reading, it shall comply with the WCAG 2.1, Success Criterion 3.3.1, Error Identification.

12.4.3.1.2 Error Identification (closed functionality)

Where ICT is non-web software that provides a user interface which is closed to assistive technologies for screen reading, it shall meet requirement 6.1.3.15 (Non-visual error identification).

12.4.3.2 Labels or instructions

Where ICT is non-web software that provides a user interface, it shall comply with the WCAG 2.1, Success Criterion 3.3.2, Labels or Instructions.

12.4.3.3 Error suggestion

Where ICT is non-web software that provides a user interface, it shall comply with the WCAG 2.1, Success Criterion 3.3.3, Error Suggestion.

12.4.3.4 Error prevention (legal, financial, data)

Where ICT is non-web software that provides a user interface, it shall comply with the success criterion given in Table 28.

Table 28: Software success criterion: Error prevention (legal, financial, data)

For software that cause legal commitments or financial transactions for the user to occur, that modify or delete user-controllable data in data storage systems, or that submit user test responses, at least one of the following is true: 1) Reversible: Submissions are reversible. 2) Checked: Data entered by the user is checked for input errors and the user is provided an opportunity to correct them. 3) Confirmed: A mechanism is available for reviewing, confirming, and correcting information before finalizing the submission.
NOTE: This success criterion is identical to the WCAG 2.1 Success Criterion 3.3.4, Error Prevention (Legal, Financial, Data) replacing "web pages" with "software".

12.5 Robust

12.5.1 Compatible

12.5.1.1 Parsing

Where ICT is non-web software that provides a user interface and that supports access to any assistive technologies, it shall comply with the success criterion given in Table 29.

Table 29: Software success criterion: Parsing

<p>For software that uses markup languages, in such a way that the markup is separately exposed and available to assistive technologies and accessibility features of software or to a user-selectable user agent, elements have complete start and end tags, elements are nested according to their specifications, elements do not contain duplicate attributes, and any IDs are unique, except where the specifications allow these features.</p>
<p>NOTE 1: Start and end tags that are missing a critical character in their formation, such as a closing angle bracket or a mismatched attribute value quotation mark are not complete.</p>
<p>NOTE 2: Markup is not always available to assistive technology or to user selectable user agents such as browsers. In such cases, conformance to this [requirement] would have no impact on accessibility as it can for web content where it is exposed.</p>
<p>NOTE 3: Examples of markup that is separately exposed and available to assistive technologies and to user agents include but are not limited to: documents encoded in HTML, ODF, and OOXML. In these examples, the markup can be parsed entirely in two ways:</p> <ol style="list-style-type: none"> by assistive technologies which may directly open the document, by assistive technologies using DOM APIs of user agents for these document formats.
<p>NOTE 4: Examples of markup used internally for persistence of the software user interface that are never exposed to assistive technology include but are not limited to: XUL, and FXML. In these examples assistive technology only interacts with the user interface of generated software.</p>
<p>NOTE 5: This success criterion is identical to the WCAG 2.1 Success Criterion 4.1.1 Parsing replacing "In content implemented using markup languages" with "For software that uses markup languages, in such a way that the markup is separately exposed and available to assistive technologies and accessibility features of software or to a user-selectable user agent" with the addition of notes 2, 3 and 4 above.</p>

12.5.1.2 Name, role, value

Where ICT is non-web software that provides a user interface and that supports access to any assistive technologies, it shall comply with the success criterion in Table 30.

Table 30: Software success criterion: Name, role, value

<p>For all user interface components (including but not limited to: form elements, links and components generated by scripts), the name and role can be programmatically determined; states, properties, and values that can be set by the user can be programmatically set; and notification of changes to these items is available to user agents, including assistive technologies.</p>
<p>NOTE 1: This success criterion is primarily for software developers who develop or use custom user interface components. Standard user interface components on most accessibility-supported platforms already meet this success criterion when used according to specification.</p>
<p>NOTE 2: For conforming to this success criterion, it is recommended for software user interfaces to use the accessibility services provided by platform software. These accessibility services enable interoperability between software user interfaces and both assistive technologies and accessibility features of software in standardized ways. Most platform accessibility services go beyond programmatic exposure of name and role, and programmatic setting of states, properties and values (and notification of same), and specify additional information that could or should be exposed and / or set (for instance, a list of the available actions for a given user interface component, and a means to programmatically execute one of the listed actions).</p>
<p>NOTE 3: This success criterion is identical to the WCAG 2.1, Success Criterion 4.1.2, Name, Role, Value replacing the original WCAG 2.1 note with: "This success criterion is primarily for software developers who develop or use custom user interface components. Standard user interface components on most accessibility- supported platforms already meet this success criterion when used according to specification." and the addition of note 2 above.</p>

12.5.1.3 Status messages

Where ICT is non-web software, it shall comply with WCAG 2.1, Success Criterion 4.1.3, Status Messages.

12.6 Interoperability with assistive technology

12.6.1 Closed functionality

Where the closed functionality of software complies with clause 6.1 (closed functionality) it shall not be required to comply with clause 12.6.2.1 to clause 12.6.2.17.

12.6.2 Accessibility services

12.6.2.1 Platform accessibility service support for software that provides a user interface

Platform software shall provide a set of documented platform services that enable software that provides a user interface running on the platform software to interoperate with assistive technology.

Where a user interface concept corresponding to one of the clauses 12.6.2.5 to 12.6.2.17 is supported within the software environment, the platform software should support that requirement. For example, selection attributes from clause 12.6.2.14 (Modification of focus and selection attributes) may not exist in environments that do not allow selection, which is most commonly associated with copy and paste.

NOTE 1: These define the minimum functionality of software providing user interfaces when using platform services.

NOTE 2: In some platforms these services may be called accessibility services, but in some other platforms these services may be provided as part of the user interface services.

NOTE 3: User interface services that provide accessibility support by default are considered to be part of the services provided to conform to this clause (e.g. the service for creating a new user interface element provides role, state, boundary, name and description).

NOTE 4: To comply with this requirement the platform software can provide its own set of services or expose the services provided by its underlying platform layers, if those services conform to this requirement.

NOTE 5: Within specific programming environments, the technical attributes associated with the user interface properties described in clauses 12.6.2.5 to 12.6.2.17 may have different names than those used within the clauses.

12.6.2.2 Platform accessibility service support for assistive technologies

Platform software shall provide a set of documented platform accessibility services that enable assistive technology to interoperate with software that provides a user interface running on the platform software.

Where a user interface concept corresponding to one of the clauses 12.6.2.5 to 12.6.2.17 is supported within the software environment, the platform software should support that requirement. For example, selection attributes from clause 12.6.2.14 (Modification of focus and selection attributes) may not exist in environments that do not allow selection, which is most commonly associated with copy and paste.

NOTE 1: These define the minimum functionality available to assistive technologies when using platform services.

NOTE 2: The definition of platform in clause 3.23 applies to software that provides services to other software, including but not limited to, operating systems, web browsers, virtual machines.

NOTE 3: In some platforms these services may be called accessibility services, but in some other platforms these services may be provided as part of the user interface services.

NOTE 4: Typically, these services belong to the same set of services that are described in clause 12.6.2.1.

NOTE 5: To comply with this requirement the platform software can provide its own set of services or expose the services provided by its underlying platform layers, if those services comply with this requirement.

12.6.2.3 Use of accessibility services

Where the software provides a user interface it shall use the applicable documented platform accessibility services. If the documented platform accessibility services do not allow the software to meet the applicable requirements of clauses 12.6.2.5 to 12.6.2.17, then software that provides a user interface shall use other documented services to interoperate with assistive technology.

NOTE: The term "documented platform accessibility services" refers to the set of services provided by the platform according to clauses 12.6.2.1 and 12.6.2.2.

It is recommended to develop software using toolkits that automatically implement the underlying platform accessibility services.

12.6.2.4 Assistive technology

Where the ICT is assistive technology, it shall use the documented platform accessibility services.

NOTE 1: The term "documented platform accessibility services" refers to the set of services provided by the platform according to clauses 12.6.2.1 and 12.6.2.2.

NOTE 2: Assistive technology can also use other documented accessibility services.

12.6.2.5 Object information

Where the software provides a user interface, it shall, by using the services as described in clause 12.6.2.3, make the user interface elements' role, state(s), boundary, name, and description programmatically determinable by assistive technologies.

12.6.2.6 Row, column, and headers

Where the software provides a user interface, it shall, by using the services as described in clause 12.6.2.3, make the row and column of each cell in a data table, including headers of the row and column if present, programmatically determinable by assistive technologies.

12.6.2.7 Values

Where the software provides a user interface, it shall, by using the services as described in clause 12.6.2.3, make the current value of a user interface element and any minimum or maximum values of the range, if the user interface element conveys information about a range of values, programmatically determinable by assistive technologies.

12.6.2.8 Label relationships

Where the software provides a user interface, it shall expose the relationship that a user interface element has as a label for another element, or of being labelled by another element, using the services as described in clause 12.6.2.3, so that this information is programmatically determinable by assistive technologies.

12.6.2.9 Parent-child relationships

Where the software provides a user interface, it shall, by using the services as described in clause 12.6.2.3, make the relationship between a user interface element and any parent or children elements programmatically determinable by assistive technologies.

12.6.2.10 Text

Where the software provides a user interface it shall, by using the services as described in clause 12.6.2.3, make the text contents, text attributes, and the boundary of text rendered to the screen programmatically determinable by assistive technologies.

12.6.2.11 List of available actions

Where the software provides a user interface it shall, by using the services as described in clause 12.6.2.3, make a list of available actions that can be executed on a user interface element, programmatically determinable by assistive technologies.

12.6.2.12 Execution of available actions

Where permitted by security requirements, software that provides a user interface shall, by using the services as described in clause 12.6.2.3, allow the programmatic execution of the actions exposed according to clause 12.6.2.11 by assistive technologies.

NOTE 1: In some cases the security requirements imposed on a software product may forbid external software from interfering with the ICT product. Examples of systems under strict security requirements are systems dealing with intelligence activities, cryptologic activities related to national security, command and control of military forces.

NOTE 2: Assistive technologies may be required to maintain the same level of security as the standard input mechanisms supported by the platform.

12.6.2.13 Tracking of focus and selection attributes

Where software provides a user interface it shall, by using the services as described in clause 12.6.2.3, make information and mechanisms necessary to track focus, text insertion point, and selection attributes of user interface elements programmatically determinable by assistive technologies.

12.6.2.14 Modification of focus and selection attributes

Where permitted by security requirements, software that provides a user interface shall, by using the services as described in clause 12.6.2.3, allow assistive technologies to programmatically modify focus, text insertion point, and selection attributes of user interface elements where the user can modify these items.

NOTE 1: In some cases the security requirements imposed on a software product may forbid external software from interfering with the ICT product and so this requirement would not apply. Examples of systems under strict security requirements are systems dealing with intelligence activities, cryptologic activities related to national security, command and control of military forces.

NOTE 2: Assistive technologies may be required to maintain the same level of security as the standard input mechanisms supported by the platform.

12.6.2.15 Change notification

Where software provides a user interface it shall, by using the services as described in clause 12.6.2.3, notify assistive technologies about changes in those programmatically determinable attributes of user interface elements that are referenced in requirements 12.6.2.5 to 12.6.2.11 and 12.6.2.13.

12.6.2.16 Modifications of states and properties

Where permitted by security requirements, software that provides a user interface shall, by using the services as described in clause 12.6.2.3, allow assistive technologies to programmatically modify states and properties of user interface elements, where the user can modify these items.

NOTE 1: In some cases the security requirements imposed on a software product may forbid external software from interfering with the ICT product and so this requirement would not apply. Examples of systems under strict security requirements are systems dealing with intelligence activities, cryptologic activities related to national security, command and control of military forces.

NOTE 2: Assistive technologies may be required to maintain the same level of security as the standard input mechanisms supported by the platform.

12.6.2.17 Modifications of values and text

Where permitted by security requirements, software that provides a user interface shall, by using the services as described in clause 12.6.2.3, allow assistive technologies to modify values and text of user interface elements using the input methods of the platform, where a user can modify these items without the use of assistive technology.

NOTE 1: In some cases the security requirements imposed on a software product may forbid external software from interfering with the ICT product and so this requirement would not apply. Examples of systems under strict security requirements are systems dealing with intelligence activities, cryptologic activities related to national security, command and control of military forces.

NOTE 2: Assistive technologies may be required to maintain the same level of security as the standard input mechanisms supported by the platform.

12.7 Documented accessibility usage

12.7.1 User control of accessibility features

Where software is a platform, it shall provide sufficient modes of operation for user control over those platform accessibility features documented as intended for users.

12.7.2 No disruption of accessibility features

Where software provides a user interface it shall not disrupt those documented accessibility features that are defined in platform documentation except when requested to do so by the user during the operation of the software.

12.8 User preferences

Where software is not designed to be isolated from its platform, and provides a user interface, that user interface shall follow the values of the user preferences for platform settings for: units of measurement, colour, contrast, font type, font size, and focus cursor except where they are overridden by the user.

NOTE 1: Software that is isolated from its underlying platform has no access to user settings in the platform and thus cannot adhere to them.

NOTE 2: For web content, the underlying platform is the user agent.

NOTE 3: This does not preclude the software from having additional values for a setting as long as there is one mode where the application will follow the system settings even if more restricted.

12.9 Authoring tools

12.9.1 General (informative)

For those creating web content authoring tools, ATAG 2.0 provides information that can be of interest to those who want to go beyond these requirements.

NOTE: This is applicable both to standalone and to web based authoring tools.

12.9.2 Content technology

Authoring tools shall comply with clauses 12.9.3 to 12.9.6 to the extent that information required for accessibility is supported by the format used for the output of the authoring tool.

12.9.3 Accessible content creation

Authoring tools shall enable and guide the production of content that complies with clause 10 (Web content) or clause 11 (Non-Web content) as applicable.

NOTE: Authoring tools may rely on additional tools where conformance with specific requirements is not achievable by a single tool. For example, a video editing tool may enable the creation of video files for distribution via broadcast television and the web, but authoring of caption files for multiple formats may be provided by a different tool.

12.9.4 Preservation of accessibility information in transformations

If the authoring tool provides restructuring transformations or re-coding transformations, then accessibility information shall be preserved in the output if equivalent mechanisms exist in the content technology of the output.

NOTE 1: Restructuring transformations are transformations in which the content technology stays the same, but the structural features of the content are changed (e.g. linearizing tables, splitting a document into pages).

NOTE 2: Re-coding transformations are transformations in which the technology used to encode the content is changed.

12.9.5 Repair assistance

If the accessibility checking functionality of an authoring tool can detect that content does not meet a requirement of clause 10 (Web) or clause 11 (Non-web documents) as applicable, then the authoring tool shall provide repair suggestion(s).

NOTE: This does not preclude automated and semi-automated repair which is possible (and encouraged) for many types of content accessibility problems.

12.9.6 Templates

When an authoring tool provides templates, at least one template that supports the creation of content that complies with the requirements of clause 10 (Web) or clause 11 (Non-web documents) as applicable shall be available and identified as such.

13 Documentation and support services

13.1 Product documentation

13.1.1 Accessibility and compatibility features

Product documentation provided with the ICT whether separately or integrated within the ICT shall list and explain how to use the accessibility and compatibility features of the ICT.

NOTE 1: Accessibility and compatibility features include accessibility features that are built-in and accessibility features that provide compatibility with assistive technology.

NOTE 2: It is recommended to use WebSchemas/Accessibility 2.0 to provide meta data on the accessibility of the ICT.

NOTE 3: The accessibility statement and help pages are both examples of the provision of product information.

13.1.2 Accessible documentation

Product documentation provided with the ICT shall:

- a) be easily identifiable and accessible. Where online resources are available, the URLs shall be provided; and
- b) be made available in at least one of the following electronic formats:

- i) a web format that conforms to the requirements of clause 10; or
- ii) a non-web format that conforms to the requirements of clause 11.

NOTE 1: This does not preclude the possibility of also providing the product documentation in other formats (electronic, printed or audio) that are not accessible.

NOTE 2: It also does not preclude the possibility of providing alternate formats that meet the needs of some specific type of users (e.g. Braille documents for blind people or easy-to-read information for persons with limited cognitive, language and learning abilities).

NOTE 3: Where documentation is incorporated into the ICT, the documentation falls under the requirements for accessibility in this standard.

NOTE 4: A user agent that supports automatic media conversion would be beneficial to enhancing accessibility.

13.2 Support services

13.2.1 General

ICT support services include, but are not limited to help desks, call centres, technical support, relay services and training services.

13.2.2 Information on accessibility and compatibility features

ICT support services shall provide information on the accessibility and compatibility features that are mentioned in the product documentation.

NOTE: Accessibility and compatibility features include accessibility features that are built-in and accessibility features that provide compatibility with assistive technology.

13.2.3 Effective communication

ICT support services shall be easily identifiable and accessible. Where online support services are available, the URLs shall be provided and user friendly;

ICT support services shall accommodate the communication needs of persons with disabilities either directly or through a referral point.

13.2.4 Accessible documentation

Documentation provided by support services shall be made available in at least one of the following electronic formats:

- a) a Web format that conforms to clause 10; or
- b) a non-web format that conforms to clause 11.

NOTE 1: This does not preclude the possibility of also providing the documentation in other formats (electronic or printed) that are not accessible.

NOTE 2: It also does not preclude the possibility of providing alternate formats that meet the needs of some specific type of users (e.g. Braille documents for blind people or easy-to-read information for persons with limited cognitive, language and learning abilities).

NOTE 3: Where the support documentation is incorporated into the ICT, the documentation falls under the requirements for accessibility in this standard.

NOTE 4: A user agent that supports automatic media conversion would be beneficial to enhancing accessibility.

14 ICT providing relay or emergency service access

14.1 Relay services requirements

14.1.1 General

Relay services enable users of different modes of communication e.g. text, sign, speech, to interact remotely through ICT with two-way communication by providing conversion between the modes of communication, normally by a human operator.

It is recommended to meet the applicable relay service requirements of ETSI ES 202 975.

14.1.2 Text relay services

Where ICT is intended to provide a text relay service, the text relay service shall enable text users and speech users to interact by providing conversion between the two modes of communication.

14.1.3 Sign relay services

Where ICT is intended to provide a sign relay service, the sign relay service shall enable sign language users and speech users to interact by providing conversion between the two modes of communication.

NOTE: Sign relay services are also sometimes referred to as sign language relay services or video relay services.

14.1.4 Lip-reading relay services

Where ICT is intended to provide a lip-reading relay service, the lip-reading service shall enable lip-readers and voice telephone users to interact by providing conversion between the two modes of communication.

14.1.5 Captioned telephony services

Where ICT is intended to provide a captioned telephony service, the captioned telephony service shall assist a deaf or hard of hearing user in a spoken dialogue by providing text captions translating the incoming part of the conversation.

14.1.6 Speech to speech relay services

Where ICT is intended to provide a speech to speech relay service, the speech to speech relay service shall enable telephone users who are speech impaired, have limited cognitive, language and learning abilities, as well as any other user, to communicate by providing assistance between them.

14.2 Access to relay services

Where ICT systems support two-way communication, and the system is specified for use with relay services, access to those relay services shall not be prevented for outgoing and incoming calls involving: voice, RTT, or video, either individually or in combinations supported by both the relay service and the ICT system.

NOTE 1: The purpose of this requirement is to achieve functionally equivalent communication access by persons with disabilities.

NOTE 2: The system may be specified as needing to work with relay services by, for example: procurers, regulators, or product specifications.

14.3 Access to emergency services

14.3.1 Two-way communication

Where ICT systems support two-way communication, and the system is specified for use with emergency services, access to those emergency services shall not be prevented for outgoing and incoming calls involving: voice, RTT, or video, either individually or in combinations supported by both the emergency service and the ICT system.

14.3.2 Lighting communication

Where ICT systems support the use of lighting system in addition to the two-way communication specified in 14.3.1, and the ICT system is specified for use with emergency services, access to the emergency services shall be available through both the lighting system and the two-way communication system.

NOTE 1: The purpose of this requirement is to achieve functionally equivalent communication access to the emergency service by persons with disabilities.

NOTE 2: The system may be specified as needing to work with emergency services by, for example: procurers, regulators, or product specifications.

15 Conformance

15.1 Conformance to this standard is achieved by meeting all the applicable requirements, these are clauses containing the word "shall". Those clauses containing the word "should" are recommendations and are not mandatory for conformance.

15.2 All clauses except those in clause 13 are self-scoping. This means they are introduced with the phrase 'Where ICT <pre condition>'. A requirement is met when the pre-condition is true/provided and the corresponding test (in part 2 of this standard) is passed.

15.3 When one of the pre-conditions is false/not provided the requirement is not applicable/achieved. Consequently, the result of the tests in part 2 of this standard can be: not applicable, pass, fail, or (in exceptional circumstances) not testable.

15.4 ICT is often comprised of an assembly of two or more items of ICT. In some cases, two or more interoperable items of ICT may together meet more requirements of the standard when one item complements the functionality of the other and the sum together meets more of the accessibility requirements. However, combining two items of ICT, both of which fail to meet any particular requirement, will not lead to a combined ICT system that meets that requirement.

NOTE 1: Conformance with the accessibility requirements could be affected by subsequent implementation or maintenance.

NOTE 2: Sampling is frequently required on complex ICT when there are too many instances of the object to be tested. This standard cannot recommend specific ICT evaluation sampling techniques as these are context specific.

Annex A (Informative)

Relationship between requirements and functional performance principles

A.1 Relationships between clauses 6 to 14 and the functional performance principles

Table A.2 shows which of the requirements set out in clauses 6 to 14 support each of the functional performance principles set out in clause 5.2.

To allow Table A.2 to fit the page, the abbreviations shown in Table A.1 have been used in the column headers of Table A.2.

Table A.1 — Key to the column header designations used in Table A.2

Clause number	Column header abbreviation	Functional performance principle
5.2.1	WV	Usage without vision
5.2.2	LV	Usage with limited vision
5.2.3	WPC	Usage without perception of colour
5.2.4	WH	Usage without hearing
5.2.5	LH	Usage with limited hearing
5.2.6	WVC	Usage without vocal capability
5.2.7	LMS	Usage with limited manipulation or strength
5.2.8	LR	Usage with limited reach
5.2.9	PS	Usage with photosensitive seizures
5.2.10	LC	Usage with limited cognition
5.2.11	Pv	Privacy

The following abbreviations have been used to represent the relationship between the requirements in clauses 6 to 14 and the functional performance principles:

- a) P = Primary relationship. The requirement supports the functional performance statement.
- b) S = Secondary relationship. The requirement provides partial support for the functional performance statement because some users may use the feature in specific situations.

Table A.2: Requirements in clauses 6 to 14 supporting the accessibility needs expressed in the functional performance principles

Requirements	5.2.1 WV	5.2.2 LV	5.2.3 WPC	5.2.4 WH	5.2.5 LH	5.2.6 WVC	5.2.7 LMS	5.2.8 LR	5.2.9 PS	5.2.10 LC	5.2.11 Pv
6.1.2.1 Closed functionality	P	P	P	P	P	P	P	P	P	P	P
6.1.2.2 Assistive technology	-	-	-	-	-	-	-	-	-	-	S
6.1.3.1 Audio output of visual information	P	S	-	-	-	-	-	-	-	S	-
6.1.3.2 Auditory output delivery including speech	P	S	-	-	-	-	-	-	-	S	-
6.1.3.3 Auditory output correlation	-	P	-	-	-	-	-	-	-	S	-
6.1.3.4 Speech output user control	P	S	-	-	-	-	-	-	-	S	-
6.1.3.5 Speech output automatic interruption	P	S	-	-	-	-	-	-	-	S	-
6.1.3.6 Speech output for non-text content	P	S	-	-	-	-	-	-	-	S	-
6.1.3.7 Speech output for video information	P	S	-	-	-	-	-	-	-	S	-
6.1.3.8 Masked entry	P	S	-	-	-	-	-	-	-	S	P
6.1.3.9 Private access to personal data	P	S	-	-	-	-	-	-	-	S	P
6.1.3.10 Non-interfering audio output	P	S	-	-	-	-	-	-	-	S	-
6.1.3.11 Private listening volume	P	S	-	-	S	-	-	-	-	S	S
6.1.3.12 Speaker volume	P	S	-	-	S	-	-	-	-	S	-
6.1.3.13 Volume reset	P	S	-	-	S	-	-	-	-	S	-
6.1.3.14 Spoken languages	P	S	-	-	-	-	-	-	-	S	-
6.1.3.15 Non-visual error identification	P	S	-	-	-	-	-	-	-	S	-
6.1.3.16 Receipts, tickets, and transactional outputs	P	S	-	-	-	-	-	-	-	-	-
6.1.4 Functionality closed to text enlargement	-	P	-	-	-	-	-	-	-	-	-
6.1.5 Visual output for auditory information	-	-	-	P	P	-	-	-	-	S	-
6.1.6.1 Operation without keyboard interface (closed functionality)	P	P	-	-	-	S	P	-	-	-	-
6.1.6.2 Operation without keyboard interface (Input focus)	P	P	-	-	-	S	P	-	-	-	-
6.1.7 Access without speech	-	-	-	-	-	P	-	-	-	-	-
6.2 Activation of accessibility features	P	P	P	P	P	-	P	-	-	-	-

6.3 Biometrics	P	P	-	P	-	P	P	P	-	-	P
6.4 Preservation of accessibility information during conversion	P	P	-	P	P	-	-	-	-	S	-
6.5.1 Means of operation	-	-	-	-	-	-	P	-	-	-	-
6.5.2 Operable part discernibility	P	S	-	-	-	-	-	-	-	-	-
6.6.1 Tactile or auditory status	P	P	-	P	-	-	-	-	-	S	-
6.6.2 Visual status	-	-	-	P	P	-	P	P	-	S	-
6.7 Key repeat	-	-	-	-	-	-	P	-	-	S	-
6.8 Double-strike key acceptance	-	-	-	-	-	-	P	P	-	S	-
6.9 Simultaneous user actions	-	-	-	-	-	-	P	P	-	S	-
7.1 Audio bandwidth for speech	-	-	-	-	P	-	-	-	-	-	-
7.2.1.1 RTT communication	-	-	-	P	S	S	-	-	-	-	-
7.2.1.2 Concurrent voice and text	-	-	-	P	P	S	-	-	-	-	-
7.2.2.1 Visually distinguishable display	-	-	-	P	S	S	-	-	-	-	-
7.2.2.2 Programmatically determinable send and receive direction	-	-	-	P	S	S	-	-	-	-	-
7.2.2.3 Speaker identification	-	-	-	P	P	S	-	-	-	-	-
7.2.2.4 Visual indicator of Audio with RTT	-	-	-	P	P	S	-	-	-	-	-
7.2.3 Interoperability	-	-	-	P	S	S	-	-	-	-	-
7.2.4 RTT responsiveness	-	-	-	P	S	S	-	-	-	-	-
7.3 Caller ID	P	P	-	-	-	-	-	-	-	S	-
7.4 Alternatives to voice- based services	-	-	-	P	P	P	-	-	-	-	-
7.5.2 Resolution	-	-	-	P	P	S	-	-	-	-	-
7.5.3 Frame rate	-	-	-	P	P	S	-	-	-	-	-
7.5.4 Synchronization between audio and video	-	-	-	P	P	S	-	-	-	-	-
7.5.5 Visual indicator of audio with video	-	-	-	P	P	S	-	-	-	-	-
7.5.6 Speaker identification with video (sign language) communication	-	-	-	P	P	S	-	-	-	-	-
7.6 Alternatives to video- based services	P	S	-	P	P	P	-	-	-	-	-
8.1.1 Captioning playback	-	-	-	P	P	-	-	-	-	S	-
8.1.2 Captioning synchronization	-	-	-	P	P	-	-	-	-	S	-

8.1.3 Preservation of captioning	-	-	-	P	P	-	-	-	-	S	-
8.1.4 Captions characteristics	-	S	S	P	P	-	-	-	-	S	-
8.1.5 Spoken subtitles	P	P	S	-	-	-	-	-	-	S	-
8.2.1 Audio description playback	P	P	-	-	-	-	-	-	-	S	-
8.2.2 Audio description synchronization	P	P	-	-	-	-	-	-	-	S	-
8.2.3 Preservation of audio description	P	P	-	-	-	-	-	-	-	S	-
8.3 User controls for captions and audio description	P	P	-	P	P	-	-	-	-	S	-
9.1.2 Standard connections	P	P	-	-	P	-	P	P	-	P	-
9.1.3 Colour	-	S	P	-	-	-	-	-	-	S	-
9.2.1.1 Speech volume range	-	-	-	-	P	-	-	-	-	-	-
9.2.1.2 Incremental volume control	-	-	-	-	P	-	-	-	-	-	-
9.2.2.1 Fixed-line devices	-	-	-	-	P	-	-	-	-	-	-
9.2.2.2 Wireless communication devices	-	-	-	-	P	-	-	-	-	-	-
9.3 Stationary ICT, General	-	-	-	-	-	-	-	P	-	-	-
9.3.2 Forward or side reach	-	-	-	-	-	-	-	P	-	-	-
9.3.3.1 Unobstructed high forward reach	-	-	-	-	-	-	-	P	-	-	-
9.3.3.2 Unobstructed low forward reach	-	-	-	-	-	-	-	P	-	-	-
9.3.3.3.1 Obstructed forward reach - Clear space	-	-	-	-	-	-	-	P	-	-	-
9.3.3.3.2 Obstructed (<510 mm) forward reach	-	-	-	-	-	-	-	P	-	-	-
9.3.3.3.3 Obstructed (<635 mm) forward reach	-	-	-	-	-	-	-	P	-	-	-
9.3.3.4 Knee and toe clearance width	-	-	-	-	-	-	-	P	-	-	-
9.3.3.5 Toe clearance	-	-	-	-	-	-	-	P	-	-	-
9.3.3.6 Knee clearance	-	-	-	-	-	-	-	P	-	-	-
9.3.4.1 Unobstructed high side reach	-	-	-	-	-	-	-	P	-	-	-
9.3.4.2 Unobstructed low side reach	-	-	-	-	-	-	-	P	-	-	-
9.3.4.3.1 Obstructed (≤ 255 mm) side reach	-	-	-	-	-	-	-	P	-	-	-
9.3.4.3.2 Obstructed (≤ 610 mm) side reach	-	-	-	-	-	-	-	P	-	-	-
9.3.5.1 Change in level	-	-	-	-	-	-	-	P	-	-	-

9.3.5.2 Level ground space	-	-	-	-	-	-	-	-	P	-	-	-
9.3.5.3.1 Approach - General	-	-	-	-	-	-	-	-	P	-	-	-
9.3.5.3.2 Forward approach	-	-	-	-	-	-	-	-	P	-	-	-
9.3.5.3.3 Parallel approach	-	-	-	-	-	-	-	-	P	-	-	-
9.3.6 Visibility	-	-	-	-	-	-	-	-	P	-	-	-
9.3.7 Installation instructions	-	-	-	-	-	-	-	-	P	-	-	-
9.4.1 Numeric keys	P	S	-	-	-	-	-	-	-	-	-	-
9.4.2.1 Means of operation of mechanical parts	-	-	-	-	-	-	-	P	-	-	-	-
9.4.2.2 Force of operation of mechanical parts	-	-	-	-	-	-	-	P	-	-	-	-
9.4.3 Keys, tickets and fare cards	P	S	-	-	-	-	-	-	-	-	-	-
9.5 Tactile indication of speech mode	P	-	-	-	-	-	-	-	-	-	-	-
10.2.1.1 Non-text content	P	P	-	P	S	-	-	-	-	-	S	S
10.2.2.1 Audio-only and video-only (pre-recorded)	P	P	-	P	P	-	-	-	-	-	S	-
10.2.2.2 Captions (pre-recorded)	-	-	-	P	P	-	-	-	-	-	S	-
10.2.2.3 Audio description or media alternative (pre-recorded)	P	S	-	-	-	-	-	-	-	-	S	-
10.2.2.4 Captions (live)	-	-	-	P	P	-	-	-	-	-	S	-
10.2.2.5 Audio description (pre-recorded)	P	S	-	-	-	-	-	-	-	-	S	-
10.2.3.1 Info and relationships	P	S	-	-	-	-	-	-	-	-	S	-
10.2.3.2 Meaningful sequence	P	S	-	-	-	-	-	-	-	-	S	-
10.2.3.3 Sensory characteristics	P	P	P	P	P	-	-	-	-	-	S	-
10.2.3.4 Orientation	-	-	-	-	-	-	-	P	P	-	S	-
10.2.3.5 Identify input purpose	-	P	-	-	-	-	-	-	-	-	-	-
10.2.4.1 Use of colour	P	P	P	-	-	-	-	-	-	-	S	-
10.2.4.2 Audio control	P	-	-	-	P	-	-	-	-	-	S	-
10.2.4.3 Contrast (minimum)	-	P	P	-	-	-	-	-	-	-	S	-
10.2.4.4 Resize text	-	P	-	-	-	-	-	-	-	-	-	-
10.2.4.5 Images of text	-	P	P	-	-	-	-	-	-	-	S	-
10.2.4.6 Reflow	-	P	-	-	-	-	-	-	-	-	-	-
10.2.4.7 Non-text contrast	-	P	P	-	-	-	-	-	-	-	S	-
10.2.4.8 Text spacing	-	P	-	-	-	-	-	-	-	-	P	-
10.2.4.9 Content on hover or focus	-	P	-	-	-	-	-	-	-	-	P	-
10.3.1.1 Keyboard	P	P	-	-	-	S	P	-	-	-	-	-
10.3.1.2 No keyboard trap	P	P	-	-	-	S	P	-	-	-	-	-

10.3.1.3 Character key shortcuts	-	-	-	-	-	-	P	P	-	S	-
10.3.2.1 Timing adjustable	P	P	-	P	P	-	P	-	-	P	-
10.3.2.2 Pause, stop, hide	P	P	-	P	P	-	P	-	-	P	-
10.3.3.1 Three flashes or below threshold	-	-	-	-	-	-	-	-	P	-	-
10.3.4.1 Bypass blocks	P	P	-	-	-	S	P	-	-	P	-
10.3.4.2 Page titled	P	P	-	-	-	-	P	-	-	P	-
10.3.4.3 Focus order	P	P	-	-	-	-	P	-	-	P	-
10.3.4.4 Link purpose (in context)	P	P	-	-	-	S	P	-	-	P	-
10.3.4.5 Multiple ways	P	P	-	-	-	S	P	-	-	P	-
10.3.4.6 Headings and labels	P	P	-	S	-	S	P	-	-	P	-
10.3.4.7 Focus visible	P	P	-	-	-	S	P	-	-	P	-
10.3.5.1 Pointer gestures	-	-	-	-	-	-	P	P	-	P	-
10.3.5.2 Pointer cancellation	-	P	-	-	-	-	P	P	-	P	-
10.3.5.3 Label in name	-	-	-	-	-	-	P	P	-	S	-
10.3.5.4 Motion actuation	S	S	-	-	-	-	P	P	-	S	-
10.4.1.1 Language of page	P	S	-	S	S	-	-	-	-	S	-
10.4.1.2 Language of parts	P	S	-	S	S	-	-	-	-	S	-
10.4.2.1 On focus	P	P	-	-	-	-	P	-	-	P	-
10.4.2.2 On Input	P	P	-	-	-	-	P	-	-	P	-
10.4.2.3 Consistent navigation	P	P	-	-	-	-	-	-	-	P	-
10.4.2.4 Consistent identification	S	P	-	-	-	-	-	-	-	P	-
10.4.3.1 Error identification	P	P	P	-	-	-	-	-	-	P	-
10.4.3.2 Labels or instructions	P	P	-	-	-	S	S	-	-	P	-
10.4.3.3 Error suggestion	P	P	-	-	-	S	S	-	-	P	-
10.4.3.4 Error prevention (legal, financial, data)	P	P	-	-	-	-	S	-	-	P	-
10.5.1.1 Parsing	P	S	-	-	-	-	-	-	-	-	-
10.5.1.2 Name, role, value	P	P	-	-	-	-	S	-	-	-	-
10.5.1.3 Status messages	P	P	P	P	P	S	P	P	P	P	-
10.7 WCAG Conformance requirements	P	P	P	P	P	S	P	P	P	P	S
11.2.1.1 Non-text content	P	P	-	P	S	-	-	-	-	S	S
11.2.2.1 Audio-only and video-only (pre-recorded)	P	P	-	P	P	-	-	-	-	S	-
11.2.2.2 Captions (pre-recorded)	-	-	-	P	P	-	-	-	-	S	-
11.2.2.3 Audio description or media alternative (pre-recorded)	P	S	-	-	-	-	-	-	-	S	-

11.2.2.4 Captions (live)	-	-	-	P	P	-	-	-	-	S	-
11.2.2.5 Audio description (pre-recorded)	P	S	-	-	-	-	-	-	-	S	-
11.2.3.1 Info and relationships	P	S	-	-	-	-	-	-	-	S	-
11.2.3.2 Meaningful sequence	P	S	-	-	-	-	-	-	-	S	-
11.2.3.3 Sensory characteristics	P	P	P	P	P	-	-	-	-	S	-
11.2.3.4 Orientation	-	-	-	-	-	-	P	P	-	S	-
11.2.3.5 Identify input purpose	-	P	-	-	-	-	-	-	-	-	-
11.2.4.1 Use of colour	P	P	P	-	-	-	-	-	-	S	-
11.2.4.2 Audio control	P	-	-	-	P	-	-	-	-	S	-
11.2.4.3 Contrast (minimum)	-	P	P	-	-	-	-	-	-	S	-
11.2.4.4 Resize text	-	P	-	-	-	-	-	-	-	-	-
11.2.4.5 Images of text	-	P	P	-	-	-	-	-	-	S	-
11.2.4.6 Reflow	-	P	-	-	-	-	-	-	-	-	-
11.2.4.7 Non-text contrast	-	P	P	-	-	-	-	-	-	S	-
11.2.4.8 Text spacing	-	P	-	-	-	-	-	-	-	P	-
11.2.4.9 Content on hover or focus	-	P	-	-	-	-	-	-	-	P	-
11.3.1.1 Keyboard	P	P	-	-	-	S	P	-	-	-	-
11.3.1.2 No keyboard trap	P	P	-	-	-	S	P	-	-	-	-
11.3.1.3 Character key shortcuts	-	-	-	-	-	-	P	P	-	S	-
11.3.2.1 Timing adjustable	P	P	-	P	P	-	P	-	-	P	-
11.3.2.2 Pause, stop, hide	P	P	-	P	P	-	P	-	-	P	-
11.3.3.1 Three flashes or below threshold	-	-	-	-	-	-	-	-	P	-	-
11.3.4.1 Document titled	P	P	-	-	-	-	P	-	-	P	-
11.3.4.2 Focus order	P	P	-	-	-	-	P	-	-	P	-
11.3.4.3 Link purpose (in context)	P	P	-	-	-	S	P	-	-	P	-
11.3.4.4 Headings and labels	P	P	-	S	-	S	P	-	-	P	-
11.3.4.5 Focus visible	P	P	-	-	-	S	P	-	-	P	-
11.3.5.1 Pointer gestures	-	-	-	-	-	-	P	P	-	P	-
11.3.5.2 Pointer cancellation	-	P	-	-	-	-	P	P	-	P	-
11.3.5.3 Label in name	-	-	-	-	-	-	P	P	-	S	-
11.3.5.4 Motion actuation	S	S	-	-	-	-	P	P	-	S	-
11.4.1.1 Language of document	P	S	-	S	S	-	-	-	-	S	-
11.4.1.2 Language of parts	P	S	-	S	S	-	-	-	-	S	-
11.4.2.1 On focus	P	P	-	-	-	-	P	-	-	P	-
11.4.2.2 On input	P	P	-	-	-	-	P	-	-	P	-

11.4.3.1 Error identification	P	P	P	-	-	-	-	-	-	P	-
11.4.3.2 Labels or instructions	P	P	-	-	-	S	S	-	-	P	-
11.4.3.3 Error suggestion	P	P	-	-	-	S	S	-	-	P	-
11.4.3.4 Error prevention (legal, financial, data)	P	P	-	-	-	-	S	-	-	P	-
11.5.1.1 Parsing	P	S	-	-	-	-	-	-	-	-	-
11.5.1.2 Name, role, value	P	P	-	-	-	-	S	-	-	-	-
11.5.1.3 Status messages	P	P	P	P	P	P	P	P	P	P	-
11.6 Caption positioning	-	-	-	P	P	-	-	-	-	S	-
11.7 Audio description timing	P	S	-	-	-	-	-	-	-	S	-
12.2.1.1.1 Non-text content (open functionality)	P	P	-	P	S	-	-	-	-	S	S
12.1.1.1.2 Non-text content (closed functionality)	P	P	-	P	S	-	-	-	-	S	S
12.2.2.1.1 Audio-only and video-only (pre-recorded - open functionality)	P	P	-	P	P	-	-	-	-	S	-
12.2.2.1.2.1 Pre-recorded audio-only (closed functionality)	-	-	-	P	P	-	-	-	-	S	-
12.2.2.1.2.2 Pre-recorded video-only (closed functionality)	P	S	-	-	-	-	-	-	-	S	-
12.2.2.2 Captions (pre-recorded)	-	-	-	P	P	-	-	-	-	S	-
12.2.2.3.1 Audio description or media alternative (pre-recorded - open functionality)	P	S	-	-	-	-	-	-	-	S	-
12.2.2.3.2 Audio description or media alternative (pre-recorded - closed functionality)	P	S	-	-	-	-	-	-	-	S	-
12.2.2.4 Captions (live)	-	-	-	P	P	-	-	-	-	S	-
12.2.2.5 Audio description (pre-recorded)	P	S	-	-	-	-	-	-	-	S	-
12.2.3.1.1 Info and relationships (open functionality)	P	S	-	-	-	-	-	-	-	S	-
12.2.3.1.2 Info and relationships (closed functionality)	P	S	-	-	-	-	-	-	-	S	-
12.2.3.2.1 Meaningful sequence (open functionality)	P	S	-	-	-	-	-	-	-	S	-
12.2.3.2.2 Meaningful sequence (closed functionality)	P	S	-	-	-	-	-	-	-	S	-
12.2.3.3 Sensory characteristics	P	P	P	P	P	-	-	-	-	S	-

12.2.3.4 Orientation	-	-	-	-	-	-	-	P	P	-	S	-
12.2.3.5.1 Identify input purpose (open functionality)	-	P	-	-	-	-	-	-	-	-	-	-
12.2.3.5.2 Identify input purpose (closed functionality)	-	P	-	-	-	-	-	-	-	-	-	-
12.2.4.1 Use of colour	P	P	P	-	-	-	-	-	-	-	S	-
12.2.4.2 Audio control	P	-	-	-	P	-	-	-	-	-	S	-
12.2.4.3 Contrast (minimum)	-	P	P	-	-	-	-	-	-	-	S	-
12.2.4.4.1 Resize text (open functionality)	-	P	-	-	-	-	-	-	-	-	-	-
12.2.4.4.2 Resize text (closed functionality)	-	P	-	-	-	-	-	-	-	-	-	-
12.2.4.5.1 Images of text (open functionality)	-	P	P	-	-	-	-	-	-	-	S	-
12.2.4.5.2 Images of text (closed functionality)	-	-	-	-	-	-	-	-	-	-	-	-
12.2.4.6 Reflow	-	P	-	-	-	-	-	-	-	-	-	-
12.2.4.7 Non-text contrast	-	P	P	-	-	-	-	-	-	-	S	-
12.2.4.8 Text spacing	-	P	-	-	-	-	-	-	-	-	P	-
12.2.4.9 Content on hover or focus	-	P	-	-	-	-	-	-	-	-	P	-
12.3.1.1.1 Keyboard (open functionality)	P	P	-	-	-	S	P	-	-	-	-	-
12.3.1.1.2 Keyboard (closed functionality)	P	P	-	-	-	S	P	-	-	-	-	-
12.3.1.2 No keyboard trap	P	P	-	-	-	S	P	-	-	-	-	-
12.3.1.4.1 Character key shortcuts (open functionality)	-	-	-	-	-	-	P	P	-	-	S	-
12.3.1.4.2 Character key shortcuts (closed functionality)	-	-	-	-	-	-	P	P	-	-	S	-
12.3.2.1 Timing adjustable	P	P	-	P	P	-	P	-	-	-	P	-
12.3.2.2 Pause, stop, hide	P	P	-	P	P	-	P	-	-	-	P	-
12.3.3.1 Three flashes or below threshold	-	-	-	-	-	-	-	-	-	P	-	-
12.3.4.1 Focus order	P	P	-	-	-	-	P	-	-	-	P	-
12.3.4.2 Link purpose (in context)	P	P	-	-	-	S	P	-	-	-	P	-
12.3.4.3 Headings and labels	P	P	-	S	-	S	P	-	-	-	P	-
12.3.4.4 Focus visible	P	P	-	-	-	S	P	-	-	-	P	-
12.3.5.1 Pointer gestures	-	-	-	-	-	-	P	P	-	-	P	-
12.3.5.2 Pointer cancellation	-	P	-	-	-	-	P	P	-	-	P	-
12.3.5.3.1 Label in name (open functionality)	-	-	-	-	-	-	P	P	-	-	S	-
12.3.5.3.2 Label in name (closed functionality)	-	-	-	-	-	-	P	P	-	-	S	-

12.3.5.4 Motion actuation	S	S	-	-	-	-	P	P	-	S	-
12.4.1.1.1 Language of software (open functionality)	P	S	-	S	S	-	-	-	-	S	-
12.4.1.1.2 Language of software (closed functionality)	P	S	-	S	S	-	-	-	-	S	-
12.4.2.1 On focus	P	P	-	-	-	-	P	-	-	P	-
12.4.2.2 On input	P	P	-	-	-	-	P	-	-	P	-
12.4.3.1.1 Error identification (open functionality)	P	P	P	-	-	-	-	-	-	P	-
12.4.3.1.2 Error Identification (closed functionality)	P	P	P	-	-	-	-	-	-	P	-
12.4.3.2 Labels or instructions	P	P	-	-	-	S	S	-	-	P	-
12.4.3.3 Error suggestion	P	P	-	-	-	S	S	-	-	P	-
12.4.3.4 Error prevention (legal, financial, data)	P	P	-	-	-	-	S	-	-	P	-
12.5.1.1 Parsing	P	S	-	-	-	-	-	-	-	-	-
12.5.1.2 Name, role, value	P	P	-	-	-	-	S	-	-	-	-
12.5.1.3 Status messages	P	P	P	P	P	P	P	P	P	P	-
12.6.2.1 Platform accessibility service support for software that provides a user interface	P	P	-	-	-	-	P	-	-	S	-
12.6.2.2 Platform accessibility service support for assistive technologies	P	P	-	-	-	-	P	-	-	S	-
12.6.2.3 Use of accessibility services	P	P	-	-	-	-	P	-	-	S	-
12.6.2.4 Assistive technology	P	P	-	-	-	-	P	-	-	S	-
12.6.2.5 Object information	P	P	-	-	-	-	P	-	-	S	-
12.6.2.6 Row, column, and headers	P	P	-	-	-	-	P	-	-	S	-
12.6.2.7 Values	P	P	-	-	-	-	P	-	-	S	-
12.6.2.8 Label relationships	P	P	-	-	-	-	P	-	-	S	-
12.6.2.9 Parent-child relationships	P	P	-	-	-	-	P	-	-	S	-
12.6.2.10 Text	P	P	-	-	-	-	P	-	-	S	-
12.6.2.11 List of available actions	P	P	-	-	-	-	P	-	-	S	-
12.6.2.12 Execution of available actions	P	P	-	-	-	-	P	-	-	S	-
12.6.2.13 Tracking of focus and selection attributes	P	P	-	-	-	-	P	-	-	S	-
12.6.2.14 Modification of focus and selection attributes	P	P	-	-	-	-	P	-	-	S	-
12.6.2.15 Change notification	P	P	-	-	-	-	P	-	-	S	-

12.6.2.16 Modifications of states and properties	P	P	-	-	-	-	P	-	-	S	-
12.6.2.17 Modifications of values and text	P	P	-	-	-	-	P	-	-	S	-
12.7.1 User control of accessibility features	P	P	P	P	P	-	P	-	-	-	-
12.7.2 No disruption of accessibility features	P	P	P	P	P	-	P	-	-	-	-
12.8 User preferences	-	P	P	-	-	-	-	-	-	S	-
12.9.2 Content technology	P	P	P	P	P	S	P	P	P	P	S
12.9.3 Accessible content creation	P	P	P	P	P	S	P	P	P	P	S
12.9.4 Preservation of accessibility information in transformations	P	P	P	P	P	S	P	P	P	P	S
12.9.5 Repair assistance	P	P	P	P	P	S	P	P	P	P	S
12.9.6 Templates	P	P	P	P	P	S	P	P	P	P	S
13.1.1 Accessibility and compatibility features	P	P	P	P	P	-	P	-	-	S	-
13.1.2 Accessible documentation	P	P	P	P	P	S	P	P	P	P	S
13.2.2 Information on accessibility and compatibility features	P	P	P	P	P	-	P	-	-	S	-
13.2.3 Effective communication	-	-	-	P	P	P	-	-	-	S	-
13.2.4 Accessible documentation	P	P	P	P	P	S	P	P	P	P	S
14.1.2 Text relay services	-	-	-	P	P	P	-	-	-	S	-
14.1.3 Sign relay services	-	-	-	P	P	P	-	-	-	-	-
14.1.4 Lip-reading relay services	-	-	-	P	P	P	-	-	-	-	-
14.1.5 Captioned telephony services	-	-	-	P	P	P	-	-	-	-	-
14.1.6 Speech to speech relay services	-	-	-	-	-	-	-	-	-	P	-
14.2 Access to relay services	-	-	-	P	P	P	-	-	-	S	-
14.3 Access to emergency services	-	-	-	P	P	P	-	-	-	S	-

A.2 Interpretation of Table A.2

A.2.1 General

Table A.2 illustrates the impact a specific accessibility issue might have on different users. It does this by mapping the requirements in the standard with the functional performance principles in clause 5. A requirement can be Primary (P) or Secondary (S).

The technical requirements are listed in a vertical column and the functional performance principles horizontally.

Requirements	5.2.1 WV	5.2.2 LV	5.2.3 WPC	5.2.4 WH	5.2.5 LH	5.2.6 WVC	5.2.7 LMS	5.2.8 LR	5.2.9 PST	5.2.10 LC	5.2.11 P
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The table indicates which functional performance principles, and corresponding user needs, are covered by each requirement.

A.2.2 Example

A.2.2.1 Step 1

For requirement 6.1.3.11, which relates to the possibility of changing the volume when the user is listening in a private headset, the table can be read like this:

Requirements	5.2.1 WV	5.2.2 LV	5.2.3 WPC	5.2.4 WH	5.2.5 LH	5.2.6 WVC	5.2.7 LMS	5.2.8 LR	5.2.9 PST	5.2.10 LC	5.2.11 P
6.1.3.11 Private listening volume	P	S	-	-	S	-	-	-	-	S	S

The requirement for private listening volume has a "P" for primary support in the column "WV", which stands for "without vision".

Requirements	5.2.1 WV	5.2.2 LV	5.2.3 WPC	5.2.4 WH	5.2.5 LH	5.2.6 WVC	5.2.7 LMS	5.2.8 LR	5.2.9 PST	5.2.10 LC	5.2.11 P
6.1.3.11 Private listening volume	P	S	-	-	S	-	-	-	-	S	S

This means that private listening volume supports the functional performance principles for users who cannot see. In other words, the possibility for the user to control the volume when listening via a private headset is necessary for blind users.

A.2.1.2 Step 2

The third column shows that, for users with low vision, the possibility to control the volume when listening via a private headset is not as necessary as for blind users, it has an S for Secondary, where the first column had a P for Primary

Requirements	5.2.1 WV	5.2.2 LV	5.2.3 WPC	5.2.4 WH	5.2.5 LH	5.2.6 WVC	5.2.7 LMS	5.2.8 LR	5.2.9 PST	5.2.10 LC	5.2.11 P
6.1.3.11 Private listening volume	P	S	-	-	S	-	-	-	-	S	S

Secondary support means that some users in this group may use the accessibility feature in specific situations.

A.2.1.3 Step 3

In this way it is possible to assess the impact on functional performance principles if a particular requirement is not met.

Requirements	5.2.1 WV	5.2.2 LV	5.2.3 WPC	5.2.4 WH	5.2.5 LH	5.2.6 WVC	5.2.7 LMS	5.2.8 LR	5.2.9 PST	5.2.10 LC	5.2.11 P
6.1.3.11 Private listening volume	P	S	-	-	S	-	-	-	-	S	S

The fourth column considers users who are color blind; the requirement on private listening volume is not marked at all. Of course, the possibility of changing the volume when listening in private headset is nice to have for all users, no matter their ability to distinguish between colors, but the listening volume does not compensate for the color blindness.

A.2.1.4 Step 4

The table can also be read the other way around:

Since blind users cannot see the screen, they need an alternative way to use the interface. If this alternative is audio via private headset, blind users need the possibility to change the volume.

Requirements	5.2.1 WV	5.2.2 LV	5.2.3 WPC	5.2.4 WH	5.2.5 LH	5.2.6 WVC	5.2.7 LMS	5.2.8 LR	5.2.9 PST	5.2.10 LC	5.2.11 P
6.1.3.11 Private listening volume	P	S	-	-	S	-	-	-	-	S	S

Some users who can see, but not well, need or prefer to use audio as an alternative way to use the interface. If this alternative is audio via private headset, some low vision users will benefit from the possibility to change the volume.

Requirements	5.2.1 WV	5.2.2 LV	5.2.3 WPC	5.2.4 WH	5.2.5 LH	5.2.6 WVC	5.2.7 LMS	5.2.8 LR	5.2.9 PST	5.2.10 LC	5.2.11 P
6.1.3.11 Private listening volume	P	S	-	-	S	-	-	-	-	S	S

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