भारतीय मानक
Indian Standard

IS 17802 (Part 1) : 2021

(Reaffirmed 2022)

आइसीटी उत्पादों और सेवाओं के लिए अभिगम्यता

भाग 1 अपेक्षाऐं

Accessibility for the ICT Products and Services

Part 1 Requirements

ICS 35.240.80, 11.180

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December 2021   **Price Group 16**

Active Assisted Living Sectional Committee, LITD 35

FOREWORD

This Indian Standard(Part 1) was adopted by the Bureau of Indian Standards, after the draft is finalized by the Active Assisted Living Sectional Committee, had been approved by the Electronics and Information Technology Division Council.

This Indian Standard is published in two parts. The other part in this series is:

           Part 2 Determination of conformance

The development of the Indian standard on Accessibility for ICT Products and Services was initiated by the Ministry of Electronics and Information Technology (MeitY) under the 'Knowledge and Resource Centre for Accessibility in ICT (KAI) Project' led by the Centre for Development of Advanced Computing (CDAC). During the preparation of this standard, several consultation meetings and discussions were held with a wide cross section of stakeholders including Ministry of Electronics and Information Technology (MeitY), Department of Empowerment of Persons with Disabilities (DEPwD), Ministry of Housing and Urban Affairs (MoHUA) and Department of Telecommunications (DoT). This Indian Standard is developed to provide a set of accessibility requirements that specify how to make content accessible, primarily for people with disabilities and also for all the end users.

The present Indian Standard (Part 1) is the technical adoption of the European Standard EN 301 549 v 3.2.1 "Accessibility requirements for ICT products and services" developed by CEN, CENELEC and ETSI. Modifications have been made to adapt it to India and are limited to referencing the relevant regulatory context (Rights of Persons with Disabilities Act, 2016) and the official languages of India. The technical coverage is otherwise identical.

The requirements mentioned in this standard (Part 1) relating to the other departments under Government of India (GOI) are given in Annex A (*informative*).

The idea on the further resources for cognitive accessibility is given in Annex D (*Informative*).

Guidance to the users of this standard in providing the overview and also specifying the usage of this standard is given in Annex E (*informative*).

The Composition of the panel, LITD 35/P1 and the sectional committee, LITD 35 responsible for the formulation of this standard is given at Annex F.

CONTENTS

IS 17802 (Part 1) : 2021

iv

Page No.

LIST OF TABLES

LIST OF FIGURES

0 INTRODUCTION

0.1 Background

Driven by progress in technology and its increasing adoption in all walks of life, twenty-first century has been witnessing unparalleled opportunities for Information and Communication Technology (ICT) to create impact on the lives of citizens, economies and society. One dimension of the challenge for a country like India is its size and diversity, demanding scale and scope of technology interventions. Connecting and empowering over one hundred and thirty crore citizens through the growing use of ICT, with underlying innovation is progressively leading to transformation of India as a knowledge-based economy. ICT provides opportunities for faster economic growth, a better quality of life and greater inclusion and access.

By building the digital edifice (infrastructure, services and digitalization) through a number of measures, a huge opportunity has been opened up for ICT to play a significant role in India's economy and society. These range from provision of digital identity - Aadhaar; Digital payments supported by National Payment Corporation of India (NPCI); Financial inclusion through JAM (Jan Dhan, Aadhar and Mobile) trinity; Increase in penetration of Broadband, Mobile and Internet (the number of mobile users and internet users in India are second in the world); setting up of lakhs of Common Service Centres (CSCs) to ensure citizen services delivery at the last mile; Health insurance services to 50 crore needy people through 'Ayushman Bharat (PMJAY)'; Ayushman Bharat Digital Mission (ABDM); Telemedicine services through e-Sanjeevani; and delivery of digital e-Governance services – under an overall bouquet of policy, programs and promotional measures of 'Digital India' of the Government of India. In turn, the above measures are supported by initiatives of state governments and a domestic IT software products and services industry that is servicing the world, a fast-growing start-up ecosystem that is demonstrating vibrancy and a mobile manufacturing and electronics industry that is growing steadily.

ICT is becoming an all-encompassing aspect for common people enabling them to perform duties effectively and productively on a daily basis. Driven by the rapid pace of technology and innovation, ICT based solutions are increasingly becoming digital and are rapidly being adopted by all key sectors-from banking and finance and e-commerce to education, health, agriculture, travel and more. Other national initiatives such as Smart Cities and Skill India are creating the momentum for wide sections of the population to adopt ICT solutions for greater efficiency, effectiveness, ease of life, and business velocity. It is in this context that it is very important that accessibility aspects are enabled by such a powerful ICT medium towards inclusive development.

Accessibility in ICT is a measure of the extent to which a product or a service can be used by the Persons with Disabilities (PwDs) as effectively as it can be used by others. The concept of accessibility relates to the needs and abilities of diverse sections of PwDs and is expressed in degrees to which such needs are satisfied through ICT-from fully accessible to partially accessible or completely inaccessible for a specified user group. The more the number of people who can use an ICT product or service and the more tasks they can carry out effectively with it, the more is the ICT product or the service considered accessible.

Increased accessibility brings benefits for users, producers, service providers, governments and society at large. Users benefit from being able to use the product or service more effectively and independently, enjoy inclusion in society and benefit from better employment prospects. Producers and service providers benefit from additional business, legal compliance, and customer diversity. It is in this context that certain legal rights have been provided for PwDs. Governments are able to ensure compliance with the Indian legal obligations along with the obligations undertaken by it in international conventions and treaties.

Accessibility is being inclusive. By focusing on the needs and abilities of all users in all situations, it aims to include more of the users more of the time. Other terms for accessibility are Inclusive Design, Universal Design and Design for All. In times of increasing digitalization of economies and societies, Accessibility in ICT is a compelling need for pursuit of all daily activities by PwDs-from ability to conduct e-commerce and on-line banking to on-line education, on-line work, e-health, e-payment for utilities and daily needs, availing public facilities and services and more. ICT accessibility also serves the needs of senior citizens, temporarily disabled members and pregnant women.

0.2 *Rights of Persons with Disabilities Act,* 2016

India ratified the United Nations Convention on the Rights of Persons with Disabilities (CRPD) in 2007 and passed Rights of Persons with Disabilities act (RPwD act) in December 2016 which came into effect from 19th April 2017. As per the *RPwD Act* 2016, twenty-one (21) types of disabilities have been recognized and listed under physical disabilities (locomotor disability, visual impairment, hearing impairment, speech and language disability), intellectual disabilities, mental behaviour, chronic neurological conditions, blood disorders and multiple disabilities. In terms of 'International classification of Functioning, Disability and Health (ICF)', the above disabilities can, in turn, be classified into nine.

In terms of duties and responsibilities of appropriate Governments, the Act clearly states that 'The Central Government shall, in consultation with the Chief Commissioner, formulate rules for persons with disabilities laying down the standards of accessibility for the physical environment, transportation, information and communications, including appropriate technologies and systems, and other facilities and services provided to the public in urban and rural areas.

The RPwD Act further states under "Access to information and communication technology" — "the appropriate Government shall take measures to ensure that:

a) all contents available in audio, print and electronic media are in accessible format;

b) persons with disabilities have access to electronic media by providing audio description, sign language interpretation and close captioning; and

c) electronic goods and equipment which are meant for everyday use are available in universal design."

RPwD Act, 2016 also presents a strategy for public procurement of Electronics and ICT services and solutions.

Many initiatives, such as "Sugamya Bharat Abhiyan" (Accessible India Campaign), are being taken up by different Ministries and Departments of Government of India, State Governments, and other organizations for the PwDs.

0.3 Accessibility Standard in Global Perspective

While assistive devices based on ICT had come into being even in the twentieth century, the concept of "universal design" – mainstreaming of the concept in products and services to support better usability and accessibility for all have been gaining greater traction in the twenty-first century. Post emergence of Internet and World Wide Web (W3C) in early nineties, Web Accessibility Initiative (WAI) came into being by the dawn of the twenty-first century. With broad-based and global participation of experts, it has been looking at the technical means to address the needs of Web accessibility as also requirements in the form of Web Content Accessibility Guidelines (WCAG).

Thus, WCAG 1.0 came in 1999 and WCAG 2.0 came in 2008 in response to further evolution of Web technology, access devices and multi-media content. WCAG 2.0 series has been updated in 2018 with WCAG 2.1. While the focus of WAI has been on Web, W3C/WAI had produced a Working Group Note by setting up WCAG2ICT Task Force to extend its accessibility guidelines beyond Web, to non-web areas of ICT. Accessibility guidelines and techniques are based on four core principles, namely, Perceivable, Operable, Understandable and Robust (POUR). These core principles address the accessibility requirements arising out of ageing, limited learning and temporary disabilities as well.

Europe began to prepare its requirements standard on ICT accessibility from 2012 onwards through ETSI/CEN/CENELEC under EN 301 549 series and their thrust has also been similar with extended scope, but fully harmonized with WAI/WCAG. The EN 301 549 series represent a comprehensive and cohesive requirements standard, applicable for all categories of ICT, updated from time to time.

USA has also updated its standard through latest release of Section 508 of *Rehabilitation Act,* 2019 and it is harmonized with both W3C/WAI/WCAG and EN 301 549 Standards as applicable at the time of approval of the revision.

0.4 Objective of this Standard

The *RPwD Act,* 2016 envisages laying down of the standards for accessibility for information and communications, including appropriate technologies and systems, and other facilities and services provided to the public in urban and rural areas.

India has been laying down guidelines for accessibility of websites – and mobile apps, through inclusion of mandatory accessibility guidelines by National Informatics Centre (NIC) and Department of Administrative Reforms and Public Grievances (DARPG) for government sites by adoption of Guidelines for Indian Government Apps and Websites 1.0 (GIGW 1.0) in 2009 and GIGW 2.0 in 2019, in conformity with WAI/WCAG guidelines 1.0 and 2.0 respectively.

In response to *RPwD Act*, 2016, many sectors such as telecom, broadcasting, urban development, education, banking and other concerned ministries have also been undertaking stakeholder consultations for formulation afresh or updating of their accessibility requirements in respect of their sectoral applications of ICT. As a result, some of them have announced updated policies, standards and guidelines as in the case of Department of Telecommunications (DoT)/Telecom Regulatory Authority of India (TRAI), Ministry of Information and Broadcasting (MoI&B) (including in respect of Contents), Ministry of Urban Development and Ministry of Education.

In line with global trends on the development of a cohesive, consistent and cross-cutting standard on accessibility requirement for ICT products and services used in all sectors – as mentioned earlier, this standard consolidates and harmonizes current global and Indian standards and Indian user needs. In particular, it covers accessibility requirements for all web (covering text, audio, images and video) and mobile apps; closed and open system needs to operate without or with assistive technology devices; software; hardware-from desktops, laptops, mobiles and all else and including facilities; online (non-web) documents, contents and e-books; two-way voice including real-time text (RTT); ICT with video communications including TV with set-top box and remote control; support document and help-desk for ICT; and ICT providing emergency and relay services.

Indian language users of computers, internet and mobiles have dramatically grown in the recent years and one study report has indicated that they have already exceeded English language users in India. The Government of India supports the delivery of e-Governance services in Indian languages as well. Hence, this standard has catered to the accessibility requirements of Indian language users of ICT products and services in all categories.

This standard captures functional performance requirements from the set of functional disability categories and covers the technical requirements for each category of use situations in detail. These have been stated in a verifiable way to ensure testing and compliance of ICT products and services to requirements for the benefit of developers and users.

Indian Standard

ACCESSIBILITY FOR THE ICT PRODUCTS AND SERVICES

PART 1 REQUIREMENTS

1 SCOPE

This standard (Part 1) specifies the needs of people with visual, auditory, speech, physical and neurological disabilities and those with limited cognition, language, and learning applicable to ICT products and services in terms of functional performance statements. It then covers the generic technical requirements for various kinds of ICT to meet functional performance statements.

In line with the *RPwD Act* 2016, this standard covers a wide range of ICT products and services relating to information and communication, including telecom services, web-based services, electronic and print services, digital and virtual services.

This standard (Part 1) is intended to be used in the context of web based technologies, non-web technologies and those that use both. It covers software, hardware and content as well as services. The conformance criteria on test descriptions and evaluation methodology are covered in Part 2 of this standard.

2 REFERENCES

The standards or other publications given below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards or other publications are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards or other publications.

ANSI/IEEE C63.19 (2011)	American National Standard Method of Measurement of Compatibility between Wireless Communication Devices and Hearing Aids
ANSI/TIA-4965	Receive volume control requirements for digital and analogue wireline terminals
Character Encoding: 01: 2009	Character encoding standard for Indian languages, Document No: — Character Encoding: 01, Version: 1.0, November, 2009, Government of India, Department of Information Technology, Ministry of Communications and Information Technology
ETSI ETS 300 381 (Edition 1) (December 1994)	Telephony for hearing impaired people; Inductive coupling of telephone earphones to hearing aids
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
ETSI EG 201 013	Human Factors (HF); Definitions, abbreviations and symbols
ETSI ES 202 975	Human Factors (HF); Requirements for relay services
ETSI ETS 300 767	Human Factors (HF); Telephone Prepayment Cards; Tactile Identifier
ETSI TS 126 114	Universal Mobile Telecommunications System (UMTS); LTE; IP Multimedia Subsystem (IMS); Multimedia telephony; Media handling and interaction (3GPP TS 26.114)

IS 17802 (Part 1) : 2021

ETSI TS 122 173	Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; IP Multimedia Core Network Subsystem (IMS) Multimedia Telephony Service and supplementary services; Stage 1 (3GPP TS 22.173)	ISO/IEC 13066-1 : 2011	Information technology — Interoperability with assistive technology (AT) — Part 1: Requirements and recommendations for interoperability
ETSI TS 134 229	Universal Mobile Telecommunications System (UMTS); LTE; Internet Protocol (IP) multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); User Equipment (UE) conformance specification (3GPP TS 34.229)	ISO/IEC TS 20071-25 : 2017	Information technology — User interface component accessibility — Part 25: Guidance on the audio presentation of text in videos, including captions, subtitles and other on-screen text
ETSI/CEN/ CENELEC EN 301 549 (V2.1.2) (August 2018)	Accessibility requirements for ICT products and services	ISO 21542 : 2011	Building construction — Accessibility and usability of the built environment
GIGW v2.0	Guidelines for Indian Government Apps and Websites, v2.0, Feb, 2019, NIC, MeitY, GOI;	ISO/IEC Guide 71 : 2014	Guide for addressing accessibility in standards
		IS 16333 (Part 3) : 2017	Mobile phone handsets: Part 3 Indian language support for mobile phone handsets — Specific requirements (*first revision*)
Harmonized Guidelines and Space Standards for Barrier-Free Built Environment for persons with Disability and Elderly Persons, Feb-2016,		IS 16350: 2016	Enhanced Inscript Keyboard Layouts
IETF RFC 4103 (2005):	"RTP Payload for Text Conversation	IS/ISO/IEC 14496-22 : 2019	Information technology — Coding of audio-visual objects: Part 22: Open font format
ISO/IEC 40500 : 2012	Information technology — W3C Web Content Accessibility Guidelines (WCAG) 2.0	MoI&B Accessibility Standard	Accessibility Standards for Persons with Disabilities in TV Programs, 11-Sep-19, MoI&B
ISO/IEC 10646 : 2012	Information technology — Universal Coded Character Set (UCS)	Recommendation ITU-T E.161 (2001)	Arrangement of digits, letters and symbols on telephones and other devices that can be used for gaining access to a telephone network
ISO 9241-11 : 2018	Ergonomics of human-system interaction — Part 11: Usability: Definitions and concepts	Recommendation ITU-T G.722 (1988)	7 kHz audio-coding within 64 kbit/s
ISO 9241-110 : 2006	Ergonomics of human-system interaction — Part 110: Dialogue principles	Recommendation ITU-T G.722.2 (2003)	Wideband coding of speech at around 16 kbit/s using Adaptive Multi-Rate Wideband (AMR-WB)
ISO 9241-171 : 2008	Ergonomics of human-system interaction — Part 171: Guidance on software accessibility	Recommendation ITU-T V.18 (2000)	Operational and interworking requirements for DCEs operating in the text telephone mode
		Recommendation ITU-T T.140 (1988):	Protocol for multimedia application text conversation

Recommendation ITU-T F.703 (2000)	Multimedia conversational services
TIA-1083-A (2010)	Telecommunications; Telephone Terminal equipment; Handset magnetic measurement procedures and performance requirements
W3C Web Schemas/ Accessibility 2.0.	NOTE: Available at https://www.w3.org/wiki/ WebSchemas/Accessibility
WCAG2ICT	W3C Working Group Note 5 September 2013, Guidance on Applying WCAG 2.0 to Non-Web Information and Communications Technologies
WCAG 2.1 : 2018	Web Content Accessibility Guidelines (WCAG) 2.1

NOTE: Available at WCAG 2.1.

3 TERMINOLOGY AND ABBREVIATIONS

3.1 Terminology

For the purposes of this standard, the terms given in ETSI EG 201 013 and the following shall apply:

3.1.1 *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 (*source* ISO 9241-11 : 2018) .

> NOTES
> **1** Context of use includes direct use or use supported by assistive technologies.
> **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.

3.1.2 *Access Space* — Space intended to be occupied by the person, including their Assistive Technology, while they are using the product.

3.1.3 *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 — 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.

3.1.4 *Assistive Technology (AT)* — Equipment, product system, hardware, software or service that is used to increase, maintain or improve capabilities of individuals (*source* ISO/IEC Guide 71 : 2014) .

> NOTES
> **1** Assistive technology is an umbrella term that is broader than assistive products.
> **2** Assistive technology can include assistive services, and professional services needed for assessment, recommendation and provision.
> **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.

3.1.5 *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 — This is also variously described using terms such as "video description" or variants, such as "descriptive narration".

3.1.6 *Authoring Tool* — software that can be used to create or modify content

> NOTES
> **1** An authoring tool may be used by a single user or multiple users working collaboratively.
> **2** An authoring tool may be a single stand-alone application or be comprised of collections of applications.
> **3** An authoring tool may produce content that is intended for further modification or for use by end-users.

3.1.7 *Caption* — Synchronized visual and/or text alternative for both speech and non-speech audio information needed to understand the media content (*source :* WCAG 2.1).

> NOTES
> **1** This is also variously described using terms, such as "subtitles" or variants, such as "subtitles for the deaf and hard-of-hearing".
> **2** *Open Captioning* : The captioning whereby the user does not have to do anything in order to see captions for the hearing impaired' as these are an integral part of the picture and cannot be turned off [*source:* MoI&B Accessibility Standard]
> **3** *Closed Captioning* : The means by which both the audio dialogue and sound representations of audio-video content are made visible *via* onscreen text that is synchronized with the audio content on demand by the user [*source* : MoI&B Accessibility Standard].
> **4** *Sub-titling* : The captioning of dialogues whereby the user does not have to do anything in order to see such sub-titles for the hearing impaired, as these are an integral part of the picture and cannot be turned off [source: MoI&B Accessibility Standard].

3.1.8 *Closed Functionality* — Functionality that is limited by characteristics that prevent a user from attaching, installing or using assistive technology.

3.1.9 *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 (*source*: WCAG2ICT).

NOTE — 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.

3.1.10 *Context of Use* — Combination of users, goals and tasks, resources, and environment (*source*: ISO 9241-11 : 2018).

NOTE — The "environment" in a context of use includes the technical, physical, social, cultural and organizational environments.

3.1.11 *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 (*source*: WCAG2ICT).

NOTES

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

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

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 the 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.

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.

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.

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.

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

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

9 Documents may contain sub-documents.

3.1.12 *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 — 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.

3.1.13 *ICT Network* — Technology and resources supporting the connection and operation of interconnected ICT.

3.1.14 *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.

NOTES

1 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 that copy, scan, and fax documents.

2 RPwD Act, 2016 defines, "ICT includes all services and innovations relating to information and communication, including telecom services, web-based services, electronic and print services, digital and virtual services."

3.1.15 *Mechanically Operable Part* — Operable part that has a mechanical interface to activate, deactivate, or adjust the ICT

NOTE — Examples of mechanically operable parts include scanner covers, notebook docking stations and lids as well as physical switches and latches.

3.1.16 *Mechanism for Private Listening* — Auditory output designed so that only the current user can receive the sound.

NOTE — Personal headsets, directional speakers and audio hoods are examples of mechanisms for private listening.

3.1.17 *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 (*see* WCAG 2.1).

3.1.18 *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.

3.1.19 *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.

3.1.20 *Open Functionality* — Functionality that supports access by assistive technology.

NOTE — This is the opposite of closed functionality.

3.1.21 *Operable Part* — Component of ICT used to activate, deactivate, or adjust the ICT.

NOTES

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.

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.

3.1.22 *Person with Disability (PwD)* — A person with long term physical, mental, intellectual or sensory impairment which, in interaction with barriers, hinders his full and effective participation in society equally with others [*source*: RPwD Act, 2016].

3.1.23 *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 (*source*: ISO/IEC 13066-1).

NOTE — A particular software component might play the role of a platform in some situations and a client in others.

3.1.24 *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 — WCAG 2.1 uses "determined" where this definition uses "able to be read" (to avoid ambiguity with the word "determined").

3.1.25 *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.

NOTES

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 500ms. However, the actual delay will be dependent on the communication network.

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

3.1.26 *Reasonable Accommodation* — Necessary and appropriate modification and adjustments, without imposing a disproportionate or undue burden in a particular case, to ensure to persons with disabilities the enjoyment or exercise of rights equally with others [source: *RPwD Act,* 2016].

3.1.27 *Satisfies a Success Criterion* — Success criterion does not evaluate to "false" when applied to the ICT (*source*: WCAG 2.1 : 2018).

3.1.28 *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 — 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 (for example, network, auto-reception) as a single connection for purposes such as transfer.

3.1.29 *Sign Language (or Signing Language)* — A language, instead of acoustically conveyed sound patterns, uses visually transmitted sign patterns (manual communication, body language) to convey meaning simultaneously combining hand shapes, orientation and movement of the hands, arms or body, and facial expressions to fluidly express a speaker's thoughts (*source*: MoI&B accessibility standard).

3.1.30 *Sign Language Interpretation* — Sign language of the programme audio (speech and other sounds) for viewers who are hearing impaired and use sign language. Whenever reference is made to 'sign language' in the Indian context' it will refer to a variant of it called 'Indian Sign Language' (ISL) (*source* MoI&B accessibility standard).

3.1.31 *Spoken Captions/Subtitles Audio Captions/ Subtitles* — Captions/subtitles that are voiced over the audio-visual content (*source* ISO/IEC TS 20071-25).

3.1.32 *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.

NOTES

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).

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.

3.1.33 *Terminal* — Combination of hardware and/or software with which the end user directly interacts and that provides the user interface.

NOTES

1 The hardware may consist of more than one device working together for example, a mobile device and a computer.

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.

IS 17802 (Part 1) : 2021

3.1.35 *Turn-taking* **—** Ttype of organization in conversation and discourse where participants speak one at a time in alternating turns.

3.1.36 *User Agent* **—** software that retrieves and presents content for users (*source* WCAG 2.1: 2018).

> NOTES
>
> **1** Software that only displays the content contained within it is treated as software and not considered to be a user agent.
>
> **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.
>
> **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.

3.1.37 *Universal Design* — The design of products, environments, programmes and services to be usable by all people to the greatest extent possible, without the need for adaptation or specialised design and shall apply to assistive devices including advanced technologies for particular group of persons with disabilities.

3.1.38 *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 (*source* ISO 9241-110).

3.1.39 *User Interface Element* — Entity of the user interface that is presented to the user by the software (Source: ISO 9241-171).

> NOTES
>
> **1** This term is also known as "user interface component".
>
> **2** User-interface elements can be interactive or not.

3.1.40 *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.

3.1.41 *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 (*source*: WCAG 2.1: 2018).

3.2 Symbols

Void

3.3 Abbreviations

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

Abbreviation	Description
ANSI	American National Standards Institute
AT	Assistive Technology

ATAG	Authoring Tool Accessibility Guidelines (of W3C)
CPWD	Central Public Works Department
CSS	Cascading Style Sheets
DARPG	Department of Administrative Reforms and Public Grievances
DOM	Document Object Model
EU	European Union
FPS	Frames Per Second
FXML	XML-based user interface markup language
GIGW	Guidelines for Indian Government Apps and Websites
HTML	Hyper Text Markup Language
HTTP	Hyper Text Transfer Protocol
ICT	Information and Communication Technology
IETF	Internet Engineering Task Force
IMS	IP Multimedia System
INSCRIPT	Indian Script
IP	Internet Protocol
ISCII	Indian Script Code for Information Interchange
ISL	Indian Sign Language
ITU-T	International Telecommunication Union - Telecommunication standardization sector
LED	Light Emitting Device
MeitY	Ministry of Electronics and Information Technology, GoI
MoI&B	Ministry of Information and Broadcasting, GoI
MoUD	Ministry of Housing and Urban Affairs, GoI
NIC	National Informatics Centre
ODF	Open Document Format
OOXML	Office Open eXtensible Markup Language
PSTN	Public Switched Telephone Network
PwD	Person with Disabilities
QVGA	Quarter Video Graphics Array
RBI	Reserve Bank of India
RFC	Request For Comment
RPwD	*Rights of Persons with Disabilities Act*, 2016

10

RTT	Real-Time Text
SIP	Session Initiation Protocol
STQC	Standardization Testing and Quality Certification directorate, GoI
TRAI	Telecom Regulatory Authority of India, GoI
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/WAI)
WLAN	Wireless Local Access Network
XML	eXtensible Markup Language
XUL	XML User interface Language

4 FUNCTIONAL PERFORMANCE

4.1 Meeting Functional Performance Statements

The statements set out in **4.2** 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 **5** to **13** provide specific testable criteria for accessible ICT, corresponding to the user needs reflected in **4.2**.

NOTES

1 The relationship between the requirements from **5** to **13** and the functional performance statements is set out in Annex B.

2 The intent of **4.2** 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.

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 **4.2**.

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.

4.2 Functional Performance Statements

4.2.1 *Usage Without Vision*

Where ICT provides visual modes of operation, the ICT provides 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.

NOTES

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.

2 Audio, tactile and haptic user interfaces may contribute towards meeting this clause.

4.2.2 *Usage with Limited Vision*

Where ICT provides visual modes of operation, the ICT provides 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.

NOTES

1 Magnification, reduction of required field of vision and control of contrast, brightness and intensity can contribute towards meeting this clause.

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 meeting this clause.

3 Users with limited vision may also benefit from non-visual access (*see* **4.2.1**).

4.2.3 *Usage without Perception of Colour*

Where ICT provides visual modes of operation, the ICT provides 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 meeting this clause.

4.2.4 *Usage without Hearing*

Where ICT provides auditory modes of operation, the ICT provides 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.

NOTES

1 Visual and tactile user interfaces, including those based on sign language, may contribute towards meeting this clause.

2 In respective of sign language, Indian Sign Language (ISL) may be supported.

3 Captioning and Sub-titling will also contribute to meeting this clause, especially in respect of broadcast TV programs or streamed video or audio or in video conferencing meetings.

4.2.5 *Usage with Limited Hearing*

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

NOTES

1 Enhancement of the audio clarity, reduction of background noise, providing a joint monaural option, adjustment of balance

11

of both audio channels, increased range of volume and greater volume in the higher frequency range can contribute towards meeting this clause.

2 Allowing the use of Assistive Listening Devices, such as headsets with noise cancellation (connected by cable, Bluetooth or WLAN) can contribute towards meeting this clause.

3 Users with limited hearing may also benefit from non-hearing access (*see* **4.2.4**).

4.2.6 *Usage with no or Limited Vocal Capability*

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

> NOTES
>
> **1** Vocal output includes speech and other orally generated sounds, such as whistles and clicks.
>
> **2** Keyboard, pen or touch user interfaces may contribute towards meeting this clause.

4.2.7 *Usage with Limited Manipulation or Strength*

Where ICT requires manual actions, the ICT provides 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.

> NOTES
>
> **1** Examples of operations that users may not be able to perform include those that require fine motor control, path dependant gestures, pinching, twisting of the wrist, tight grasping, or simultaneous manual actions.
>
> **2** One-handed operation, sequential key entry and speech user interfaces may contribute towards meeting this clause.
>
> **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 meeting this clause.

4.2.8 *Usage with Limited Reach*

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

> NOTES
>
> **1** 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 meeting this clause.
>
> **2** Considering the differences in reach-range of ICT of Indian users, including those with disabilities, the design of public places and installation of information kiosks, ATMs, Ticketing machines and the like, needs to meet Indian user needs.

4.2.9 *Minimize Photosensitive Seizure Triggers*

Where ICT provides visual modes of operation, the ICT provides 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 meeting this clause.

4.2.10 *Usage with Limited Cognition, Language or Learning*

The ICT provides 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.

> NOTES
>
> **1** Adjustable timings, error indication and suggestion, and a logical focus order are examples of design features that may contribute towards meeting this clause.
>
> **2** Providing an audio output of the text is an example of providing support for people with limited reading abilities.
>
> **3** Providing spelling aid and word prediction of the text is an example of providing support for people with limited writing abilities.
>
> **4** Interaction with content can be made easier, and less prone to errors, by presenting tasks in steps that are easy to follow.

4.2.11 *Privacy*

Where ICT provides features for accessibility, the ICT maintains 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 meeting this clause.

4.2.12 *Support to Indian Languages*

Accessibility support shall be provided in respect of all the features, functions or contents provided by the ICT, in respect of all the Indian languages figuring in the eighth schedule of the Indian constitution. This is essential to support users with disabilities to understand, comprehend, use and operate the functions of the ICT at the same level or better in these languages.

5 GENERIC REQUIREMENTS

5.1 Closed Functionality

5.1.1 *Introduction (Informative)*

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.

5.1.2 *General*

5.1.2.1 *Closed functionality*

Where ICT has closed functionality, it shall meet the requirements set out in clauses 5.2 to 13, as applicable. Indian language requirements shall be met through support to UNICODE (*source* ISO/IEC 10646), display (*source* IS/ISO/IEC 14496-22 : 2009), inputting of text in mobile phones (*source* IS 16333-3), encoding and Enhanced INSCRIPT keyboard layouts (*source* IS 16350 : 2016) and encoding standards (*source* Character Encoding: 01: 2009)

> NOTES
>
> **1** ICT may close some, but not all, of its functionalities. Only the closed functionalities have to conform to the requirements of **5.1**.
>
> **2** The requirements within this clause replace those in **5.2** to **13** 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).
>
> **3** Whenever an Indian language is chosen by the user, the device or the closed function shall support the same.

5.1.2.2 *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 conform to the generic requirements of **5.1.3** to **5.1.6** as applicable. Personal headsets and personal induction loops shall not be classed as assistive technology for the purpose of this clause.

5.1.3 *Nonvisual Access*

5.1.3.1 *Non-visual 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.

> NOTES
>
> **1** Non-visual access may be in an audio form, including speech, or in haptic form or in tactile form, such as braille for deaf- blind users.
>
> **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.
>
> **3** Whenever an Indian language is chosen by the user, non-visual access shall also support the same Indian language.

5.1.3.2 *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.

> NOTES
>
> **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.
>
> **2** An industry standard connection could be a wireless connection.
>
> **3** Some users may benefit from the provision of an inductive loop.
>
> **4** 'Where an Indian language .is chosen by the user, auditory output shall also be provided in the same language chosen by the user.

5.1.3.3 *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.

> NOTES
>
> **1** Many people who are legally blind still have visual ability, and use aspects of the visual display even if it cannot be fully comprehended. 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.
>
> **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.

5.1.3.4 *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.

> NOTES
>
> **1** It is best practice to allow the user to pause speech output rather than just allowing them to interrupt it.
>
> **2** It is best practice to allow the user to repeat only the most recent portion rather than requiring play to start from the beginning.

5.1.3.5 *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.

5.1.3.6 *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 pure 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.

> NOTE — Such non-text content shall be in the same Indian language chosen by the user.

5.1.3.7 *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.

> NOTES
>
> 1 This speech output can take the form of an audio description or an auditory transcript of the video content.
>
> 2 This speech output shall be in the same Indian language chosen by the user.

5.1.3.8 *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.

> NOTES
>
> 1 Masking characters are usually displayed for security purposes and include, but are not limited to asterisks representing personal identification numbers.
>
> 2 Unmasked character output might be preferred when closed functionality is used, for example, in the privacy of the user's home. A warning highlighting privacy concerns might be appropriate to ensure that the user has made an informed choice.
>
> 3 The masked and unmasked character outputs shall be in the same Indian language chosen by the user.

5.1.3.9 *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.

> NOTES
>
> 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.
>
> 2 Non-private output might be preferred when closed functionality is used, for example, in the privacy of the user's home. A warning highlighting privacy concerns might be appropriate to ensure that the user has made an informed choice.
>
> 3 Privacy preserving output shall also be in the same language chosen by the user. The warning highlighting privacy shall also be in the same language.

5.1.3.10 *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.

5.1.3.11 *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.

5.1.3.12 *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 (-29 dBPaA).

> NOTE — For noisy environments, 65 dBA may not be sufficient.

5.1.3.13 *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.

5.1.3.14 *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, the present 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.

5.1.3.15 *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.

NOTE — The speech output of the error message shall be in the same Indian language chosen by the user.

5.1.3.16 *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.

NOTES

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

2 The speech output may be provided in the same language chosen by the user, immaterial of the language of the text contained in the receipt, ticket or other outputs.

3 In respect of transactions involving payment gateways, the choice of Indian language by the user shall be respected during the entire course of the transaction.

5.1.4 *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

$\psi =$ the subtended angle in degrees;

$H =$ the height of the text; and

$D =$ the viewing distance.

D and H are expressed in the same units.

NOTES

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

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

3 In respect of Indian language as a choice of display, chosen sentence spacing and fonts have to ensure that successive sentences and characters do not stick to each other, obstructing a clear reading of characters and words (source IS/ISO/IEC 14496-22 : 2015).

Table 1 Relationship between Maximum Design Viewing Distance and Minimum Character Height at the Limit of Subtended Angle

[*Clause* 5.1.4, Note 2]

Minimum Subtended Angle	Maximum Design Viewing Distance	Minimum Character Height
	100 mm	1.2 mm
	200 mm	2.4 mm
	250 mm	3.1 mm
	300 mm	3.7 mm
0.7 degrees	350 mm	4.3 mm
	400 mm	4.9 mm
	450 mm	5.5 mm
	500 mm	6.1 mm
	550 mm	6.7 mm
	600 mm	7.3 mm

5.1.5 *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.

NOTES

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

2 Whenever an Indian language is supported, the visual output and auditory information shall be in the same language as the one chosen by the user.

5.1.6 *Operation without Keyboard Interface*

5.1.6.1 *Closed functionality*

Where ICT functionality is closed to keyboards or keyboard interfaces, all functionality shall be operable without vision as required by **5.1.3**.

5.1.6.2 *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.

5.1.7 *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.

NOTE — The alternative input shall be in the same Indian language chosen by the user.

Fig. 1 Relationship Between Minimum Character Height
and Maximum Design Viewing Distance

5.2 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.

5.3 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.

> NOTES
>
> **1** Alternative means of user identification or for control of ICT could be non-biometric or biometric.
>
> **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.

5.4 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.

5.5 Operable Parts

5.5.1 *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.

5.5.2 *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 — One way of meeting this requirement is by making the operable parts tactilely discernible.

5.6 Locking or Toggle Controls

5.6.1 *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.

16

NOTES

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

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.

5.6.2 *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. The state before and after the toggle action should be presented in accessible form.

NOTES

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

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.

5.7 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 2 s; and

b) the key repeat rate shall be adjustable down to one character per 2 s.

5.8 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 s.

5.9 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.

5.10 Support to Indian Languages

Where ICT offers a feature, functionality or content in any one or more of the twenty-two Indian languages mentioned in Schedule 8 of the Indian constitution, accessibility support shall be provided to the users who opt to use the ICT in any one or more of the Indian languages chosen by the user. These shall cover all aspects of perceivability, operability, understandability

and robustness as covered in **5.1** to **5.9** above and elsewhere in this standard in 6 to 13, wherever applicable, and in closed systems and open systems.

5.10.1 *Indian Language Requirements*

The Indian Language Requirements shall be met through support to UNICODE (*source* ISO/IEC 10646), display (*source* IS/ISO/IEC 14496-22 : 2015), inputting of text in mobile phones (*source* IS 16333-3), encoding and Enhanced INSCRIPT keyboard layouts (*source* IS 16350 : 2016) and encoding standards (Source: Character Encoding: 01: 2009)

NOTES

1 In respect of desktop/laptop, enhanced INSCRIPT keyboard layouts covered in IS 16350 : 2016 is the preferred standard.

2 As regards the system input, output, storage and display, the ICT product/system/service shall follow the internationalization (i18n), localization (l10n), globalization (g11n), localizability (l12y) standards/guidelines; they shall support internationalization in domain names and mail servers; they shall follow Indian language standards. It is desirable to provide inputting and display of text in the same Indian language of choice of the user for speech. For Indian languages, Indian standards related to keyboard and fonts shall be provided and made use of. There are many file formats, storage standards etc. Herein, it is expected that for Indian languages text storage unicode encoding to be used in **5.11** support to Indian Sign Language (ISL)

5.11 Indian Sign Language

In respect of use of sign language to address the needs of hearing impaired, Indian Sign Language (ISL) shall be used.

5.12 Captioning and Sub-titling

In respect of use of captioning and sub-titling to address the needs of hearing impaired, especially in support of broadcast video or streaming video content or in support of video conferencing platforms, the standard issued by Ministry of Information and Broadcasting may be followed.

6 ICT WITH TWO-WAY VOICE COMMUNICATION

6.1 Audio Bandwidth for Speech

Where ICT provides two-way voice communication, in order to provide good audio quality, that 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.

NOTES

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

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.

6.2 Real-Time Text (RTT) Functionality

6.2.1 *RTT Provision*

6.2.1.1 *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.

NOTES

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.

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.

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

4 When an Indian language setting is selected by the user, the text shall also be in the same language as the language of the voice.

5 Feature phones may not be able to support RTT capabilities.

6.2.1.2 *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.

NOTES

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).

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.

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 (that is, 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).

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).

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.

6 Whenever the speech, RTT and Chat are taking place, it is desirable to provide text in the same Indian language supported

and chosen by the user for speech, unless it is agreed to by convention or by an understanding prior to the conversation that a common language will be used for text and chat, that may not be the spoken language of the users.

6.2.2 *Display of RTT*

6.2.2.1 *Visually distinguishable display*

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

NOTES

1 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.

2 Whenever the desired Indian language of the user is offered, the language chosen by the user shall be preserved in the display, unless the sender and receiver agree to use a common language for the RTT.

6.2.2.2 *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.

NOTES

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

2 Where one or more desired Indian languages of the user are offered, the function of programmatically determining the language of the text by the sender and receiver shall be provided for better coordination of communication.

6.2.2.3 *Speaker identification*

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

NOTES

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

2 Whenever the desired Indian language of the user is offered, speaker identification for RTT shall be in the chosen Indian language of the user.

6.2.2.4 *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.

NOTES

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.

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

6.2.3 *Interoperability*

Where ICT with RTT functionality interoperates with other ICT with RTT functionality (as required by **6.2.1.1**) 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.

NOTES

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.

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.

6.2.4 *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 500ms 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.

NOTES

1 For character-by-character input, the "smallest reliably composed unit of text entry" would be a character.

2 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).

3 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.

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

6.3 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.

NOTE — Whenever the desired Indian language of the user is offered, Caller ID shall also be in the Indian language chosen by the user.

6.4 Alternatives to 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.

NOTES

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.

2 Solutions capable of handling audio, RTT and video media could satisfy the above requirement.

3 Solutions shall preferably use the same Indian language chosen by the user, be it audio or text.

6.5 Video Communication

6.5.1 *General (Informative)*

Clause **6.5** (video communications) 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 × 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.

Increasing the resolution and frame rate further improves both sign language (especially finger spelling) and lip reading, with frame rate being more important than resolution.

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.

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 for example, network delay and video processing. For this reason, a testable requirement on minimum values for overall delay cannot be produced.

> NOTES
>
> **1** 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.
>
> **2** Indian sign language shall only be used in conformance to MoI&B accessibility standard.
>
> **3** Often, network capabilities, especially in rural areas and with mobile or 2G usage, can pose challenges making it difficult to meet these performance requirements. In such cases, alternate means, such as captioning or sub-titling may be used.

6.5.2 *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.

6.5.3 *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.

6.5.4 *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.

> NOTE — Recent research shows that, if audio leads the video, the intelligibility suffers much more than the reverse.

6.5.5 *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.

> NOTES
>
> **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.

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

6.5.6 *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.

> NOTES
>
> **1** The speaker ID can be in the same location as for voice users for multiparty calls.
>
> **2** This mechanism might be triggered manually by a user, or automatically where this is technically achievable.
>
> **3** Display of speaker ID in Sign Language shall conform to Indian Sign Language (ISL).

6.6 Alternatives to 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 these facilities for:

a) audible information, without the use of hearing;

b) spoken commands, without the use of speech; and

c) visual information, without the use of vision.

> NOTES
>
> **1** Solutions capable of generating real-time captions or handling RTT could satisfy the above requirement.
>
> **2** Solutions supporting Indian languages, shall offer captions in the same Indian language supported and chosen by the user and shall be as per this standard.

7 ICT WITH VIDEO CAPABILITIES

7.1 Caption Processing Technology

7.1.1 *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.

> NOTES
>
> **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.
>
> **2** If a Braille device is connected, the ICT should provide an option to display captions on the Braille device.
>
> **3** Clause **7.1.1** refers to the ability of the player to display captions. Clauses **9.1.2.2, 10.1.2.2** and **11.1.2.2** refer to the provision of captions for the content (the video).
>
> **4** Captioning and sub-titling shall preferably be in the same Indian language chosen by the user or in the language agreed to by all participants.
>
> **5** Captioning shall be as per the MoI & B Accessibility standard.

7.1.2 *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; and

b) Live captions: within 100 ms of the availability of the caption to the player.

7.1.3 *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 **7.1.1** and **7.1.2**.

Additional presentational aspects of the text such as screen position, text colours, text style and text fonts may convey meaning, based on regional conventions. Altering these presentational aspects could change the meaning and should be avoided wherever possible.

7.1.4 *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.

NOTES

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 meeting this requirement.

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

3 Characteristics of Captions and subtitles shall be as per the MoI&B accessibility standard and, where Indian language is offered, shall be in the same language chosen by the user.

7.1.5 *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.

NOTES

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.

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

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

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

7.2 Audio Description Technology

7.2.1 *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 satisfy this requirement if the ICT enables the user to select and play several audio tracks.

NOTES

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

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.

3 Where Indian language is offered, the audio descriptions shall be in the same Indian language supported by the system and chosen by the user.

7.2.2 *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.

7.2.3 *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 **7.2.1** and **7.2.2**.

7.3 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 (that is, the number of steps to complete the task) as the primary media controls.

NOTES

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

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.

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

4 Where Indian language is offered, user controls for captions and audio description shall be in the same language supported by the system and chosen by the user.

8 HARDWARE

8.1 General

8.1.1 *Generic Requirements*

The "generic requirements" of clause 5 also apply to ICT that is hardware.

NOTES

1 Ability to input Indian language content and display Indian language content shall be provided in devices, especially desktops, laptops, notebooks, display boards, ATM's, kiosks, digital sign boards, and mobile devices (*source* IS/ISO/IEC 14496-22 : 2019, IS 16350 : 2016).

2 Choice of fonts considered appropriate for Indian languages for accessibility shall be offered for users with accessibility needs (*source* IS/ISO/IEC 14496-22 : 2019)

3 For website, SAKAL BHARATI font or similar font having same height and stem width for all Indian script is recommended.

8.1.2 *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.

NOTES

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

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

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

8.1.3 *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.

8.2 Hardware Products with Speech Output

8.2.1 *Speech Volume Gain*

8.2.1.1 *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 18dB.

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

8.2.1.2 *Incremental volume control*

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

8.2.2 *Magnetic Coupling*

8.2.2.1 *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.

NOTES

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

2 Magnetic coupling is also known as inductive coupling for T-coil.'

8.2.2.2 *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.

8.3 Stationary ICT

8.3.0 *General*

This standard 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" (typically kiosks and cabins), and where there are external reach ranges relevant for operating the stationary ICT.

8.3.1 *Forward or Side Reach*

Stationary ICT shall conform to either **8.3.2** or **8.3.3**.

NOTES

1 This does not preclude conforming to both clauses.

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 8.3 does not apply to the accessibility of the physical environment external to the ICT.

3) The dimensions specified in the Harmonized Guidelines and Space Standards for Barrier-Free Built Environment for persons with Disability and Elderly Persons, Feb-16 to be referred.

8.3.2 *Forward Reach*

8.3.2.1 *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 be located no higher than 1200 mm above the floor of the access space. This is shown in Fig. 2.

8.3.2.2 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 be located no lower than 380 mm above the floor of the access space. This is shown in Fig. 2.

8.3.2.3 *Obstructed forward reach*

8.3.2.3.1 *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 access at least one of each type of operable part.

8.3.2.3.2 *Obstructed (< 500 mm forward reach)*

Where the stationary ICT has an obstruction, which is an integral part of the ICT and which is less than 500 mm, the forward reach to at least one of each type of operable part shall be no higher than 1000 mm above the floor contact of the ICT. This is shown in Fig. 3 (a).

8.3.2.3.3 *Obstructed (< 600 mm forward reach)*

Where the stationary ICT has an obstruction, which is an integral part of the ICT and which is not less than 500 mm but is less than 600 mm maximum, the forward reach to at least one of each type of operable part shall be no higher than 1100 mm above the floor contact of the ICT. This is shown in Fig. 3 (b).
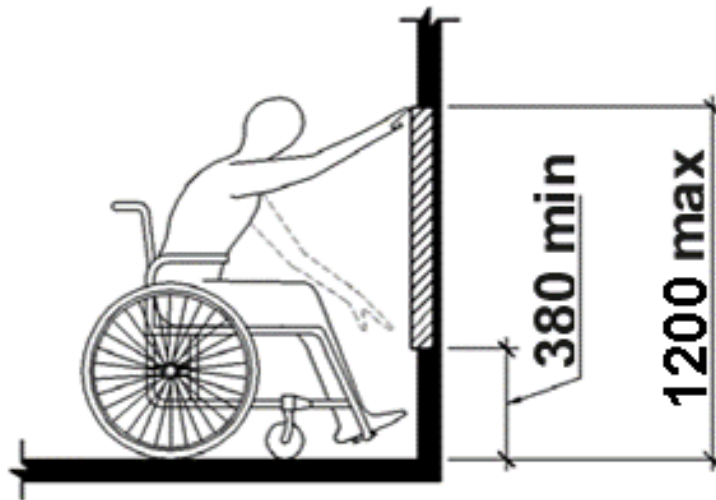
Fig. 2 Unobstructed Forward Reach
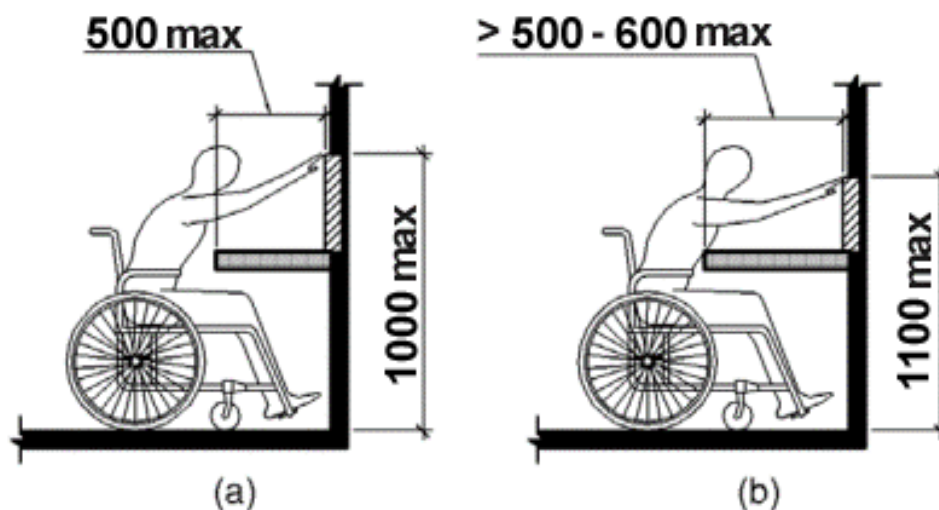
Fig. 3 Obstructed Forward Reach

23

8.3.2.4 *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 900 mm wide.

8.3.2.5 *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:

  a) extend 635 mm maximum under the whole obstacle;

  b) provide a space at least 430 mm deep and 230 mm above the floor under the obstacle; and

  c) extend no more than 150 mm beyond any obstruction at 230 mm above the floor. This is shown in Fig. 4.

8.3.2.6 *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:

  a) extend no more than 635 mm under the obstacle at a height of 230 mm above the floor;

  b) extend at least 280 mm under the obstacle at a height of 230 mm above the floor;

  c) 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.

This is shown in Fig. 5.

FIG.4 TOE CLEARANCE

FIG. 5 KNEE CLEARANCE

24

8.3.3 *Side Reach*

8.3.3.1 *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. This is shown in Fig. 6.

8.3.3.2 *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. This is shown in Fig. 6.

8.3.3.3 *Obstructed side reach*

8.3.3.3.1 *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 each to at least one of each type of operable part shall be no higher than 1 220 mm above the floor of the access space. This is shown in Fig. 7 (a).

8.3.3.3.2 *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 be no higher than 1170 mm above the floor of the access space. This is shown in Fig. 7 (b).

8.3.4 *Clear Floor or Ground Space*

8.3.4.1 *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 no steeper than 1 : 12.

Exceptions:

If the change in floor level is less than or equal to 6, 4 mm (¼ inch) the change may be vertical as shown in Fig. 8.

If the change in floor level is less than or equal to 13 mm (½ inch) the change may have a slope not steeper than 1:2 as shown in Fig. 9.

8.3.4.2 *Clear floor or ground space*

Where stationary ICT has an operating area within it, it shall provide a clear floor area that has the minimum dimensions of 900 mm by 1 200 mm from which to operate the ICT. This is shown in Fig 10.

8.3.4.3 *Approach*

8.3.4.3.1 *General*

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

8.3.4.4 *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. This is shown in Fig.11.

8.3.4.5 *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 1525 mm wide. This is shown in Fig. 12.
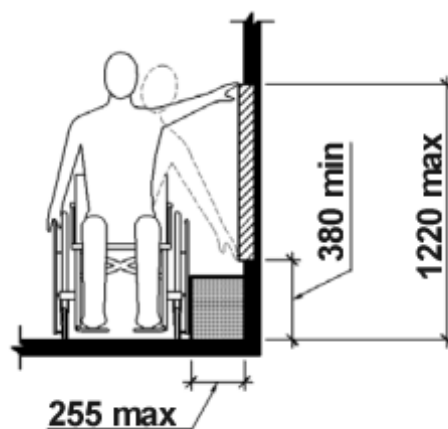
FIG. 6 UNOBSTRUCTED SIDE REACH

25
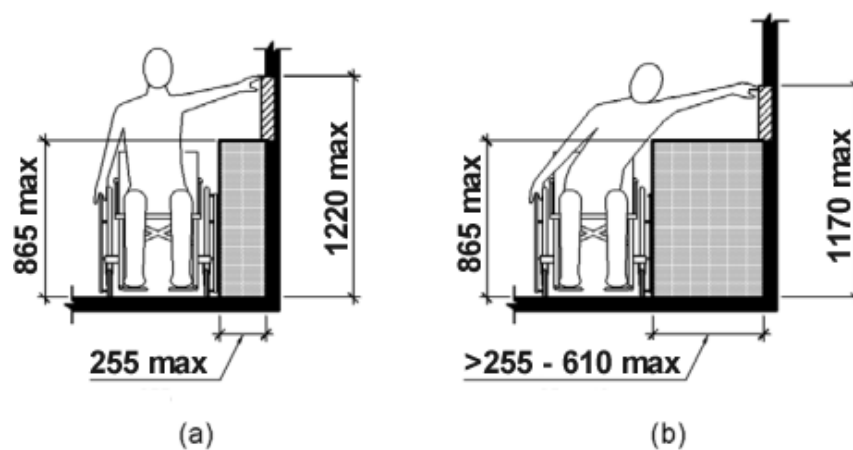
FIG. 7 OBSTRUCTED HIGH SIDE REACH (EN)
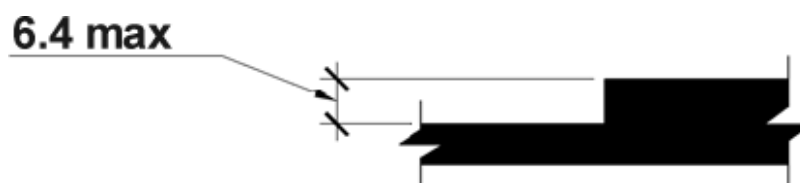
FIG. 8 VERTICAL CHANGE IN LEVEL
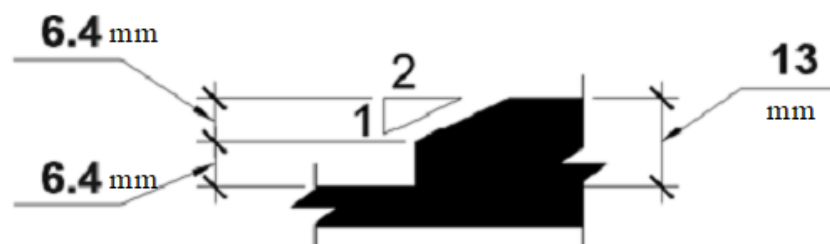
FIG.9 BEVELLED CHANGE IN LEVEL
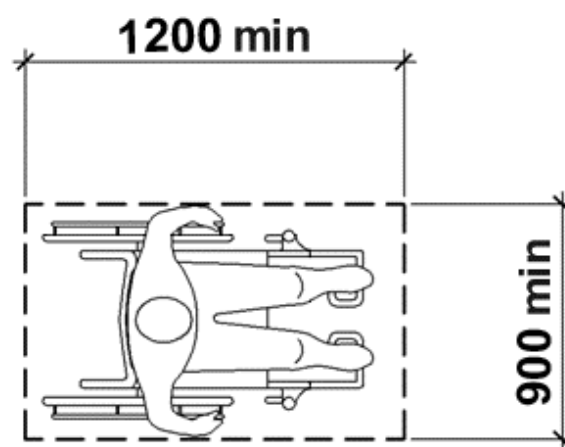
FIG. 10 CLEAR FLOOR OR GROUND SPACE

26
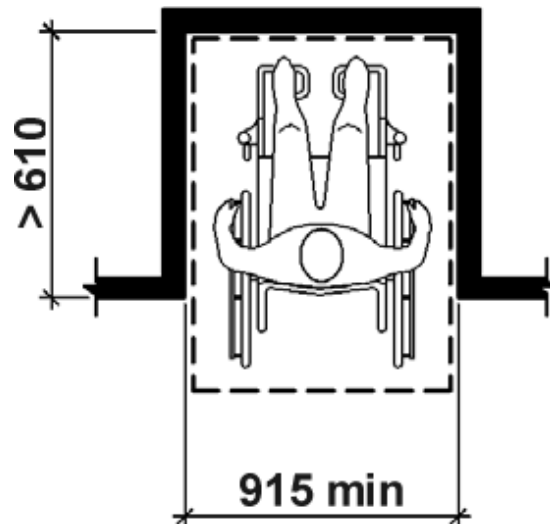
FIG. 11 MANOEUVRING CLEARANCE IN AN ALCOVE, FORWARD APPROACH
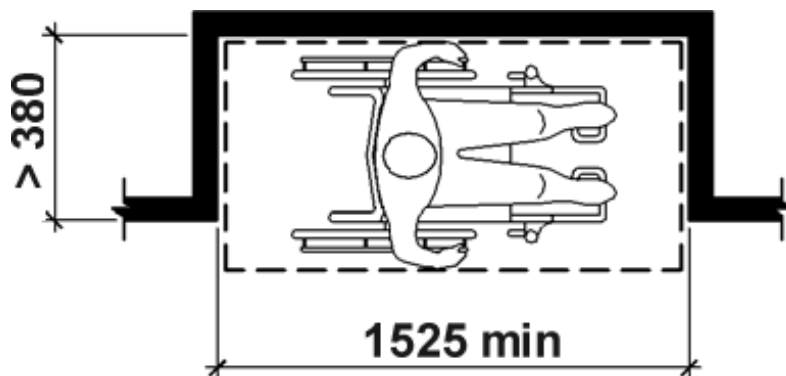
FIG. 12 MANOEUVRING CLEARANCE IN AN ALCOVE, PARALLEL APPROACH

8.3.5 *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 1015 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.

8.3.6 *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 should require that the dimensions of the installed ICT conform to **8.3.2** to **8.3.5** of this standard.

8.4 Mechanically Operable Parts

8.4.1 *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.

> NOTES
>
> **1** Recommendation ITU-T E.161 describes the 12-key telephone keypad layout and provides further details of the form of tactile markers.
>
> **2** Where soft key based keyboard is used in public terminals like petrol pumps, PoS terminals and the like - as is becoming increasingly common, provision may be made for an alternate way of location and navigation within the key board space to assist the user about the keys such as through provision of audio - also ensuring privacy through headphone support while entering privacy respecting input.

27

8.4.2 *Operation of Mechanical Parts*

8.4.2.1 *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.

8.4.2.2 *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 — ISO 21542 : 2011 Building Construction-Accessibility and Usability of the Built Environment recommends a value between 2.5 and 5 Newtons.

8.4.3 *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.

> NOTE — ETSI ETS 300 767 defines suitable tactile indications for plastic cards.

8.5 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.

9 WEB

9.0 General (Informative)

Requirements in **9** apply to web pages (as defined in **3.1**) including:

a) Conformance with W3C Web Content Accessibility Guidelines (WCAG 2.0) Level AA is equivalent to conforming with clauses **9.1.1**, **9.1.2**, **9.1.3.1** to **9.1.3.3**, **9.1.4.1** to **9.1.4.5**, **9.2.1.1**, **9.2.1.2**, **9.2.2**, **9.2.3**, **9.2.4**, **9.3**, **9.4.1.1**, **9.4.1.2** and the conformance requirements of **9.6** of of this standard.

b) Conformance with W3C Web Content Accessibility Guidelines (WCAG 2.1) Level AA is equivalent to conforming with all of **9.1** to **9.4** and the conformance requirements of **9.6** of this standard.

c) Requirements for non-web documents and non-web software are given in **10** and **11** respectively.

> NOTE
>
> **1** When evaluating web sites, 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.
>
> **2** WCAG 2.0 is identical to ISO/IEC 40500:2012: "Information technology-W3C Web Content Accessibility Guidelines (WCAG) 2.0".

a) The requirements in **9.1** to **9.4** are written using the concept of satisfying success criteria (defined in **3.1**). 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.

3 For example, a web page that does not contain pre-recorded audio content in synchronized media will automatically satisfy WCAG success criterion 1.2.2 (captions - pre-recorded) and, in consequence, will also conform to **9.1.2.2**.

a) In addition to Level AA success criteria, the web content accessibility guidelines also include success criteria for Level AAA. These are listed in **9.5** of this standard. Web authors and procurement accessibility specialists are encouraged to 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.

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 satisfy all Level AAA success criteria for some content".

5 "Void" clauses have been inserted in order to maintain alignment with the numbering of WCAG 2.1 Level A and Level AA success criteria.

6 Multilingual aspect of the web site must be considered in Indian context. The metadata related to accessibility services must also be created in at least one of the languages of the main content. If the website is multilingual, then corresponding multilingual metadata must also be provided.

9.1 Perceivable

9.1.1 *Text Alternatives*

9.1.1.1 *Non-text content*

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

9.1.2 *Time-based Media*

9.1.2.1 *Audio-only and video-only (pre-recorded)*

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

9.1.2.2 *Captions (pre-recorded)*

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

9.1.2.3 *Audio description or media alternative (pre-recorded)*

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

9.1.2.4 *Captions (live)*

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

9.1.2.5 *Audio description (pre-recorded)*

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

9.1.3 *Adaptable*

9.1.3.1 *Info and relationships*

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

9.1.3.2 *Meaningful sequence*

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

9.1.3.3 *Sensory characteristics*

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

9.1.3.4 *Orientation*

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

9.1.3.5 *Identify input purpose*

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

9.1.4 *Distinguishable*

9.1.4.1 *Use of colour*

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

9.1.4.2 *Audio control*

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

9.1.4.3 *Contrast (minimum)*

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

9.1.4.4 *Resize text*

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

9.1.4.5 *Images of text*

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

9.1.4.6 *Void*

9.1.4.7 *Void*

9.1.4.8 *Void*

9.1.4.9 *Void*

9.1.4.10 *Reflow*

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

9.1.4.11 *Non-text Contrast*

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

9.1.4.12 *Text spacing*

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

NOTE — For Indian languages, text spacing shall be as per the font standard specified (*source* IS/ISO/IEC 14496-22 : 2019).

9.1.4.13 *Content on hover or focus*

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

9.2 Operable

9.2.1 *Keyboard Accessible*

9.2.1.1 *Keyboard*

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

NOTE — In respect of Indian languages, keyboard layout may be as specified in the standard.

9.2.1.2 *No keyboard trap*

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

9.2.1.3 *Void*

9.2.1.4 *Character key shortcuts*

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

9.2.2 *Enough Time*

9.2.2.1 *Timing adjustable*

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

9.2.2.2 *Pause, stop, hide*

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

9.2.3 *Seizures and Physical Reactions*

9.2.3.1 *Three flashes or below threshold*

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

9.2.4 *Navigable*

9.2.4.1 *Bypass blocks*

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

9.2.4.2 *Page titled*

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

9.2.4.3 *Focus order*

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

9.2.4.4 *Link purpose (in context)*

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

9.2.4.5 *Multiple ways*

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

9.2.4.6 *Headings and labels*

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

9.2.4.7 *Focus visible*

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

9.2.5 *Input Modalities*

9.2.5.1 *Pointer gestures*

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

9.2.5.2 *Pointer cancellation*

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

9.2.5.3 *Label in name*

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

9.2.5.4 *Motion actuation*

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

9.3 Understandable

9.3.1 *Readable*

9.3.1.1 *Language of page*

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

9.3.1.2 *Language of parts*

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

9.3.2 *Predictable*

9.3.2.1 *On focus*

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

9.3.2.2 *On input*

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

9.3.2.3 *Consistent navigation*

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

9.3.2.4 *Consistent identification*

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

9.3.3 *Input assistance*

9.3.3.1 *Error identification*

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

9.3.3.2 *Labels or instructions*

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

9.3.3.3 *Error suggestion*

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

9.3.3.4 *Error prevention (legal, financial, data)*

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

9.4 Robust

9.4.1 *Compatible*

9.4.1.1 *Parsing*

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

9.4.1.2 *Name, role, value*

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

9.4.1.3 *Status messages*

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

9.5 WCAG 2.1 AAA Success Criteria

In addition to the Level AA success criteria, included in **9.1** to **9.4**, the web content accessibility guidelines include success criteria for Level AAA. These are listed in Table 2. Web authors and procurement accessibility specialists are encouraged to 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 satisfy all Level AAA Success Criteria for some content".

9.6 WCAG Conformance Requirements

Where ICT is a web page, it shall satisfy 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.

Table 2 WCAG 2.1 Level AAA Success Criteria

(*Clause* 9.5)

Sl No.	Guideline	Success Criterion Number	Success Criteria Name
(1)	(2)	(3)	(4)
i)	Time-based media	1.2.6	Sign Language (Pre-recorded)
ii)	Time-based media	1.2.7	Extended Audio Description (Pre-recorded)
iii)	Time-based media	1.2.8	Media Alternative (Pre-recorded)
iv)	Time-based media	1.2.9	Audio-only (Live)
v)	Adaptable	1.3.6	Identify Purpose
vi)	Distinguishable	1.4.6	Contrast (Enhanced)
vii)	Distinguishable	1.4.7	Low or No Background Audio
viii)	Distinguishable	1.4.8	Visual Presentation
ix)	Distinguishable	1.4.9	Images of Text (No Exception)
x)	Keyboard Accessible	2.1.3	Keyboard (No Exception)
xi)	Enough time	2.2.3	No Timing
xii)	Enough time	2.2.4	Interruptions
xiii)	Enough time	2.2.5	Re-authenticating
xiv)	Enough time	2.2.6	Timeouts
xv)	Seizures and physical reactions	2.3.2	Three Flashes
xvi)	Seizures and physical reactions	2.3.3	Animation form Interactions
xvii)	Navigable	2.4.8	Location
xviii)	Navigable	2.4.9	Link Purpose (Link Only)
xix)	Navigable	2.4.10	Section Headings
xx)	Input modalities	2.5.5	Target Size
xxi)	Input modalities	2.5.6	Concurrent Input Mechanisms
xxii)	Readable	3.1.3	Unusual Words
xxiii)	Readable	3.1.4	Abbreviations
xxiv)	Readable	3.1.5	Reading Level
xxv)	Readable	3.1.6	Pronunciation
xxvi)	Predictable	3.2.5	Change on Request
xxvii)	Input assistance	3.3.5	Help
xxviii)	Input assistance	3.3.6	Error Prevention (All)

NOTES

1 A web page that meets all requirements of **9.1** to **9.4**, or where a Level AA conforming alternate version (as defined in WCAG 2.1) is provided, will meet conformance requirement 1.

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".

3 Conformance requirement 5 states that all content on the page, including content that is not otherwise relied upon to meet conformance, meets clauses **9.1.4.2**, **9.2.1.2**, **9.2.2.2** and **9.2.3.1**.

10 NON-WEB DOCUMENTS

10.0 General (Informative)

Requirements in **10** 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 (that is, the present clause applies to downloadable documents).

Clause **9** 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.

NOTES

1 Some examples of 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.

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.

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 **11**.

4 The requirements for content that is part of software, can be found in **11**.

5 The success criteria set out in **10** are intended to harmonize with the Working Group Note produced by the W3C's WCAG2ICT Task Force.

6 "Void" clauses have been inserted in order to maintain alignment of the numbering in **9**, **10** and **11**.

7 Requirements in **10** 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.

8 It is best practice to provide meta data on the accessibility of the document within or separate to the document using web schemas/accessibility 2.0.

9 Documents in Indian languages shall be supported for accessibility (*see* **5.10**).

10.1 Perceivable

10.1.1 *Text Alternatives*

10.1.1.1 *Non-text content*

Where ICT is a non-web document, it shall satisfy 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.

10.1.2 *Time-based Media*

10.1.2.1 *Audio-only and video-only (pre-recorded)*

Where ICT is a non-web document, it shall satisfy 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.

10.1.2.2 *Captions (pre-recorded)*

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

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".

10.1.2.3 *Audio description or media alternative (pre-recorded)*

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

NOTES

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

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

10.1.2.4 *Captions (live)*

Where ICT is a non-web document, it shall satisfy 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".

10.1.2.5 *Audio description (pre-recorded)*

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

NOTES

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

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

10.1.3 *Adaptable*

10.1.3.1 *Info and relationships*

Where ICT is a non-web document, it shall satisfy 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.

10.1.3.2 *Meaningful sequence*

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

10.1.3.3 *Sensory characteristics*

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

10.1.3.4 *Orientation*

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

10.1.3.5 *Identify input purpose*

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

10.1.4 *Distinguishable*

10.1.4.1 *Use of colour*

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

10.1.4.2 *Audio control*

Where ICT is a non-web document, it shall satisfy the document success criterion as given below.

Document success criterion for Audio control:

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.

NOTES

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.

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 5: Non-Interference" and adding note 1.

10.1.4.3 *Contrast (minimum)*

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

10.1.4.4 *Resize text*

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

NOTES

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

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

3 It is best practice to use only fonts that allow for scaling without loss of quality (for example, pixelized presentation). This applies in particular to embedded fonts.

10.1.4.5 *Images of text*

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

10.1.4.6 *Void*

10.1.4.7 *Void*

10.1.4.8 *Void*

10.1.4.9 *Void*

10.1.4.10 *Reflow*

Where ICT is a non-web document, it shall satisfy the document success criterion as given below.

NOTE — Information originally contained in some tables where the table format was not informational in nature have been converted into text for better accessibility through screen readers.

Document success criterion for reflow

Content can be presented without loss of information or functionality, and without requiring scrolling in two dimensions for:

a) Vertical scrolling content at a width equivalent to 320 CSS pixels; and

b) 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.

> NOTES
>
> **1** 320 CSS pixels is equivalent to a starting viewport width of 1 280 CSS pixels wide at 400 percent zoom. For documents which are designed to scroll horizontally (for example, with vertical text), the 256 CSS pixels is equivalent to a starting viewport height of 1 024 pixels at 400 percent zoom.
>
> **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.
>
> **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.

10.1.4.11 *Non-text contrast*

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

10.1.4.12 *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 satisfy WCAG 2.1 Success Criterion 1.4.12 Text spacing.

10.1.4.13 *Content on hover or focus*

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

10.2 Operable

10.2.1 *Keyboard Accessible*

10.2.1.1 *Keyboard*

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

10.2.1.2 *No keyboard traps*

Where ICT is a non-web document, it shall satisfy the document success criterion as given below.

Document success criterion for No keyboard trap:

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.

> NOTES
>
> **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.
>
> **2** Standard exit methods may vary by platform. For example, on many desktop platforms, the Escape key is a standard method for exiting.
>
> **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 5: 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".

10.2.1.3 *Void*

10.2.1.4 *Character key shortcuts*

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

10.2.2 *Enough Time*

10.2.2.1 *Timing adjustable*

Where ICT is a non-web document, it shall satisfy the document success criterion as given below.

Document success criterion for Timing adjustable:

For each time limit that is set by the document, at least one of the following is true:

a) *Turn off* — The user is allowed to turn off the time limit before encountering it;

b) *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;

c) *Extend* — The user is warned before time expires and given at least 20 s 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;

d) *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;

e) *Essential Exception* — The time limit is essential and extending it would invalidate the activity; or

f) *20 Hour Exception* — The time limit is longer than 20 h.

> NOTES
>
> **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.
>
> **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.

10.2.2.2 *Pause, stop, hide*

Where ICT is a non-web document, it shall satisfy the document success criterion as given below.

Document success criterion: Pause, stop, hide

For moving, blinking, scrolling, or auto-updating information, all of the following are true:

a) *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

b) *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.

NOTES

1 For requirements related to flickering or flashing content, refer to WCAG 2.1 Guideline 2.3.

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.

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.

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.

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 5: 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".

10.2.3 *Seizures and Physical Reactions*

10.2.3.1 *Three flashes or below threshold*

Where ICT is a non-web document, it shall satisfy the document success criterion as given below.

Document success criterion for three flashes or below threshold:

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.

NOTES

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.

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 5: Non-Interference" and with note 1 above re-drafted to avoid the use of the word "must".

10.2.4 *Navigable*

10.2.4.1 *Void*

NOTES

1 The related web page requirement "Bypass blocks" does not apply to single documents, but to a specific definition of "sets of documents" that are rare.

2 Although not a requirement, the ability to bypass blocks of content that are repeated within documents is generally considered best practice and addresses user needs.

10.2.4.2 *Document titled*

Where ICT is a non-web document, it shall satisfy the document success criterion as given below.

Document success criterion for Document titled:

Documents have titles that describe topic or purpose.

NOTES

1 The name of a document (for example, document, media file) is a sufficient title if it describes the topic or purpose.

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.

10.2.4.3 *Focus Order*

Where ICT is a non-web document, it shall satisfy the document success criterion as given below.

Document success criterion for 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".

10.2.4.4 *Link purpose (in context)*

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

10.2.4.5 *Void*

> NOTE — The related web page requirement "Multiple ways" does not apply to single documents, but to a specific definition of "sets of documents" that are rare.

10.2.4.6 *Headings and labels*

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

10.2.4.7 *Focus visible*

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

10.2.5 *Input Modalities*

10.2.5.1 *Pointer gestures*

Where ICT is a non-web document, it shall satisfy the success criterion as given below.

Document success criterion for 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.

> NOTES
>
> **1** This requirement applies to documents that interpret pointer actions (that is, this does not apply to actions that are required to operate the user agent or assistive technology).
>
> **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.

10.2.5.2 *Pointer cancellation*

Where ICT is a non-web document, it shall satisfy the success criterion as given below.

Document success criterion for Pointer cancellation:

For functionality that can be operated using a single pointer, at least one of the following is true:

   a) *No Down-Event* — The down-event of the pointer is not used to execute any part of the function;

   b) *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;

   c) *Up Reversal* — The up-event reverses any outcome of the preceding down-event; and

   d) *Essential* — Completing the function on the down-event is essential.

> NOTES
>
> **1** Functions that emulate a keyboard or numeric keypad key press are considered essential.
>
> **2** This requirement applies to a document that interprets pointer actions (that is, this does not apply to actions that are required to operate the user agent or assistive technology).
>
> **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.

10.2.5.3 *Label in name*

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

10.2.5.4 *Motion actuation*

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

10.3 Understandable

10.3.1 *Readable*

10.3.1.1 *Language of document*

Where ICT is a non-web document, it shall satisfy the Document success criterion as given below.

Document success criterion for 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".

10.3.1.2 *Language of parts*

Where ICT is a non-web document, it shall satisfy the document success criterion as given below.

Document success criterion for 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.

> NOTES
>
> **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.
>
> **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.
>
> **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.

10.3.2 *Predictable*

10.3.2.1 *Onfocus*

Where ICT is a non-web document, it shall satisfy 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 (for example, 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 (for example, 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.

10.3.2.2 *On input*

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

10.3.2.3 *Void*

NOTE — The related web page requirement "Consistent navigation" does not apply to single documents, but to a specific definition of "sets of documents" that are rare.

10.3.2.4 *Void*

NOTE — The related web page requirement "Consistent identification" does not apply to single documents, but to a specific definition of "sets of documents" that are rare.

10.3.3 *Input Assistance*

10.3.3.1 *Error identification*

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

10.3.3.2 *Labels or instructions*

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

10.3.3.3 *Error suggestion*

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

10.3.3.4 *Error prevention (legal, financial, data)*

Where ICT is a non-web document, it shall satisfy the document success criterion as given below.

Document success criterion for error prevention (legal, financial, data):

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:

a) *Reversible* — Submissions are reversible.

b) *Checked* — Data entered by the user is checked for input errors and the user is provided an opportunity to correct them.

c) *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 "documents".

10.4 Robust

10.4.1 *Compatible*

10.4.1.1 *Parsing*

Where ICT is a non-web document, it shall satisfy the document success criterion as given below.

Document success criterion for 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.

NOTES

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.

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.

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.

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.

10.4.1.2 *Name, role, value*

Where ICT is a non-web document, it shall satisfy the document success criterion as given below.

Document success criterion for 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.

NOTES

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.

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.

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.

10.4.1.3 *Status messages*

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

10.5 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.

10.6 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.

11 SOFTWARE

11.0 General (Informative)

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.

NOTES

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.

2 The requirements for web content, including software that is web content, can be found in **9**.

3 The requirements for documents that may be presented by user agents, can be found in **10**.

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 **5** or **11**.

Requirements in clauses **11.1** to **11.5** apply to software:

f) that is not a web page; and

g) not embedded in web pages nor used in the rendering or functioning of the page.

Clause 9 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 **11.1** to **11.5** have different versions for open or closed functionality. In those cases, the corresponding clause will be divided into two sub-clauses.

The success criteria set out in **11.1** to **11.5** are intended to harmonize with the W3C Working Group Note produced by the W3C's WCAG2ICT Task Force.

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.

6 "Void" clauses have been inserted in order to maintain alignment of the numbering in clauses **9, 10** and **11**.

7 Indian language support may be provided for software developers and their development of user interfaces in Indian languages. Relevant clause of Section may also be referred to for details.

11.1 Perceivable

11.1.1 *Text Alternatives*

11.1.1.1 *Non-text content*

11.1.1.1.1 *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 satisfy 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.

11.1.1.1.2 *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 **5.1.3.6** (speech output for non-text content).

11.1.2 *Time-based Media*

11.1.2.1 *Audio-only and video-only (pre-recorded)*

11.1.2.1.1 *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 satisfy 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.

11.1.2.1.2 *Audio-only and video-only (pre-recorded-closed functionality)*

11.1.2.1.2.1 *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 requirement **5.1.5** (visual output for auditory information).

11.1.2.1.2.2 *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 **5.1.3.7** (speech output for video information).

11.1.2.2 *Captions (pre-recorded)*

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

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".

11.1.2.3 *Audio description or media alternative (pre-recorded)*

11.1.2.3.1 *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 satisfy the WCAG 2.1 Success Criterion 1.2.3 Audio Description or Media Alternative (Pre-recorded).

NOTES

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

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

3 If an Indian language has been chosen by the developer or is needed for fulfilling a user requirement of language, the alternative audio may also be in the same language.

11.1.2.3.2 *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 requirement **5.1.3.7** (speech output for video information).

11.1.2.4 *Captions (live)*

Where ICT is non-web software that provides a user interface, it shall satisfy 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".

11.1.2.5 *Audio description (pre-recorded)*

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

NOTES

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

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

3 Where a user interface has to display an Indian language, the audio description may also be in the same language.

11.1.3 *Adaptable*

11.1.3.1 *Info and relationships*

11.1.3.1.1 *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 satisfy 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* also **11.5** interoperability with assistive technology).

11.1.3.1.2 *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.

NOTES

1 Many people who are legally blind still have visual ability, and use aspects of the visual display even if it cannot be fully comprehended. 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.

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.

11.1.3.2 *Meaningful sequence*

11.1.3.2.1 *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 satisfy the WCAG 2.1 Success Criterion 1.3.2 Meaningful Sequence.

11.1.3.2.2 *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.

> NOTES
>
> 1 Many people who are legally blind still have visual ability, and use aspects of the visual display even if it cannot be fully comprehended. 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.
>
> 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.

11.1.3.2.3 *Sensory characteristics*

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

11.1.3.2.4 *Orientation*

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

11.1.3.2.5 *Identify input purpose*

11.1.3.2.5.1 *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 satisfy the WCAG 2.1 Success Criterion 1.3.5 Identify Input Purpose.

11.1.3.2.5.2 *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.

11.1.4 *Distinguishable*

11.1.4.1 *Use of colour*

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

11.1.4.2 *Audio control*

Where ICT is non-web software that provides a user interface, it shall satisfy the Software success criterion as given below.

Software success criterion for audio control:

If any audio in a software plays automatically for more than 3 s, 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.

> NOTES
>
> 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.
>
> 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 5: Non-Interference" and adding note 1.

11.1.4.3 *Contrast (minimum)*

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

11.1.4.4 *Resize text*

11.1.4.4.1 *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 satisfy the WCAG 2.1 Success Criterion 1.4.4 Resize Text.

> NOTES
>
> 1 Content for which there are software players, viewers or editors with a 200 percent zoom feature would automatically meet this success criterion when used with such players, unless the content will not work with zoom.
>
> 2 This success criterion is about the ability to allow users to enlarge the text on screen at least up to 200 percent without needing to use assistive technologies. This means that the application provides some means for enlarging the text 200 percent (zoom or otherwise) without loss of content or functionality or that the application works with the platform features that meet this requirement.

11.1.4.4.2 *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 requirement mentioned in **5.1.4** (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 present clause in a closed environment may place a much heavier burden on the content author.

11.1.4.5 *Images of text*

11.1.4.5.1 *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 satisfy the WCAG 2.1 Success Criterion 1.4.5 Images of Text.

11.1.4.5.2 *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 requirement **5.1.3.6** (speech output for non-text content).

11.1.4.6 *Void*

11.1.4.7 *Void*

11.1.4.8 *Void*

11.1.4.9 *Void*

11.1.4.10 *Reflow*

Where ICT is non-web software that provides a user interface, it shall satisfy the Software success criterion as given below.

Software success criterion for reflow:

Content can be presented without loss of information or functionality, and without requiring scrolling in two dimensions for:

  a) Vertical scrolling content at a width equivalent to 320 CSS pixels; and

  b) 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.

> NOTES
>
> **1** 320 CSS pixels is equivalent to a starting viewport width of 1280 CSS pixels wide at 400 percent zoom. For non-web software which are designed to scroll horizontally (for example, with vertical text), the 256 CSS pixels is equivalent to a starting viewport height of 1 024 px at 400 percent zoom.
>
> **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.

> **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.

11.1.4.11 *Non-text contrast*

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

11.1.4.12 *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 satisfy WCAG 2.1 Success Criterion 1.4.12 Text spacing.

> NOTE — In respect of Indian languages, fonts and typography that provide adequate spacing between adjacent characters may be used as default or given as a choice.

11.1.4.13 *Content on hover or focus*

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

11.2 Operable

11.2.1 *Keyboard Accessible*

11.2.1.1 *Keyboard*

11.2.1.1.1 *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 satisfy 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.

11.2.1.1.2 *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 requirement mentioned in **5.1.6.1** (operation without keyboard interface: Closed functionality).

11.2.1.1.3 *No keyboard trap*

Where ICT is non-web software that provides a user interface, it shall satisfy the Software success criterion as given below.

Software success criterion for No keyboard trap:

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.

NOTES

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.

2 Standard exit methods may vary by platform. For example, on many desktop platforms, the Escape key is a standard method for exiting.

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 5: Non-Interference" and with the addition of Note 2 above and with Note 1 above re-drafted to avoid the use of the word "shall".

11.2.1.1.4 *Void*

11.2.1.1.5 *Character key shortcuts*

11.2.1.1.5.1 *Character key shortcuts (open functionality)*

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

11.2.1.1.5.2 *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 **5.1.6.1** (operation without keyboard interface: Closed functionality).

11.2.2 *Enough Time*

11.2.2.1 *Timing adjustable*

Where ICT is non-web software that provides a user interface, it shall satisfy the Software success criterion as given below.

Software success criterion for Timing adjustable:

For each time limit that is set by the software, at least one of the following is true:

a) *Turn off* — The user is allowed to turn off the time limit before encountering it;

b) *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;

c) *Extend* — The user is warned before time expires and given at least 20 s 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;

d) *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;

e) *Essential Exception* — The time limit is essential and extending it would invalidate the activity; or

f) *20 H Exception* — The time limit is longer than 20 h.

NOTES

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.

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.

11.2.2.2 *Pause, stop, hide*

Where ICT is non-web software that provides a user interface, it shall satisfy the Software success criterion as given below.

Software success criterion for Pause, stop, hide:

For moving, blinking, scrolling, or auto-updating information, all of the following are true:

a) *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.

b) *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.

NOTES

1 For requirements related to flickering or flashing content, refer to WCAG 2.1 Guideline 2.3.

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).

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.

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.

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.

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 5: 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.

11.2.3 *Seizures and Physical Reactions*

11.2.3.1 *Three flashes or below threshold*

Where ICT is non-web software that provides a user interface, it shall satisfy the Software success criterion as given below.

Software success criterion for 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.

> NOTES
>
> **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).
>
> **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 5: Non-Interference" and with note 1 above re-drafted to avoid the use of the word "must".

11.2.4 *Navigable*

11.2.4.1 *Void*

> NOTES
>
> **1** The related web page requirement "Bypass blocks" does not apply to single software programs, but to a specific definition of "sets of software programs" that are extremely rare.

> **2** Although not a requirement, it is generally considered best practice, and to address user needs, to be able to bypass blocks of content that are repeated within software.

11.2.4.2 *Void*

> NOTES
>
> **1** The related web page requirement "Page titled" does not apply to single software programs, but to a specific definition of "sets of software programs" that are extremely rare.
>
> **2** Although the name of a software product could be a sufficient title if it describes the topic or purpose, software names are trademarked and trademark names cannot by law be descriptive names. It is not practical to make software names both unique and descriptive.

11.2.4.3 *Focus order*

Where ICT is non-web software that provides a user interface, it shall satisfy the Software success criterion as given below.

Software success criterion for 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".

11.2.4.4 *Link purpose (in context)*

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

11.2.4.5 *Void*

> NOTE — The related web page requirement for "multiple ways" applies to "Sets" of web pages. In software, the equivalent to "sets of web pages" would be "sets of software", but these are extremely rare and an equivalent is not included in this clause on software requirements.

11.2.4.6 *Headings and labels*

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

> NOTE — 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.

11.2.4.7 *Focus visible*

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

11.2.5 *Input Modalities*

11.2.5.1 *Pointer gestures*

Where ICT is non-web software that provides a user interface, it shall satisfy the Software success criterion as given below.

Software success criterion for 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.

> NOTES
>
> **1** This requirement applies to non-web software that interprets pointer actions (that is, this does not apply to actions that are required to operate the user agent or assistive technology).
>
> **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.

11.2.5.2 *Pointer cancellation*

Where ICT is non-web software that provides a user interface, it shall satisfy the Software success criterion as given below.

Software success criterion for Pointer cancellation:

For functionality that can be operated using a single pointer, at least one of the following is true:

a) *No Down-Event* — The down-event of the pointer is not used to execute any part of the function.

b) *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.

c) *Up Reversal* — The up-event reverses any outcome of the preceding down-event.

d) *Essential* — Completing the function on the down-event is essential.

> NOTES
>
> **1** Functions that emulate a keyboard or numeric keypad key press are considered essential.
>
> **2** This requirement applies to non-web software that interprets pointer actions (that is, this does not apply to actions that are required to operate the user agent or assistive technology).
>
> **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.

11.2.5.3 *Label in name*

11.2.5.3.1 *Label in name (open functionality)*

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

11.2.5.3.2 *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 5.1.3.3 (Auditory output correlation).

11.2.5.4 *Motion actuation*

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

11.3 Understandable

11.3.1 *Readable*

11.3.1.1 *Language of software*

11.3.1.1.1 *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 satisfy the software success criterion as given below.

Software success criterion for Language of software:

The default human language of software can be programmatically determined.

> NOTES
>
> **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.
>
> **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.

11.3.1.1.2 *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 **5.1.3.14** (Spoken languages).

11.3.1.2 *Void*

> NOTE — To apply the related web page requirement for "Language of parts" to software would require the marking-up of all text in all locations within the software. This would be impossible so an equivalent is not included in this clause on software requirements.

11.3.2 *Predictable*

11.3.2.1 *On focus*

Where ICT is non-web software that provides a user interface, it shall satisfy 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 (for example, 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 (for example, 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.

11.3.2.2 *On input*

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

11.3.2.3 *Void*

> NOTE — The related web page requirement for "consistent navigation" applies to "Sets" of web pages. While consistency within software is desirable, "sets of software" in the same sense as "sets of web pages", are extremely rare and an equivalent is not included in this clause on software requirements.

11.3.2.4 *Void*

> NOTE — The related web page requirement for "consistent identification" applies to "sets" of web pages. In software, the equivalent to "sets of web pages" would be "sets of software", but these are extremely rare and an equivalent is not included in this clause on software requirements.

11.3.3 *Input Assistance*

11.3.3.1 *Error identification*

11.3.3.1.1 *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 satisfy the WCAG 2.1 Success Criterion 3.3.1 Error Identification.

11.3.3.1.2 *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 **5.1.3.15** (non-visual error identification).

11.3.3.2 *Labels or instructions*

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

11.3.3.3 *Error suggestion*

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

11.3.3.4 *Error prevention (legal, financial, data)*

Where ICT is non-web software that provides a user interface, it shall satisfy the Software success criterion as given below.

Software success criterion for 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:

a) *Reversible* — Submissions are reversible.

b) *Checked* — Data entered by the user is checked for input errors and the user is provided an opportunity to correct them.

c) *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".

11.4 Robust

11.4.1 *Compatible*

11.4.1.1 *Parsing*

11.4.1.1.1 *Parsing (open functionality)*

Where ICT is non-web software that provides a user interface and that supports access to any assistive technologies, it shall satisfy the success criterion as given below.

Software success criterion for Parsing:

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.

> NOTES
>
> **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.
>
> **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.

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, and

(b) by assistive technologies using DOM APIs of user agents for these document formats.

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.

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.

11.4.1.1.2 *Parsing (closed functionality)*

Not applicable.

> NOTE — Where ICT is non-web software that provides a user interface, which is closed to all assistive technology it does not have to meet the "Parsing" success criterion mentioned under **11.4.1.1.1** because the intent of this success criterion is to provide consistency so that different user agents or assistive technologies will yield the same result.

11.4.1.2 *Name, role, value*

11.4.1.2.1 *Name, role, value (open functionality)*

Where ICT is non-web software that provides a user interface and that supports access to any assistive technologies, it shall satisfy the Software success criterion as given below.

Software success criterion for 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.

> NOTES
>
> **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.
>
> **2** For conforming to this success criterion, it is usually best practice 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).

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.

11.4.1.2.2 *Name, role, value (closed functionality)*

Not applicable.

> NOTE — Where ICT is non-web software that provides a user interface, which is closed to all assistive technology it does not have to meet the "Name, role, value" Software success criterion mentioned under **11.4.1.2.1** because this success criterion requires information in a programmatically determinable form.

11.4.1.3 *Status messages*

11.4.1.3.1 *Status messages (open functionality)*

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

11.4.1.3.2 *Status messages (closed functionality)*

Not applicable.

11.5 Interoperability with assistive technology

11.5.1 Closed Functionality

Where the closed functionality of software conforms to **5.1** (closed functionality) it shall not be required to conform with **11.5.2** to **11.5.2.17**.

11.5.2 *Accessibility Services*

11.5.2.1 *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 **11.5.2.5** to **11.5.2.17** is supported within the software environment, the platform software should support that requirement. For example, selection attributes from **11.5.2.14** (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.

> NOTES
>
> **1** These define the minimum functionality of software providing user interfaces when using platform services.
>
> **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.
>
> **3** User interface services that provide accessibility support by default are considered to be part of the services provided to

conform to this clause (for example, the service for creating a new user interface element provides role, state, boundary, name and description).

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.

5 Within specific programming environments, the technical attributes associated with the user interface properties described in **11.5.2.5** to **11.5.2.17** might have different names than those used within the clauses.

6 Provision to choose language setting may be supported by the platform software. It shall include choice of all Indian languages figuring in the 8th schedules of the Indian constitution.

11.5.2.2 *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 **11.5.2.5** to **11.5.2.17** is supported within the software environment, the platform software should support that requirement. For example, selection attributes from **11.5.2.14** (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.

> NOTES
>
> **1** These define the minimum functionality available to assistive technologies when using platform services.
>
> **2** The definition of platform in **3.1** applies to software that provides services to other software, including but not limited to, operating systems, web browsers, virtual machines.
>
> **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.
>
> **4** Typically, these services belong to the same set of services that are described in **11.5.2.1**.
>
> **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 conform to this requirement.
>
> **6** The platform software shall provide for programmatically determining user interface language so that these are exposed to assistive technologies.

11.5.2.3 *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 **11.5.2.5** to **11.5.2.17**, 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 **11.5.2.1** and **11.5.2.2**.

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

11.5.2.4 *Assistive technology*

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

> NOTES
>
> **1** The term "documented platform accessibility services" refers to the set of services provided by the platform according to **11.5.2.1** and **11.5.2.2**.
>
> **2** Assistive technology can also use other documented accessibility services.

11.5.2.5 *Object information*

Where the software provides a user interface it shall, by using the services as described in **11.5.2.3,** make the user interface elements' role, state(s), boundary, name, and description programmatically determinable by assistive technologies.

11.5.2.6 *Row, column, and headers*

Where the software provides a user interface it shall, by using the services as described in **11.5.2.3,** 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.

11.5.2.7 *Values*

Where the software provides a user interface, it shall, by using the services as described in **11.5.2.3**, 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.

11.5.2.8 *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 **11.5.2.3**, so that this information is programmatically determinable by assistive technologies.

11.5.2.9 *Parent-child relationships*

Where the software provides a user interface it shall, by using the services as described in **11.5.2.3**, make the relationship between a user interface element and any parent or children elements programmatically determinable by assistive technologies.

11.5.2.10 *Text*

Where the software provides a user interface it shall, by using the services as described in **11.5.2.3**, make the text contents, text attributes, and the boundary of text rendered to the screen programmatically determinable by assistive technologies.

11.5.2.11 *List of available actions*

Where the software provides a user interface it shall, by using the services as described in **11.5.2.3**, make a list of available actions that can be executed on a user interface element, programmatically determinable by assistive technologies.

11.5.2.12 *Execution of available actions*

Where permitted by security requirements, software that provides a user interface shall, by using the services as described in **11.5.2.3**, allow the programmatic execution of the actions exposed according to **11.5.2.11** by assistive technologies.

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

11.5.2.13 *Tracking of focus and selection attributes*

Where software provides a user interface it shall, by using the services as described in **11.5.2.3**, make information and mechanisms necessary to track focus, text insertion point, and selection attributes of user interface elements programmatically determinable by assistive technologies.

11.5.2.14 *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 **11.5.2.3**, allow assistive technologies to programmatically modify focus, text insertion point, and selection attributes of user interface elements where the user can modify these items.

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

11.5.2.15 *Change notification*

Where software provides a user interface it shall, by using the services as described in **11.5.2.3**, notify assistive technologies about changes in those programmatically determinable attributes of user interface elements that are referenced in requirements **11.5.2.5** to **11.5.2.11** and **11.5.2.13**.

11.5.2.16 *Modifications of states and properties*

Where permitted by security requirements, software that provides a user interface shall, by using the services as described in **11.5.2.3**, allow assistive technologies to programmatically modify states and properties of user interface elements, where the user can modify these items.

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

11.5.2.17 *Modifications of values and text*

Where permitted by security requirements, software that provides a user interface shall, by using the services as described in **11.5.2.3**, 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.

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

11.6 Documented Accessibility Usage

11.6.1 *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.

11.6.2 *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.

11.7 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.

NOTES

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

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

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.

4 User preference setting may include default language settings. In turn, these may be programmatically determined so that assistive technologies are aware of the settings to respond to user's choice.

11.8 Authoring Tools

11.8.1 *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.

11.8.2 *Content Technology*

Authoring tools shall conform to **11.8.2** to **11.8.5** to the extent that information required for accessibility is supported by the format used for the output of the authoring tool.

11.8.3 *Accessible Content Creation*

Authoring tools shall enable and guide the production of content that conforms to **9** (Web content) or 10 (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.

11.8.4 *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.

NOTES

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

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

11.8.5 *Repair Assistance*

If the accessibility checking functionality of an authoring tool can detect that content does not meet a requirement of **9** (Web) or **10** (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.

11.8.6 *Templates*

When an authoring tool provides templates, at least one template that supports the creation of content that conforms to the requirements of 9 (Web) or **10** (non-web documents) as applicable shall be available and identified as such.

NOTE — The template may include fields to indicate language setting of the user.

12 DOCUMENTATION AND SUPPORT SERVICES

12.1 Product Documentation

12.1.1 *Accessibility and Compatibility Features*

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

NOTES

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

2 It is best practice to use WebSchemas/Accessibility 2.0 to provide meta data on the accessibility of the ICT.

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

4 Where Indian language is supported, product documentation may also be offered in the language opted by the user.

12.1.2 *Accessible Documentation*

Product documentation provided with the ICT shall be made available in at least one of the following electronic formats:

a) a Web format that conforms to the requirements of **9**; or

b) a non-web format that conforms to the requirements of **10**.

NOTES

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

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

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

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

5 Where product documentation is offered in an Indian language of choice to the end-user, alternate media shall also be in the same language.

12.2 Support Services

12.2.1 *General (Informative)*

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

> NOTES
>
> **1** In respect of an Indian language user, ICT support services shall also be provided in the same language of choice of the end-user to the maximum extent across all channels of support.
>
> **2** Support service representatives shall be trained to meet the needs of persons with disabilities.
>
> *Examples*
>
> *1 Trouble shooting for assistive technology users – such representatives shall be able to outline instructions to clients for troubleshooting a problem using screen readers.*
>
> *2 customer appropriate instructions – such as asking them to double tap the third button from the top, as opposed to saying a red-coloured icon, when the customer is blind/ visually-impaired.*

12.2.2 *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.

12.2.3 *Effective Communication*

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

> NOTE — One of the forms of communication with individuals with disabilities could be choice of Indian language, in whatever form – text, images, video, voice or captioning.

12.2.4 *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 **9**; or

b) a non-web format that conforms to **10**.

> NOTES
>
> **1** This does not preclude the possibility of also providing the documentation in other formats (electronic or printed) that are not accessible.
>
> **2** It also does not preclude the possibility of providing alternate formats that meet the needs of some specific type of users (for example, Braille documents for blind people or easy-to-read information for persons with limited cognitive, language and learning abilities).
>
> **3** Where the support documentation is incorporated into the ICT, the documentation falls under the requirements for accessibility in this standard.

4 A user agent that supports automatic media conversion would be beneficial to enhancing accessibility. ICT providing relay or emergency service access.

13 ICT PROVIDING RELAY OR EMERGENCY SERVICE ACCESS

13.1 Relay Services Requirements

13.1.1 *General (Informative)*

Relay services enable users of different modes of communication for example, 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 best practice to meet the applicable relay service requirements of ETSI ES 202 975.

> NOTE — Relay services need to support users of a chosen Indian language across different modes of communication namely, text, sign, speech.

13.1.2 *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.

> NOTE — Text relay services may support Indian language users maximally.

13.1.3 *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.

> NOTES
>
> **1** Sign relay services are also sometimes referred to as sign language relay services or video relay services.
>
> **2** Sign relay services shall follow Indian Sign Language (ISL).

13.1.4 *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.

13.1.5 *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.

> NOTE — The captions shall be as per this standard and shall support Indian languages.

13.1.6 *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.

NOTE — Speech to speech relay service may also enable users speaking different Indian languages to communicate using the assistance provided between them.

13.2 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.

NOTES

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

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

13.3 Access to Emergency Services

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.

NOTES

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

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

3) Support to Indian language input and display and to Indian Sign Language must be ensured.

ANNEX A

(*Foreword*)

(*Informative*)

RELATIONSHIP OF THIS STANDARD WITH OTHER DEPARTMENTS UNDER GOI

This standard brings out the current Indian legal context of accessibility, –including those pertaining to ICT, especially as provided by *Rights of Persons with Disabilities Act*, 2016.

There are also various other sectoral standards, guidelines, rules and compliance requirements that have been announced by various ministries, departments and government agencies, many in response to *RPwD Act*, 2016. Some have existed even prior to the coming into being of the above. Of consequence here are those relating to various components of ICT and the use of ICT in various sectors.

Compliance to Guidelines for Indian Government Apps and Websites (GIGW 2.0), and hence WCAG 2.0 has been made mandatory by Department of Administrative Reforms and Public Grievances (DARPG) for all government websites and Department of Empowerment of Persons with Disabilities (DEPwD) has set goals, currently, based on that. The main difference this standard brings in that context, is the choice of WCAG 2.1 AA compliance criteria in lieu of WCAG 2.0 AA expected in GIGW 2.0. Compliance to this standard is backward compatible with GIGW 2.0. Additional success criteria have been brought in here. In addition, the context of the applicability of this standard for wider-users, government, private and non-government as mandated by the *RPwD Act*, 2016 should be kept in mind. As also the wider scope of this standard in terms of functionalities, cutting across all ICT products and services, practically.

RBI had mandated certain guidelines for compliance of banking sector to accessibility and one can expect that sector also to upgrade their requirements.

Department of Telecommunications (DoT), through a TRAI guideline, has mandated all mobile handset suppliers to support Indian language keyboards in shipping of mobile handsets (*source:* IS 16333-3, IS 16350 : 2016).

MoI&B has announced targets for use of Indian Sign Language and Captioning and Subtitling in respect of all broadcast service providers [*source* MoI & B Accessibility Standard].

Ministry of Education has also taken steps in respect of Education sector. One can expect that sector to be an important and early adopter.

This standard is intended to rally support of all stakeholders and trigger widespread availability and adoption of ICT products and services compliant to this standard.

Indian IT sector, Telecom sector, Start-up sector, R&D labs, Academia and NGOs will play a key role in bringing out affordable, innovative and compliant ICT products and services to the market and large-scale adoption to the benefit of PwD users and other sections who will also benefit.

ANNEX B

(*Informative*)

(*Clause* 4.1)

RELATIONSHIP BETWEEN REQUIREMENTS AND FUNCTIONAL PERFORMANCE STATEMENTS

B-1 RELATIONSHIPS BETWEEN CLAUSES 5 TO 13 AND THE FUNCTIONAL PERFORMANCE STATEMENTS

Table 4 shows which of the requirements set out in clauses **5** to **13** support each of the functional performance statements set out in clause **4.2**.

To allow Table 4 to fit the page, the abbreviations shown in Table 3 have been used in the column headers of Table 4.

The following abbreviations have been used to represent the relationship between the requirements in clauses **5** to **13** and the functional performance statements:

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 3 Key to the Column Header Designations Used in Table 4

(*Clause* B-1)

Clause Number	Column Header Abbreviation	Functional Performance Statement
4.2.1	WV	Usage without vision
4.2.2	LV	Usage with limited vision
4.2.3	WPC	Usage without perception of colour
4.2.4	WH	Usage without hearing
4.2.5	LH	Usage with limited hearing
4.2.6	WVC	Usage without vocal capability
4.2.7	LMS	Usage with limited manipulation or strength
4.2.8	LR	Usage with limited reach
4.2.9	PST	Minimize photosensitive seizure triggers
4.2.10	LC	Usage with limited cognition
4.2.11	PR	Privacy
4.2.12	IL	Indian language support

53

**Table 4 Requirements in Clauses 5 to 13 Supporting the Accessibility
Needs Expressed in the Functional Performance Statements**

(*Clause* B-1)

Requirements	4.2.1 WV	4.2.2 LV	4.2.3 WPC	4.2.4 WH	4.2.5 LH	4.2.6 WVC	4.2.7 LMS	4.2.8 LR	4.2.9 PST	4.2.10 LC	4.2.11 PR	4.2.12 IL
5.1.2.1 Closed functionality	–	–	–	–	–	–	–	–	–	–	–	–
5.1.2.2 Assistive technology	–	–	–	–	–	–	–	–	–	–	S	P
5.1.3.1 General (belongs to 5.1.3 Non-visual access)	P	S	–	–	–	–	–	–	–	S	–	S
5.1.3.2 Auditory output delivery including speech	P	S	–	–	–	–	–	–	–	S	–	S
5.1.3.3 Auditory output correlation	–	P	–	–	–	–	–	–	–	S	–	–
5.1.3.4 Speech output user control	P	S	–	–	–	–	–	–	–	S	–	S
5.1.3.5 Speech output automatic interruption	P	S	–	–	–	–	–	–	–	S	–	–
5.1.3.6 Speech output for non-text content	P	S	–	–	–	–	–	–	–	S	–	S
5.1.3.7 Speech output for video information	P	S	–	–	–	–	–	–	–	S	–	S
5.1.3.8 Masked entry	P	S	–	–	–	–	–	–	–	S	P	S
5.1.3.9 Private access to personal data	P	S	–	–	–	–	–	–	–	S	P	–
5.1.3.10 Non-interfering audio output	P	S	–	–	–	–	–	–	–	S	–	–
5.1.3.11 Private listening volume	P	S	–	–	S	–	–	–	–	S	S	–
5.1.3.12 Speaker volume	P	S	–	–	S	–	–	–	–	S	–	–
5.1.3.13 Volume reset	P	S	–	–	S	–	–	–	–	S	–	–
5.1.3.14 Spoken languages	P	S	–	–	–	–	–	–	–	S	–	S
5.1.3.15 Non-visual error identification	P	S	–	–	–	–	–	–	–	S	–	S
5.1.3.16 Receipts, tickets, and transactional outputs	P	S	–	–	–	–	–	–	–	–	–	S
5.1.4 Functionality closed to text enlargement	–	P	–	–	–	–	–	–	–	–	–	–
5.1.5 Visual output for auditory information	–	–	–	P	P	–	–	–	–	S	–	S
5.1.6.1 Operation without keyboard interface (closed functionality)	P	P	–	–	–	S	P	–	–	–	–	S
5.1.6.2 Operation without keyboard interface (Input focus)	P	P	–	–	–	S	P	–	–	–	–	S
5.1.7 Access without speech	–	–	–	–	–	P	–	–	–	–	–	S
5.2 Activation of accessibility features	P	P	P	P	P	–	P	–	–	–	–	–
5.3 Biometrics	P	P	–	P	–	P	P	P	–	–	P	P

Table 4 (*Continued*)

Requirements	4.2.1 WV	4.2.2 LV	4.2.3 WPC	4.2.4 WH	4.2.5 LH	4.2.6 WVC	4.2.7 LMS	4.2.8 LR	4.2.9 PST	4.2.10 LC	4.2.11 PR	4.2.12 IL
5.4 Preservation of accessibility information during conversion	P	P	–	P	P	–	–	–	–	S	–	P
5.5.1 Means of operation	–	–	–	–	–	–	P	–	–	–	–	–
5.5.2 Operable part discernibility	P	S	–	–	–	–	–	–	–	–	–	–
5.6.1 Tactile or auditory status (belongs to 5.6 locking or toggle controls)	P	P	–	–	–	–	–	–	–	S	–	–
5.6.2 Visual status	–	–	–	P	P	–	P	P	–	S	–	–
5.7 Key repeat	–	–	–	–	–	–	P	–	–	S	–	–
5.8 Double-strike key acceptance	–	–	–	–	–	–	P	P	–	S	–	–
5.9 Simultaneous user actions	–	–	–	–	–	–	P	P	–	S	–	–
5.10 Support to Indian languages	P	P	–	S	S	S	–	–	–	S	–	P
5.11 Indian sign language	–	–	–	P	P	–	–	–	–	–	–	–
5.12 Captioning and sub-titling	–	–	–	P	P	–	–	–	–	–	–	S
6.1 Audio bandwidth for speech (informative recommendation)	–	–	–	–	P	–	–	–	–	–	–	–
6.2.1.1 RTT communication	–	–	–	P	S	S	–	–	–	–	–	P
6.2.1.2 Concurrent voice and text	–	–	–	P	P	S	–	–	–	–	–	P
6.2.2.1 Visually distinguishable display	–	–	–	P	S	S	–	–	–	–	–	–
6.2.2.2 Programmatically determinable send and receive direction	–	–	–	P	S	S	–	–	–	–	–	P
6.2.2.3 Speaker identification	–	–	–	P	S	S	–	–	–	–	–	P
6.2.2.4 Visual indicator of Audio with RTT	–	–	–	P	S	S	–	–	–	–	–	–
6.2.3 Interoperability	–	–	–	P	S	S	–	–	–	–	–	–
6.2.4 Real-time text responsiveness	–	–	–	P	S	S	–	–	–	–	–	–
6.3 Caller ID	P	P	–	–	–	–	–	–	–	S	–	–
6.4 Alternatives to voice-based services	–	–	–	P	P	P	–	–	–	–	–	–
6.5.2 (Video) Resolution	–	–	–	P	P	S	–	–	–	–	–	–
6.5.3 (Video) Frame rate	–	–	–	P	P	S	–	–	–	–	–	–
6.5.4 Synchronization between audio and video	–	–	–	P	P	S	–	–	–	–	–	–
6.5.5 Visual indicator of audio with video	–	–	–	P	P	S	–	–	–	–	–	–

Table 4 (*Continued*)

Requirements	4.2.1 WV	4.2.2 LV	4.2.3 WPC	4.2.4 WH	4.2.5 LH	4.2.6 WVC	4.2.7 LMS	4.2.8 LR	4.2.9 PST	4.2.10 LC	4.2.11 PR	4.2.12 IL
6.5.6 Speaker identification with video (sign language) communication	–	–	–	P	P	S	–	–	–	–	–	P
6.6 Alternatives to video-based services	P	S	–	P	P	P	–	–	–	–	–	–
7.1.1 Captioning playback	–	–	–	P	P	–	–	–	–	S	–	–
7.1.2 Captioning synchronization	–	–	–	P	P	–	–	–	–	S	–	–
7.1.3 Preservation of captioning	–	–	–	P	P	–	–	–	–	S	–	–
7.1.4 Captions characteristics	–	S	S	P	P	–	–	–	–	S	–	–
7.1.5 Spoken subtitles	P	P	S	–	–	–	–	–	–	S	–	S
7.2.1 Audio description playback	P	P	–	–	–	–	–	–	–	S	–	S
7.2.2 Audio description synchronization	P	P	–	–	–	–	–	–	–	S	–	–
7.2.3 Preservation of audio description	P	P	–	–	–	–	–	–	–	S	–	–
7.3 User controls for captions and audio description	P	P	–	–	–	–	–	–	–	S	–	–
8.1.2 Standard connections	P	P	–	–	–	–	–	–	–	P	–	–
8.1.3 Colour	–	S	P	–	–	–	–	–	–	S	–	–
8.2.1.1 Speech volume range	–	–	–	–	P	–	–	–	–	–	–	–
8.2.1.2 Incremental volume control	–	–	–	–	P	–	–	–	–	–	–	–
8.2.2.1 Fixed-line devices (8.2.2 Magnetic coupling)	–	–	–	–	P	–	–	–	–	–	–	–
8.2.2.2 Wireless communication devices	–	–	–	–	P	–	–	–	–	–	–	–
8.3.0 Stationary ICT, General (informative recommendation)	–	–	–	–	–	–	–	P	–	–	–	–
8.3.1 Forward or side reach	–	–	–	–	–	–	–	P	–	–	–	–
8.3.2.1 Unobstructed high forward reach	–	–	–	–	–	–	–	P	–	–	–	–
8.3.2.2 Unobstructed low forward reach	–	–	–	–	–	–	–	P	–	–	–	–
8.3.2.3.1 Obstructed forward reach - Clear space	–	–	–	–	–	–	–	P	–	–	–	–
8.3.2.3.2 Obstructed (< 510 mm) forward reach	–	–	–	–	–	–	–	P	–	–	–	–
8.3.2.3.3 Obstructed (< 635 mm) forward reach	–	–	–	–	–	–	–	P	–	–	–	–
8.3.2.4 Knee and Toe clearance width	–	–	–	–	–	–	–	P	–	–	–	–
8.3.2.5 Toe Clearance	–	–	–	–	–	–	–	P	–	–	–	–

Table 4 (*Continued*)

Requirements	4.2.1 WV	4.2.2 LV	4.2.3 WPC	4.2.4 WH	4.2.5 LH	4.2.6 WVC	4.2.7 LMS	4.2.8 LR	4.2.9 PST	4.2.10 LC	4.2.11 PR	4.2.12 IL
8.3.2.6 Knee Clearance	–	–	–	–	–	–	–	P	–	–	–	–
8.3.3.1 Unobstructed high side reach	–	–	–	–	–	–	–	P	–	–	–	–
8.3.3.2 Unobstructed low side reach	–	–	–	–	–	–	–	P	–	–	–	–
8.3.3.3.1 Obstructed ($\leq$ 255 mm) side reach	–	–	–	–	–	–	–	P	–	–	–	–
8.3.3.3.2 Obstructed ($\leq$ 610 mm) side reach	–	–	–	–	–	–	–	P	–	–	–	–
8.3.4.1 Change in level	–	–	–	–	–	–	–	P	–	–	–	–
8.3.4.2 Clear floor or ground space	–	–	–	–	–	–	–	P	–	–	–	–
8.3.4.3.1 Approach - General	–	–	–	–	–	–	–	P	–	–	–	–
8.3.4.3.2 Forward approach	–	–	–	–	–	–	–	P	–	–	–	–
8.3.4.3.3 Parallel approach	–	–	–	–	–	–	–	P	–	–	–	–
8.3.5 Visibility	–	–	–	–	–	–	–	P	–	–	–	–
8.3.6 Installation instructions	–	–	–	–	–	–	–	P	–	–	–	–
8.4.1 Numeric keys	P	S	–	–	–	–	–	–	–	–	–	–
8.4.2.1 Means of operation of mechanical parts	–	–	–	–	–	–	P	–	–	–	–	–
8.4.2.2 Force of operation of mechanical parts	–	–	–	–	–	–	P	–	–	–	–	–
8.4.3 Keys, tickets and fare cards	P	S	–	–	–	–	–	–	–	–	–	–
8.5 Tactile indication of speech mode	P	–	–	–	–	–	–	–	–	–	–	–
9.1.1.1 Non-text content	P	P	–	P	S	–	–	–	–	S	S	S
9.1.2.1 Audio-only and video-only (pre-recorded)	P	P	–	P	P	–	–	–	–	S	–	S
9.1.2.2 Captions (pre-recorded)	–	–	–	P	P	–	–	–	–	S	–	–
9.1.2.3 Audio description or media alternative (pre-recorded)	P	S	–	–	–	–	–	–	–	S	–	S
9.1.2.4 Captions (live)	–	–	–	P	P	–	–	–	–	S	–	S
9.1.2.5 Audio description (pre-recorded)	P	S	–	–	–	–	–	–	–	S	–	S
9.1.3.1 Info and relationships	P	S	–	–	–	–	–	–	–	S	–	–
9.1.3.2 Meaningful sequence	P	S	–	–	–	–	–	–	–	S	–	–
9.1.3.3 Sensory characteristics	P	P	P	P	P	–	–	–	–	S	–	–

Table 4 (*Continued*)

Requirements	4.2.1 WV	4.2.2 LV	4.2.3 WPC	4.2.4 WH	4.2.5 LH	4.2.6 WVC	4.2.7 LMS	4.2.8 LR	4.2.9 PST	4.2.10 LC	4.2.11 PR	4.2.12 IL
9.1.3.4 Orientation	–	–	–	–	–	–	P	P	–	S	–	–
9.1.3.5 Identify input purpose	–	P	–	–	–	–	–	–	–	–	–	–
9.1.4.1 Use of colour	P	P	P	–	–	–	–	–	–	S	–	–
9.1.4.2 Audio control	P	–	–	–	P	–	–	–	–	S	–	–
9.1.4.3 Contrast (minimum)	–	P	P	–	–	–	–	–	–	S	–	–
9.1.4.4 Resize text	–	P	–	–	–	–	–	–	–	–	–	–
9.1.4.5 Images of text	–	P	P	–	–	–	–	–	–	S	–	–
9.1.4.10 Reflow	–	P	–	–	–	–	–	–	–	–	–	–
9.1.4.11 Non-text contrast	–	P	P	–	–	–	–	–	–	S	–	–
9.1.4.12 Text spacing	–	P	–	–	–	–	–	–	–	P	–	–
9.1.4.13 Content on hover or focus	–	P	–	–	–	–	–	–	–	P	–	–
9.2.1.1 Keyboard	P	P	–	–	–	S	P	–	–	–	–	–
9.2.1.2 No keyboard trap	P	P	–	–	–	S	P	–	–	–	–	–
9.2.1.4 Character key shortcuts	–	–	–	–	–	–	P	P	–	S	–	–
9.2.2.1 Timing adjustable	P	P	–	P	P	–	P	–	–	P	–	–
9.2.2.2 Pause, stop, hide	P	P	–	P	P	–	P	–	–	P	–	–
9.2.3.1 Three flashes or below threshold	–	–	–	–	–	–	–	–	P	–	–	–
9.2.4.1 Bypass blocks	P	P	–	–	–	S	P	–	–	P	–	–
9.2.4.2 Page titled	P	P	–	–	–	–	P	–	–	P	–	–
9.2.4.3 Focus order	P	P	–	–	–	–	P	–	–	P	–	–
9.2.4.4 Link purpose (in context)	P	P	–	–	–	S	P	–	–	P	–	–
9.2.4.5 Multiple ways	P	P	–	–	–	S	P	–	–	P	–	–
9.2.4.6 Headings and labels	P	P	–	S	–	S	P	–	–	P	–	–
9.2.4.7 Focus visible	P	P	–	–	–	S	P	–	–	P	–	–
9.2.5.1 Pointer gestures	–	–	–	–	–	–	P	P	–	P	–	–
9.2.5.2 Pointer cancellation	–	P	–	–	–	–	P	P	–	P	–	–
9.2.5.3 Label in name	–	–	–	–	–	–	P	P	–	S	–	–

Table 4 (*Continued*)

Requirements	4.2.1 WV	4.2.2 LV	4.2.3 WPC	4.2.4 WH	4.2.5 LH	4.2.6 WVC	4.2.7 LMS	4.2.8 LR	4.2.9 PST	4.2.10 LC	4.2.11 PR	4.2.12 IL
9.2.5.4 Motion actuation	S	S	–	–	–	–	P	P	–	S	–	–
9.3.1.1 Language of page	P	S	–	S	S	–	–	–	–	S	–	P
9.3.1.2 Language of parts	P	S	–	S	S	–	–	–	–	S	–	P
9.3.2.1 On focus	P	P	–	–	–	–	P	–	–	P	–	–
9.3.2.2 On Input	P	P	–	–	–	–	P	–	–	P	–	–
9.3.2.3 Consistent navigation	P	P	–	–	–	–	–	–	–	P	–	–
9.3.2.4 Consistent identification	S	P	–	–	–	–	–	–	–	P	–	–
9.3.3.1 Error identification	P	P	P	–	–	–	–	–	–	P	–	S
9.3.3.2 Labels or instructions	P	P	–	–	–	S	S	–	–	P	–	–
9.3.3.3 Error suggestion	P	P	–	–	–	S	S	–	–	P	–	S
9.3.3.4 Error prevention (legal, financial, data)	P	P	–	–	–	–	S	–	–	P	–	P
9.4.1.1 Parsing	P	S	–	–	–	–	–	–	–	–	–	S
9.4.1.2 Name, role, value	P	P	–	–	–	–	S	–	–	–	–	S
9.4.1.3 Status messages	P	P	P	P	P	S	P	P	P	P	–	P
9.6 WCAG Conformance requirements	P	P	P	P	P	S	P	P	P	P	S	P
10.1.1.1 Non-text content	P	P	–	P	S	–	–	–	–	S	S	–
10.1.2.1 Audio-only and video-only (pre-recorded)	P	P	–	P	P	–	–	–	–	S	–	S
10.1.2.2 Captions (pre-recorded)	–	–	–	P	P	–	–	–	–	S	–	S
10.1.2.3 Audio description or media alternative (pre-recorded)	P	S	–	–	–	–	–	–	–	S	–	P
10.1.2.4 Captions (live)	–	–	–	P	P	–	–	–	–	S	–	S
10.1.2.5 Audio description (pre-recorded)	P	S	–	–	–	–	–	–	–	S	–	S
10.1.3.1 Info and relationships	P	S	–	–	–	–	–	–	–	S	–	–
10.1.3.2 Meaningful sequence	P	S	–	–	–	–	–	–	–	S	–	–
10.1.3.3 Sensory characteristics	P	P	P	P	P	–	–	–	–	S	–	–
10.1.3.4 Orientation	–	–	–	–	–	–	P	P	–	S	–	–
10.1.3.5 Identify input purpose	–	P	–	–	–	–	–	–	–	–	–	–

Table 4 (*Continued*)

Requirements	4.2.1 WV	4.2.2 LV	4.2.3 WPC	4.2.4 WH	4.2.5 LH	4.2.6 WVC	4.2.7 LMS	4.2.8 LR	4.2.9 PST	4.2.10 LC	4.2.11 PR	4.2.12 IL
10.1.4.1 Use of colour	P	P	P	–	–	–	–	–	–	S	–	–
10.1.4.2 Audio control	P	–	–	–	P	–	–	–	–	S	–	–
10.1.4.3 Contrast (minimum)	–	P	P	–	–	–	–	–	–	S	–	–
10.1.4.4 Resize text	–	P	–	–	–	–	–	–	–	–	–	–
10.1.4.5 Images of text	–	P	P	–	–	–	–	–	–	S	–	–
10.1.4.10 Reflow	–	P	–	–	–	–	–	–	–	–	–	–
10.1.4.11 Non-text contrast	–	P	P	–	–	–	–	–	–	S	–	–
10.1.4.12 Text spacing	–	P	–	–	–	–	–	–	–	P	–	P
10.1.4.13 Content on hover or focus	–	P	–	–	–	–	–	–	–	P	–	–
10.2.1.1 Keyboard	P	P	–	–	–	S	P	–	–	–	–	P
10.2.1.2 No keyboard trap	P	P	–	–	–	S	P	–	–	–	–	S
10.2.1.4 Character key shortcuts	–	–	–	–	–	–	P	P	–	S	–	S
10.2.2.1 Timing adjustable	P	P	–	P	P	–	P	–	–	P	–	–
10.2.2.2 Pause, stop, hide	P	P	–	P	P	–	P	–	–	P	–	–
10.2.3.1 Three flashes or below threshold	–	–	–	–	–	–	–	–	P	–	–	–
10.2.4.2 Document titled	P	P	–	–	–	–	P	–	–	P	–	–
10.2.4.3 Focus order	P	P	–	–	–	–	P	–	–	P	–	–
10.2.4.4 Link purpose (in context)	P	P	–	–	–	S	P	–	–	P	–	–
10.2.4.6 Headings and labels	P	P	–	S	–	S	P	–	–	P	–	–
10.2.4.7 Focus visible	P	P	–	–	–	S	P	–	–	P	–	–
10.2.5.1 Pointer gestures	–	–	–	–	–	–	P	P	–	P	–	–
10.2.5.2 Pointer cancellation	–	P	–	–	–	–	P	P	–	P	–	–
10.2.5.3 Label in name	–	–	–	–	–	–	P	P	–	S	–	–
10.2.5.4 Motion actuation	S	S	–	–	–	–	P	P	–	S	–	–
10.3.1.1 Language of page	P	S	–	S	S	–	–	–	–	S	–	P
10.3.1.2 Language of parts	P	S	–	S	S	–	–	–	–	S	–	P

Table 4 (*Continued*)

Requirements	4.2.1 WV	4.2.2 LV	4.2.3 WPC	4.2.4 WH	4.2.5 LH	4.2.6 WVC	4.2.7 LMS	4.2.8 LR	4.2.9 PST	4.2.10 LC	4.2.11 PR	4.2.12 IL
10.3.2.1 On focus	P	P	–	–	–	–	P	–	–	P	–	–
10.3.2.2 On input	P	P	–	–	–	–	P	–	–	P	–	–
10.3.3.1 Error identification	P	P	P	–	–	–	–	–	–	P	–	–
10.3.3.2 Labels or instructions	P	P	–	–	–	S	S	–	–	P	–	–
10.3.3.3 Error suggestion	P	P	–	–	–	S	S	–	–	P	–	S
10.3.3.4 Error prevention (legal, financial, data)	P	P	–	–	–	–	S	–	–	P	–	P
10.4.1.1 Parsing	P	S	–	–	–	–	–	–	–	–	–	S
10.4.1.2 Name, role, value	P	P	–	–	–	–	S	–	–	–	–	S
10.4.1.3 Status messages	P	P	P	P	P	P	P	P	P	P	–	P
10.5 Caption positioning	–	–	–	P	P	–	–	–	–	S	–	–
10.6 Audio description timing	P	S	–	–	–	–	–	–	–	S	–	–
11.1.1.1.1 non-text content (open functionality)	P	P	–	P	S	–	–	–	–	S	S	–
11.1.1.1.2 non-text content (closed functionality	P	P	–	P	S	–	–	–	–	S	S	–
11.1.2.1.1 Audio-only and video-only (pre-recorded - open functionality)	P	P	–	P	P	–	–	–	–	S	–	S
11.1.2.1.2.1 Pre-recorded audio-only (closed functionality)	–	–	–	P	P	–	–	–	–	S	–	S
11.1.2.1.2.2 Pre-recorded video-only (closed functionality)	P	S	–	–	–	–	–	–	–	S	–	S
11.1.2.2 Captions (pre-recorded)	–	–	–	P	P	–	–	–	–	S	–	S
11.1.2.3.1 Audio description or media alternative (pre-recorded - open functionality)	P	S	–	–	–	–	–	–	–	S	–	S
11.1.2.3.2 Audio description or media alternative (pre-recorded - closed functionality)	P	S	–	–	–	–	–	–	–	S	–	S
11.1.2.4 Captions (live)	–	–	–	P	P	–	–	–	–	S	–	P
11.1.2.5 Audio description (pre-recorded)	P	S	–	–	–	–	–	–	–	S	–	P
11.1.3.1.1 Info and relationships (open functionality)	P	S	–	–	–	–	–	–	–	S	–	–
11.1.3.1.2 Info and relationships (closed functionality)	P	S	–	–	–	–	–	–	–	S	–	–
11.1.3.2.1 Meaningful sequence (open functionality)	P	S	–	–	–	–	–	–	–	S	–	–
11.1.3.2.2 Meaningful sequence (closed functionality)	P	S	–	–	–	–	–	–	–	S	–	–

Table 4 (*Continued*)

Requirements	4.2.1 WV	4.2.2 LV	4.2.3 WPC	4.2.4 WH	4.2.5 LH	4.2.6 WVC	4.2.7 LMS	4.2.8 LR	4.2.9 PST	4.2.10 LC	4.2.11 PR	4.2.12 IL
11.1.3.3 Sensory characteristics	P	P	P	P	P	–	–	–	–	S	–	–
11.1.3.4 Orientation	–	–	–	–	–	–	P	P	–	S	–	–
11.1.3.5.1 Identify input purpose (open functionality)	–	P	–	–	–	–	–	–	–	–	–	–
11.1.3.5.2 Identify input purpose (closed functionality)	–	P	–	–	–	–	–	–	–	–	–	–
11.1.4.1 Use of colour	P	P	P	–	–	–	–	–	–	S	–	–
11.1.4.2 Audio control	P	–	–	–	P	–	–	–	–	S	–	–
11.1.4.3 Contrast (minimum)	–	P	P	–	–	–	–	–	–	S	–	–
11.1.4.4.1 Resize text (open functionality)	–	P	–	–	–	–	–	–	–	–	–	–
11.1.4.4.2 Resize text (closed functionality)	–	P	–	–	–	–	–	–	–	–	–	–
11.1.4.5.1 Images of text (open functionality)	–	P	P	–	–	–	–	–	–	S	–	–
11.1.4.5.2 Images of text (closed functionality)	–	–	–	–	–	–	–	–	–	–	–	–
11.1.4.10 Reflow	–	P	–	–	–	–	–	–	–	–	–	–
11.1.4.11 Non-text contrast	–	P	P	–		–	–	–	–	S	–	–
11.1.4.12 Text spacing	–	P	–	–	–	–	–	–	–	P	–	S
11.1.4.13 Content on hover or focus	–	P	–	–	–	–	–	–	–	P	–	–
11.2.1.1.1 Keyboard (open functionality)	P	P	–	–	–	S	P	–	–	–	–	P
11.2.1.1.2 Keyboard (closed functionality)	P	P	–	–	–	S	P	–	–	–	–	P
11.2.1.2 No keyboard trap	P	P	–	–	–	S	P	–	–	–	–	–
11.2.1.4.1 Character key shortcuts (open functionality)	–	–	–	–	–	–	P	P	–	S	–	P
11.2.1.4.2 Character key shortcuts (closed functionality)	–	–	–	–	–	–	P	P	–	S	–	P
11.2.2.1 Timing adjustable	P	P	–	P	P	–	P	–	–	P	–	–
11.2.2.2 Pause, stop, hide	P	P	–	P	P	–	P	–	–	P	–	–
11.2.3.1 Three flashes or below threshold	–	–	–	–	–	–	–	–	P	–	–	–
11.2.4.3 Focus order	P	P	–	–	–	–	P	–	–	P	–	–
11.2.4.4 Link purpose (in context)	P	P	–	–	–	S	P	–	–	P	–	–
11.2.4.6 Headings and labels	P	P	–	S	–	S	P	–	–	P	–	–

Table 4 (*Continued*)

Requirements	4.2.1 WV	4.2.2 LV	4.2.3 WPC	4.2.4 WH	4.2.5 LH	4.2.6 WVC	4.2.7 LMS	4.2.8 LR	4.2.9 PST	4.2.10 LC	4.2.11 PR	4.2.12 IL
11.2.4.7 Focus visible	P	P	–	–	–	S	P	–	–	P	–	–
11.2.5.1 Pointer gestures	–	–	–	–	–	–	P	P	–	P	–	–
11.2.5.2 Pointer cancellation	–	P	–	–	–	–	P	P	–	P	–	–
11.2.5.3.1 Label in name (open functionality)	–	–	–	–	–	–	P	P	–	S	–	–
11.2.5.3.2 Label in name (closed functionality)	–	–	–	–	–	–	P	P	–	S	–	–
11.2.5.4 Motion actuation	S	S	–	–	–	–	P	P	–	S	–	–
11.3.1.1.1 Language of software (open functionality)	P	S	–	S	S	–	–	–	–	S	–	S
11.3.1.1.2 Language of software (closed functionality)	P	S	–	S	S	–	–	–	–	S	–	S
11.3.2.1 On focus	P	P	–	–	–	–	P	–	–	P	–	–
11.3.2.2 On input	P	P	–	–	–	–	P	–	–	P	–	–
11.3.3.1.1 Error identification (open functionality)	P	P	P	–	–	–	–	–	–	P	–	S
11.3.3.1.2 Error Identification (closed functionality)	P	P	P	–	–	–	–	–	–	P	–	S
11.3.3.2 Labels or instructions	P	P	–	–	–	S	S	–	–	P	–	S
11.3.3.3 Error suggestion	P	P	–	–	–	S	S	–	–	P	–	S
11.3.3.4 Error prevention (legal, financial, data)	P	P	–	–	–	–	S	–	–	P	–	P
11.4.1.1.1 Parsing (open functionality)	P	S	–	–	–	–	–	–	–	–	–	S
11.4.1.1.2 Parsing (closed functionality)	–	–	–	–	–	–	–	–	–	–	–	S
11.4.1.2.1 Name, role, value (open functionality)	P	P	–	–	–	–	S	–	–	–	–	S
11.4.1.2.2 Name, role, value (closed functionality)	–	–	–	–	–	–	–	–	–	–	–	–
11.4.1.3.1 Status messages (open functionality)	P	P	P	P	P	P	P	P	P	P	–	P
11.5.1 Closed functionality	–	–	–	–	–	–	–	–	–	–	–	–
11.5.2.1 Platform accessibility service support for software that provides a user interface	P	P	–	–	–	–	P	–	–	S	–	–
11.5.2.2 Platform accessibility service support for assistive technologies	P	P	–	–	–	–	P	–	–	S	–	–
11.5.2.3 Use of accessibility services	P	P	–	–	–	–	P	–	–	S	–	–
11.5.2.4 Assistive technology	P	P	–	–	–	–	P	–	–	S	–	–
11.5.2.5 Object information	P	P	–	–	–	–	P	–	–	S	–	–

Table 4 (*Continued*)

Requirements	4.2.1 WV	4.2.2 LV	4.2.3 WPC	4.2.4 WH	4.2.5 LH	4.2.6 WVC	4.2.7 LMS	4.2.8 LR	4.2.9 PST	4.2.10 LC	4.2.11 PR	4.2.12 IL
11.5.2.6 Row, column, and headers	P	P	–	–	–	–	P	–	–	S	–	–
11.5.2.7 Values	P	P	–	–	–	–	P	–	–	S	–	–
11.5.2.8 Label relationships	P	P	–	–	–	–	P	–	–	S	–	–
11.5.2.9 Parent-child relationships	P	P	–	–	–	–	P	–	–	S	–	–
11.5.2.10 Text	P	P	–	–	–	–	P	–	–	S	–	–
11.5.2.11 List of available actions	P	P	–	–	–	–	P	–	–	S	–	–
11.5.2.12 Execution of available actions	P	P	–	–	–	–	P	–	–	S	–	–
11.5.2.13 Tracking of focus and selection attributes	P	P	–	–	–	–	P	–	–	S	–	–
11.5.2.14 Modification of focus and selection attributes	P	P	–	–	–	–	P	–	–	S	–	–
11.5.2.15 Change notification	P	P	–	–	–	–	P	–	–	S	–	S
11.5.2.16 Modifications of states and properties	P	P	–	–	–	–	P	–	–	S	–	–
11.5.2.17 Modifications of values and text	P	P	–	–	–	–	P	–	–	S	–	–
11.6.1 User control of accessibility features	P	P	P	P	P	–	P	–	–	–	–	S
11.6.2 No disruption of accessibility features	P	P	P	P	P	–	P	–	–	–	–	–
11.7 User preferences	–	P	P	–	–	–	–	–	–	S	–	P
11.8.1 Content technology	P	P	P	P	P	S	P	P	P	P	S	–
11.8.2 Accessible content creation	P	P	P	P	P	S	P	P	P	P	S	P
11.8.3 Preservation of accessibility information in transformations	P	P	P	P	P	S	P	P	P	P	S	–
11.8.4 Repair assistance	P	P	P	P	P	S	P	P	P	P	S	–
11.8.5 Templates	P	P	P	P	P	S	P	P	P	P	S	–
12.1.1 Accessibility and compatibility features	P	P	P	P	P	–	P	–	–	S	–	–
12.1.2 Accessible documentation	P	P	P	P	P	S	P	P	P	P	S	P
12.2.2 Information on accessibility and compatibility features	P	P	P	P	P	–	P	–	–	S	–	P
12.2.3 Effective communication	–	–	–	P	P	P	–	–	–	S	–	P
12.2.4 Accessible documentation	P	P	P	P	P	S	P	P	P	P	S	P

Table 4 (*Concluded*)

Requirements	4.2.1 WV	4.2.2 LV	4.2.3 WPC	4.2.4 WH	4.2.5 LH	4.2.6 WVC	4.2.7 LMS	4.2.8 LR	4.2.9 PST	4.2.10 LC	4.2.11 PR	4.2.12 IL
13.1.2 Text relay services	–	–	–	P	P	P	–	–	–	S	–	P
13.1.3 Sign relay services	–	–	–	P	P	P	–	–	–	–	–	S
13.1.4 Lip-reading relay services	–	–	–	P	P	P	–	–	–	–	–	S
13.1.5 Captioned telephony services	–	–	–	P	P	P	–	–	–	–	–	S
13.1.6 Speech to speech relay services	–	–	–	–	–	–	–	–	–	P	–	P
13.2 Access to relay services	–	–	–	P	P	P	–	–	–	S	–	S
13.3 Access to emergency services	–	–	–	P	P	P	–	–	–	S	–	P

B-2 INTERPRETATION OF TABLE 4

B.2.0 *General*

Table 4 illustrates the impact a specific accessibility issue might have on different users. It does this by mapping the requirements in this standard with the functional performance statements in **4**. A requirement can be Primary (P) or Secondary (S).

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

Requirements	4.2.1 WV	4.2.2 LV	4.2.3 WPC	4.2.4 WH	4.2.5 LH	4.2.6 WVC	4.2.7 LMS	4.2.8 LR	4.2.9 PST	4.2.10 LC	4.2.11 P

The table indicates which functional performance statements, and corresponding user needs, are covered by each requirement.

B-2.1 *Example*

B-2.1.1 *Step 1*

For requirement **5.1.3.11**, 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	4.2.1 WV	4.2.2 LV	4.2.3 WPC	4.2.4 WH	4.2.5 LH	4.2.6 WVC	4.2.7 LMS	4.2.8 LR	4.2.9 PST	4.2.10 LC	4.2.11 P
5.1.3.11 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	4.2.1 WV	4.2.2 LV	4.2.3 WPC	4.2.4 WH	4.2.5 LH	4.2.6 WVC	4.2.7 LMS	4.2.8 LR	4.2.9 PST	4.2.10 LC	4.2.11 P
5.1.3.11 Private listening volume	P	S	–	–	S	–	–	–	–	S	S

This means that private listening volume supports the functional performance statements 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.

B-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	4.2.1 WV	4.2.2 LV	4.2.3 WPC	4.2.4 WH	4.2.5 LH	4.2.6 WVC	4.2.7 LMS	4.2.8 LR	4.2.9 PST	4.2.10 LC	4.2.11 P
5.1.3.11 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.

B-2.1.3 *Step 3*

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

Requirements	4.2.1 WV	4.2.2 LV	4.2.3 WPC	4.2.4 WH	4.2.5 LH	4.2.6 WVC	4.2.7 LMS	4.2.8 LR	4.2.9 PST	4.2.10 LC	4.2.11 P
5.1.3.11 Private listening volume	P	S	–	–	S	–	–	–	–	S	S

The fourth column considers users who are colour 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 colours, but the listening volume does not compensate for the colour blindness.

B-.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	4.2.1 WV	4.2.2 LV	4.2.3 WPC	4.2.4 WH	4.2.5 LH	4.2.6 WVC	4.2.7 LMS	4.2.8 LR	4.2.9 PST	4.2.10 LC	4.2.11 P
5.1.3.11 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	4.2.1 WV	4.2.2 LV	4.2.3 WPC	4.2.4 WH	4.2.5 LH	4.2.6 WVC	4.2.7 LMS	4.2.8 LR	4.2.9 PST	4.2.10 LC	4.2.11 P
5.1.3.11 Private listening volume	P	S	–	–	S	–	–	–	–	S	S

ANNEX C

void

ANNEX D

(*Informative*)

(*Foreword*)

FURTHER RESOURCES FOR COGNITIVE ACCESSIBILITY

It is evident that people with limited cognitive, language and learning abilities have diverse accessibility needs and preferences and that there is a need for further guidelines and standards. Research in this area is ongoing.

Relevant standardisation work is currently being undertaken by the W3C Web Accessibility Initiative (WAI). WAI are working to improve the requirements and technical guidance for developers, to better address Web accessibility for people with limited cognitive, language and learning abilities. Current W3C activity in this area can be found at https://www.w3.org/WAI/cognitive/.

ANNEX E

(*Informative*)

(*Foreword*)

GUIDANCE FOR USERS OF THIS STANDARD

E-1 INTRODUCTION

This explanatory annex is designed to enable developers, industry, end users, procurement agencies – public and private, testing and certifying agencies to understand the scope and context of the standard and make best use of it.

This standard contains a wide range of requirements to cover a variety of ICT products, services and solutions. There are requirements on functional, physical and software characteristics. For example, it is necessary to understand which requirements are relevant for a specific product or service in a specific situation or context.

In a way, this standard is an efficient and consistent aggregator of functional performance statements to reflect the needs of people with different disabilities using ICT; and technical requirements that state how different components of ICT ecosystem – telecom, hardware, software, web, non-web, documents and other such, have to meet these. Many individual parts may have been covered in various standards or addressed in different forums. This standard does not aim to contradict any of them but to provide an up-to-date single point source for accessibility requirements as far as ICT is concerned.

The extensive cross-referencing to International and Indian standards, guidelines, rules, policies etc. given in this standard aims to harmonize all of them and is consistent with W3C/WAI/WCAG 2.1 and EN 301 549 V3.2.1.

Those who adhere to any of the existing or upcoming International and Indian standards can easily relate to this standard. If they need further guidance and have suggestions on how to ensure compliance to this standard may refer to the Part 2 of this standard dealing with Determination of Conformance.

As will be seen in Part 2 of this standard, testing for accessibility requirements does not always result in a yes or no. It is important to understand the requirements and alternatives available for different end-users. All these issues will be further elaborated in Part 2.

E-2 OVERVIEW

This Standard consists of thirteen sections (equivalent to chapters in a book) and five annexures.

Clauses 0 to 3 contain background information, scope of the standard, references, definitions of terminology and explanations of abbreviations. These clauses have a lot of valuable information, but it can be hard to read the standard from A to Z.

Clause 4 covers functional performance statements, which are directly related to end-user needs. The clause explains what functionality is needed to enable end users to locate, identify and operate functions in technology, no matter their abilities. This is an important section where you can learn about what challenges accessibility requirements aim to solve.

Clauses 5 to 13 are the actual technical requirements. Most readers start here, but clause **4** can possibly be a better place to begin, to really understand how to use the detailed technical parts.

The technical requirements cover many different kinds of ICT divided into separate sections, but it is always a

69

good idea to have a look at clause **5**, since this is where the general requirements are.

Clauses 9, 10 and 11 are the ones that are most relevant to IT software industry and IT use in government, offices and homes – they cover web, non-web documents and software, including mobile and web apps.

Annex B describes how the functional performance statements of clause **4** relate to the technical requirements in clauses **5** to **13**. This is a useful tool that will, for example, help you to use the standard in finalizing requirements at the time of procurement to identify the impact that specific requirements have on end users when comparing proposals.

Annex D provides a link to further resources for cognitive accessibility.

E-3 CLAUSE 4

Clause **4** is in a sense the heart of the standard. The end users, with their different needs, are the reason accessibility matters. The user needs behind each functional performance statement are also the reason for each of the requirements in this standard.

Clause **4** does not include any requirements in itself, just descriptions. This may make it seem less important but, in reality, it is the other way around. The aim of the whole standard is to ensure that end users with the varying abilities described in this clause can use products and services.

In this clause, eleven functional performance statements based on variations of impairments are described, plus privacy and support for Indian languages. The impairments can be permanent, temporary or situational. End users with multiple impairments might need specific combinations of accessibility solutions. Therefore, it is necessary to consider all different functional performance statements as well as a combination of them.

The concept behind the standard is to let technology help compensate the challenges that end users can have. The end user can look at accessibility as alternative ways to use technology. For example: if the end user cannot see, technology can provide sound. If the end user cannot hear, the technology can provide text. This is what clause **4** is describing for each user group, in detail.

Clause **4** help the used with a better understanding of the logic of the requirements in the standard.

E-4 HOW TO USE THE STANDARD

E-4.1 Self Scoping Requirements

The requirements in the present standard are called self-scoping. This means that they consist of two parts;

the first part is a precondition for the second part, which holds the actual requirement. If the first part is true, you need to meet the second part of the requirement. If the first part is not true, this means that the requirement is not applicable.

For example, a requirement saying "Where ICT hardware has speech output, it shall provide […]" can be met in two ways:

If your product or service provides speech, you need to fulfil the second part of the requirement.

If your product or service does not provide speech, you do not need to think about the second part of the requirement. The requirement is not applicable.

To meet the standard means that all applicable requirements in the standard are met.

To get an overview of the requirements in scope of your product or service, the user can focus on the requirements with the same scoping statements. There are online tools that can help you filter out requirements that are automatically met.

E-4.2 Connection between Requirements and Functional Performance Statements

The table in Annex B helps the user to understand the connection between the requirements and the functional performance statements. There is an instruction on how to use the table under **B-2**.

Before making a decision about the most suitable solution, you also need to think about the context. Here are some examples:

a) In what situation is the solution going to be used?

b) Which failed requirements are possible to compensate with other alternatives, like for example a service desk?

c) What would it cost to solve an issue with an alternative like that?

d) Will the failed requirements be possible to fix in the next version of the solution?

Suppliers may show how their product or service addresses the functional performance statements in clause 4 in addition to meeting the requirements in **5** to **13**. This can help you choose which product or service is most suitable.

E-5 VOID

E-6 ANNEX D: FURTHER RESOURCES FOR COGNITIVE ACCESSIBILITY

Annex D provides a link to W3C resources that can be used as guidance to improve the inclusion of accessibility for people with limited cognitive, language and learning abilities when using ICT products and services.

ANNEX F

(*Foreword*)

COMMITTEE COMPOSITION

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71

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[b.7] National Digital Communications Policy, 2018

[b.8] Need for Bank Branches / ATMs to be made accessible to persons with disabilities, 09-Nov-17, RBI

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[b.10] ISO/IEC FDIS 23836 "Information Technology — User interfaces — Universal interface for human language selection"

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This Indian Standard has been developed from Doc No.: LITD 35 (17829).

Amendments Issued Since Publication

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AMENDMENT NO. 1   AUGUST 2022

TO

IS 17802 (PART 1) : 2021 ACCESSSIBILITY FOR ICT PRODUCTS AND SERVICES PART 1 REQUIREMENTS

The purpose of this Amendment is to align the clause numbers and Titles of IS17802 (Part 1) with European Standard 'EN 301 549-Accessibility for ICT Products and Services' for ease of reference.

(Page 25) — Substitute '**8.3.4.3.2** *Forward approach*' *for* '**8.3.4.4** *Forward approach*'.

(Page 25) — Substitute '**8.3.4.3.3** *Parallel approach*' for '**8.3.4.5** *Parallel approach*'.

(Page 36, clause **10.3.1.1**) — Substitute '**10.3.1.1** *Language of page*' for '**10.3.1.1** *Language of document*'.

(Page 40) — Substitute '**11.1.3.3** Sensory characteristics' *for* '**11.1.3.2.3** Sensory characteristics'.

(Page 40) — Substitute '**11.1.3.4** *Orientation*' for '**11.1.3.2.4** *Orientation*'.

(Page 40) — Substitute '**11.1.3.5** *Identify input purpose*' for '**11.1.3.2.5** *Identify input purpose*'.

(Page 40) — Substitute '**11.1.3.5.1** *Identify input purpose (open functionality)*' for '**11.1.3.2.5.1** *Identify input purpose (open functionality)*'.

(Page 40) — Substitute '**11.1.3.5.2** *Identify input purpose (closed functionality)*' for '**11.1.3.2.5.2** *Identify input purpose (closed functionality)*'.

(Page 41) — Substitute '**11.2.1.2** *No keyboard trap*' for '**11.2.1.1.3** *No keyboard trap*'.

(Page 42) — Substitute '**11.2.1.3** *Void*' *for* '**11.2.1.1.4** *Void*'.

(Page 42) — Substitute '**11.2.1.4** *Character key shortcuts*' for '**11.2.1.1.5** *Character key shortcuts*'.

(Page 42) — Substitute '**11.2.1.4.1** *Character key shortcuts (open functionality)*' for '**11.2.1.1.5.1** *Character key shortcuts (open functionality)*'.

(Page 42) — Substitute '**11.2.1.4.2** *Character key shortcuts (Closed functionality)*' for '**11.2.1.1.5.2** *Character key shortcuts (closed functionality)*'.

(Page 49) — Substitute '**11.8.0** *General (Informative)*' for '**11.8.1** *General (Informative)*'.

(Page 49) — Substitute '**11.8.1** *Content Technology*' for '**11.8.2** *Content Technology*'.

(Page 49) — Substitute '**11.8.2** *Accessible Content Creation*' for '**11.8.3** *Accessible Content Creation*'.

(Page 49) — Substitute '**11.8.3** *Preservation of Accessibility Information in Transformations*' for '**11.8.4** *Preservation of Accessibility Information in Transformations*'.

(Page 49) — Substitute '**11.8.4** *Repair Assistance*' for '**11.8.5** *Repair Assistance*'.

(Page 49) — Substitute '**11.8.5** *Templates*' for '**11.8.6** *Templates*'.

(LITD 35)

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