
Cognitive accessibility —
Part 2:
Reporting

Accessibilité cognitive —
Partie 2: Consignation dans un rapport

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 173, *Assistive products*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 293, *Assistive products and accessibility*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

A list of all parts in the ISO 21801 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The intended user of this document is anyone who wants to report the cognitive accessibility of a specific system. Typically, that might be a product owner, manufacturer, designer, or salesperson. Third-party representatives can also use this document for reporting. This document can be used alongside existing standards and accompanying test methods for their systems. This document is intended to increase access to a variety of systems.

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Cognitive accessibility —

Part 2: Reporting

1 Scope

This document specifies requirements for reporting the cognitive accessibility of systems, including assistive products, assistive technologies, consumer technologies, and household appliances, according to the recommendations given in ISO 21801-1:2020.

2 Normative references

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

ISO 21801-1, *Cognitive accessibility — Part 1: General guidelines*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 21801-1 and the following apply.

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

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

3.1

environment

aggregate of surrounding things, conditions, context of, or influences upon an entity of interest

4 Reporting requirements

4.1 General

The report shall be structured in the following sections:

- The name of the system.
- A description of the context of use for the system.
- Details of the system's conformance to each recommendation.

[Clauses 5](#), [6](#) and [7](#) specify further details of the applicability of the recommendations given in ISO 21801-1:2020

NOTE An example of reporting template is presented in [Annex A](#).

4.2 Context of use

It is expected that the system will serve people from a population with the widest possible range of user needs, characteristics, and capabilities, including persons with cognitive impairment. As cognitive impairments vary immensely, it is very important to know the intended users of the system.

While a full context of use report is not needed within a report of cognitive accessibility, it is important to identify components of the context(s) for which the cognitive accessibility report applies.

The context of use section of the report shall identify:

- the goals and tasks for which the cognitive accessibility of the system is being reported, and
- the environments for which the cognitive accessibility of the system is being reported.

The context of use section of the report should identify any other sources of relevant accessibility information known about the system.

4.3 Conformance

A report on the cognitive accessibility of a system conforms to this document if it

- a) identifies the system to which it applies,
- b) identifies the context(s) in which it applies to (see 4.2),
- c) reports on the applicability of each of the recommendations contained in ISO 21801-1:2020 Clauses 5, 6, and 7 (see 4.4),
- d) reports methods used to confirm that each applicable recommendation is met by the system (see 4.5 and 4.6).

4.4 Structure of the report for each recommendation

The report shall either accept the applicability of a specific recommendation or justify why it is not applicable. In addition, a report may identify remaining challenges that need to be overcome. To support the understanding of whether or not a specific subclause is applicable, this document provides the following:

- A statement describing a type of system to which the recommendation is most likely to be applicable.
- A statement describing a type of system to which the recommendation is less likely to be applicable.
- Examples of systems to which the recommendation is or is not applicable.

A report on applicability should be consistent with ISO 21801-1.

It is important to be explicit in justifying a claim of being not applicable. It is equally important to be explicit in justifying why an applicable recommendation is not applied.

The working procedure is to

- a) determine whether the recommendation is applicable or not applicable for the system that is being reported,
- b) describe one of the following scenarios:
 - 1) If applicable:
 - Describe how the system meets the recommendation or justify why the system does not meet the recommendation.

- Optionally, describe any remaining user needs or goals related to the recommendation, but not met.
- 2) If not applicable:
 - Justify why the recommendation is not applicable.
- c) describe the method or methods used to evaluate whether the recommendation is met.

4.5 Choosing and implementing methods and approaches for conformance evaluation

Both qualitative and quantitative approaches may be used to evaluate conformance. The nature of measuring cognitive accessibility is rarely binary; that is, the result is not usually a clear “yes” or “no,” but rather “more” or “less.”

EXAMPLE [Subclause 5.2.8](#) asks whether a system handles people’s differences in coping abilities adequately. There is no precise measure to assess whether a system handles people’s differences in coping abilities adequately. A combination of methods can demonstrate that a system addresses the problem and that a solution is presented to the user in a reasonable way to support their coping abilities.

NOTE 1 A combination of methods and approaches for evaluating whether recommendations in ISO 21801-1 are met can be used, depending on the intended context of use and the target population. Methods can also be selected according to the traditions and cultures of the specific domain in which the evaluated system is situated.

NOTE 2 This document does not prescribe specific conformance evaluation methods or approaches. It accepts methods and approaches including self-reporting, third-party evaluations, user tests, data collection on user behaviour and system performance, and automated testing.

NOTE 3 [Annex B](#) presents a number of potential methods to use when evaluating whether a system meets the recommendations of ISO 21801-1.

It is important that evaluation be carried out by a multi-disciplinary team of both evaluators and testers who understand the criteria and spirit of ISO 21801-1 to ensure valid, comprehensive, and reliable findings. It is often important that more than one test method be used.

Documentation throughout the development process of a system on how specific recommendations in ISO 21801-1 are being met may be used when doing the conformance evaluation following this document. Using this approach, the recommendations in ISO 21801-1 would be addressed during the development process, with the results included in the final design of the system. This would allow for documenting the reasoning behind the final design and how the features address the recommendations in specific clauses of ISO 21801-1.

There might be previous research on cognitive accessibility connected to a specific domain or a specific type of system that resulted in a set of recommendations, heuristics, or recommendations. Such recommendations, often presented as checklists, may be used in the evaluation process.

NOTE 4 Meeting a domain-specific checklist – even one that is designed to address accessibility – might not be sufficient to address all the recommendations in ISO 21801-1. Many checklists designed to address accessibility focus on accessibility for people with sensory impairment rather than cognitive impairment. Even domain-specific checklists for cognitive accessibility might address only some of the recommendations in ISO 21801-1.

Quantitative data may be collected and used during the development or evaluation processes to determine whether a guideline in ISO 21801-1 is being met. Data about the system may be collected directly from the system or by using various third-party data collection tools. Quantitative data may also be gathered during some types of user testing.

NOTE 5 There are several potential methods to collect quantitative data during user testing. Commonly used methods include eye gazing analysis and performance statistics.

4.6 Participation of people with diverse cognitive abilities

People with diverse cognitive abilities should be invited to participate in the design and development process, in iterative testing during development, and in evaluation of the fully developed system. Data collected from cooperation with people with diverse cognitive abilities typically result in a set of qualitative data. This data can be used to draw a conclusion about whether a recommendation in ISO 21801-1 is being met.

In all test methods where there is participation of people with diverse cognitive abilities, the focus of the evaluation should remain on the accessibility of the system, not the people involved. In all test methods where there is participation, people with diverse cognitive abilities should be included. Efforts should be made to scaffold the methods of participation to allow for participation of people with diverse cognitive abilities.

Evaluations should be performed in a realistic context, including when done in a test lab.

NOTE There are several potential methods for interaction with users. Commonly used methods are user observations, cognitive/barrier walkthroughs, self-reporting protocols, focus groups, and interviews.

5 Reporting on motivation and focus

5.1 General

The report shall consider how people differ in their means of motivation and focus to learn or perform a task.

NOTE For further information, see ISO 21801-1.

5.2 Means of motivation

5.2.1 Provide options for recruiting interest

a) ISO 21801-1:2020, 5.2.1 is particularly applicable to:

- Systems that users are likely to use if they realize the system's potential.

EXAMPLE 1 A computer game presents some "easy wins" for first time users and gives glimpses of what is to come if the user proceeds to higher levels.

EXAMPLE 2 A company provides a video and booklet as different ways to demonstrate the benefits of password management software.

- Systems requiring consistent use supporting important long-term goals, but that can be unpleasant, painful, or boring to use.

EXAMPLE 3 A pedometer app incorporates gamification and reward badges to encourage a user to walk a certain number of steps each day.

b) ISO 21801-1:2020, 5.2.1 is less applicable to:

- A system that provides an obvious incentive for use, or simple means of obtaining a desirable output.

EXAMPLE 4 A microwave oven captures the user's attention when the user has the need to prepare food. The interest is recruited before the use of the microwave oven, making it less important to implement means for recruiting interest in the artefact.

5.2.2 Optimize individual options

a) ISO 21801-1:2020, 5.2.2 is particularly applicable to:

- Systems with more than one option for performing the same task.
EXAMPLE 1 An Automated Teller Machine (ATM) with language selection.
- Systems with user profiles or adaptable interfaces.
EXAMPLE 2 A streaming service account.
- Systems with multiple users with different needs who change settings back and forth.
EXAMPLE 3 A system to assist with performing a job.
EXAMPLE 4 Using public transportation.

b) ISO 21801-1:2020, 5.2.2 is less applicable to:

- Systems with only one or limited options.
EXAMPLE 5 An on/off switch.
- Systems without user profiles.
EXAMPLE 6 A water boiler.

5.2.3 Support autonomous use

a) ISO 21801-1:2020, 5.2.3 is particularly applicable to:

- Systems where the outcome of the usage can be very important for the user and where the existence of support from others cannot be taken for granted.
EXAMPLE 1 A trip planner that helps planning trips on public transportation or buying a ticket for public transportation.
- Systems where a failure in using the system independently might cause stigma or decrease self-confidence.
EXAMPLE 2 An online application form requiring correct spelling and format when users edit information.
- Systems exposed to a risk of fraud.
EXAMPLE 3 An internet banking application.

b) ISO 21801-1:2020, 5.2.3 is less applicable to:

- Systems where it is expected or socially acceptable to receive support.
EXAMPLE 4 A tax registration system.

5.2.4 Optimize usefulness and relevance

a) ISO 21801-1:2020, 5.2.4 is particularly applicable to:

- Systems that potentially can save a lot of time and energy if the full potential can be utilized by the user.
EXAMPLE 1 A photocopy machine.
- Systems that support accomplishing multi-steps tasks.

EXAMPLE 2 A time management system.

b) ISO 21801-1:2020, 5.2.4 is less applicable to:

- Systems where the usefulness and relevance are clear without any specific measures implemented.

EXAMPLE 3 A self-serve ice cream vending machine.

- Systems not expected to be frequently used.

EXAMPLE 4 A computer-based automobile diagnostic tool used by mechanics.

5.2.5 Provide options for the level of abstraction

a) ISO 21801-1:2020, 5.2.5 is particularly applicable to:

- Systems used by users with a wide range of experiences.

EXAMPLE 1 A map where it is possible to toggle between maps using symbols and maps using real-world pictures.

- Systems that users are not likely to use regularly.

EXAMPLE 2 Scanning for available channels on a TV

- Systems that users are not likely to be highly motivated to want to use.

EXAMPLE 3 A toilet with douche/dry function in a country where this is not a commodity.

b) ISO 21801-1:2020, 5.2.5 is less applicable to:

- Systems where there is only one clear and simple thing to do.

EXAMPLE 4 A standard toilet with no douche/dry function.

5.2.6 Support focus on the desired outcome

a) ISO 21801-1:2020, 5.2.6 is particularly applicable to:

- Systems with more than one intended outcome.

EXAMPLE 1 A shower with multiple functions.

- Systems with multiple steps to accomplish an intended outcome.

EXAMPLE 2 A web shop (online store) which requires choice of size, colour, and quantities.

- Systems that offer multiple choices at any step to accomplish an intended outcome, where some of the choices do not lead to accomplishing the intended outcome.

EXAMPLE 3 A web shop offering complimentary options to make you sign up for newsletter, etc.

b) ISO 21801-1:2020, 5.2.6 is less applicable to:

- Systems with a single intended outcome, that require few steps to accomplish that intended outcome, and that do not offer multiple choices at those steps that do not lead to accomplishing the intended outcome.

EXAMPLE 4 A water boiler.

5.2.7 Optimize challenge by varying demands and resources

a) ISO 21801-1:2020, 5.2.7 is particularly applicable to:

- Systems that are complex, involve multiple steps, or require sustained attention for task completion.

EXAMPLE 1 A system for applying for an online building permit application or to start up a business.

b) ISO 21801-1:2020, 5.2.7 is less applicable to:

- Systems that are practical, simple, involve only few steps, or require only brief attention for task completion.

EXAMPLE 2 A vacuum cleaner with different levels of vacuum power.

- Systems that only requires the user to make one selection between two straightforward options.

EXAMPLE 3 A popcorn-making machine that has only the option of small or large quantity.

5.2.8 Provide options for self-regulation, self-assessment and coping

a) ISO 21801-1:2020, 5.2.8 is particularly applicable to:

- Systems that involve potentially risky decisions.

EXAMPLE 1 A shower that dispenses both hot and cold water and which doesn't have thermostatic scalding protection.

EXAMPLE 2 A web browser displays a warning message when a suspicious URL is clicked, seeking confirmation before proceeding to load the page.

- Systems that display personal or confidential information.

EXAMPLE 3 Financial systems used in a public setting, such as ATMs or online banking terminals

- Systems that have time limits within which the user must initiate the next step

EXAMPLE 4 Financial systems such as ATMs and online banking ask the user if they need more time and then return to the same place in the process rather than simply logging the user out.

b) ISO 21801-1:2020, 5.2.8 is less applicable to:

- Systems that involve low-risk and low-disclosure decisions and actions.

EXAMPLE 5 A free digital newspaper.

5.2.9 Avoid unintentional trigger of inappropriate reactions

a) ISO 21801-1:2020, 5.2.9 is particularly applicable to:

- Systems that include advertising or other material from third parties that does not relate to the primary purpose of the system.

EXAMPLE 1 A web shop with third party advertising.

- Systems where inappropriate reactions will lead to adverse consequences for the user or someone else affected by the user's reaction.

EXAMPLE 2 Accidentally choosing the wrong emoji when responding to a social media post.

b) ISO 21801-1:2020, 5.2.9 is less applicable to:

- Systems where inappropriate reactions do not harm the user, someone else or the environment.

EXAMPLE 3 A sign informing about the number of flights of stairs in a building.

5.2.10 Provide means to meet differences in coping abilities

a) ISO 21801-1:2020, 5.2.10 is particularly applicable to:

- Systems that require the user to handle several steps while maintaining focus in a heavily stimulating or triggering environment.

EXAMPLE 1 A ticket machine in a busy train station that prompts the user with a reminder at the end of each step.

b) ISO 21801-1:2020, 5.2.10 is less applicable to:

- Simple, quick, or straightforward systems.

EXAMPLE 2 An escalator taking people from one floor to another.

5.2.11 Optimize for self-determination and confidence

a) ISO 21801-1:2020, 5.2.11 is particularly applicable to:

- Systems where failure could cause stigma.

EXAMPLE 1 A public toilet building in a design that does not make the entrance obvious.

- Systems used in public places where people could be or feel they are being observed.

EXAMPLE 2 An ATM that shows a progress bar and provides an overview of all steps before finalising, providing confidence that the user is making progress.

b) ISO 21801-1:2020, 5.2.11 is less applicable to:

- Simple, straightforward systems only involving one or two steps.

EXAMPLE 3 A control to open an automatic door that includes a single button to open. The door closes automatically after a pre-set time.

5.2.12 Minimize threats and maximize trust

a) ISO 21801-1:2020, 5.2.12 is particularly applicable to:

- Systems that require users to share personal information.

EXAMPLE 1 A location-based travel planner that reschedules routes if necessary.

- Systems that are used only once or irregularly.

EXAMPLE 2 An understandable leaflet in a medicine package clearly informing about side effects.

- Systems where many stakeholders interact.

EXAMPLE 3 A virtual meeting system where every participant is represented by an image and contact details.

- Systems containing potentially harmful information about the user.

EXAMPLE 4 A social media application allowing users to decide what personal information will be shared with others.

b) ISO 21801-1:2020, 5.2.12 is less applicable to:

- Systems that are regularly used in private, comfortable environments mostly by a single user.

EXAMPLE 5 A cell phone that is not a smartphone or landline with caller ID.

- Systems where potentially harmful situations are unlikely to occur.

EXAMPLE 6 A wristwatch.

- Systems where the user has full control.

EXAMPLE 7 A private OneDrive with options for sharing only with trusted persons.

5.2.13 Avoid enhanced accessibility compromising safety

- a) ISO 21801-1:2020, 5.2.13 is particularly applicable to:

- Systems handling sensitive information of any sort.

EXAMPLE 1 A medical appointment kiosk integrates a privacy screen protector.

- Systems where potential accessibility features could compromise safety.

EXAMPLE 2 An online banking system with a “read aloud” option requires headphones to be used in public.

- b) ISO 21801-1:2020, 5.2.13 is less applicable to:

- Systems not handling sensitive information.

EXAMPLE 3 A kiosk for ordering food.

- Systems where accessibility features do not compromise safety.

EXAMPLE 4 A wheelchair ramp that meets the applicable safety regulations.

5.3 Focus, attention and feedback

5.3.1 Clarify the object in focus

- a) ISO 21801-1:2020, 5.3.1 is particularly applicable to:

- Systems with many potential focal points.

EXAMPLE 1 A website service for ordering groceries to be delivered that allows the end-user to order groceries for delivery on a website.

- b) ISO 21801-1:2020, 5.3.1 is less applicable to:

- Straightforward systems with few focal points.

EXAMPLE 2 A fruit juicer, with only a power button and a speed selection button.

EXAMPLE 3 A rice cooker product that only presents one option at a time and clearly identifies the purpose and acceptable parameters of each step.

5.3.2 Support or facilitate shifts in focus

- a) ISO 21801-1:2020, 5.3.2 is particularly applicable to:

- Systems with many potential focal points.

EXAMPLE 1 A food ordering delivery system that presents a page of options that must be filled in a particular order.

EXAMPLE 2 A webpage uses a different background colour or border to make an element visually distinct when it is in focus. When the element loses focus, it returns to its normal styling. This visual indicator will help a user perceive changes in focus.

b) ISO 21801-1:2020, 5.3.2 is less applicable to:

- Straightforward systems with few focal points.

EXAMPLE 3 A toaster that starts running when the user selects the time and inserts the toast. Once the programmed time is up, the toaster ejects the toast.

5.3.3 Avoid features that inadvertently change focus or division of attention

a) ISO 21801-1:2020, 5.3.3 is particularly applicable to:

- Systems with many potential focal points.

EXAMPLE 1 An ATM that tells the user the consequences of their action.

EXAMPLE 2 An online form avoids using functions that automatically submits after the last field is completed and instead prompts the user for confirmation and give opportunity to make changes before the form is submitted.

b) ISO 21801-1:2020, 5.3.3 is less applicable to:

- Straightforward systems with few focal points.

EXAMPLE 3 A table lamp that only has a switch to turn it on and off to make it work.

EXAMPLE 4 An alarm clock that displays the time visually and strikes audibly at the scheduled alarm time. There are no other features that inadvertently change focus.

5.3.4 Provide relevant feedback

a) ISO 21801-1:2020, 5.3.4 is particularly applicable to:

- Systems with a lot of interaction.
- Systems where an error might have severe consequences.
- Systems where choices and options need to be verified.

EXAMPLE 1 An ATM that either dispenses money or makes a payment. The feedback can consist of a screen requesting acknowledgement by the user of the amount requested, before proceeding.

EXAMPLE 2 When a user incorrectly enters information into fields on a form, a message flags the error and provides suggested correct responses to the user, as well as suggestions for additional help for the form field which generated the error.

b) ISO 21801-1:2020, 5.3.4 is less applicable to:

- Straightforward and simple systems.
- Systems with no interaction.

EXAMPLE 3 An automatic door in a shopping centre that opens automatically when approached by the user.

6 Representation and understanding

6.1 General

The report shall consider how people differ in their means of representation and understanding.

NOTE For further information, see ISO 21801-1.

6.2 Multiple means of representation and understanding

6.2.1 Simplify the language – dealing with words

a) ISO 21801-1:2020, 6.2.1 is particularly applicable to:

- Systems that need to provide a lot of information in any presentation.
- Systems with information that is critical for safe or effective use.
- Parts of any system where understanding specific text information is important.

EXAMPLE 1 An instruction manual includes step-by-step pictures and easy-to-read text to show how to use the system.

EXAMPLE 2 A website instructing users to register to vote in elections. Technical or legal terms are hyperlinked (highlighted) for lay users to access definitions, synonyms, or explanations.

EXAMPLE 3 A weather app that communicates current and forecast conditions and hazards or warnings using non-technical terms. It also has icons to provide information in a simple, non-text format.

b) ISO 21801-1:2020, 6.2.1 is less applicable to:

- Systems not using verbal information

EXAMPLE 4 An electric toothbrush with only one button.

- Systems intended for specific audiences where any member of the audience is likely to comprehend complicated or internal language.

EXAMPLE 5 A blog aimed at engineering students.

6.2.2 Simplify the language – dealing with symbols

a) ISO 21801-1:2020, 6.2.2 is particularly applicable to:

- Systems based on information through symbols.
- Parts of systems where symbols can be included accompanying the text.

EXAMPLE 1 User manuals for cleaning agents where warning symbols are combined with text.

- Systems specifically targeting people who cannot read.

EXAMPLE 2 A Quality-of-Service survey consisting of selecting among several emoticons, using popular and frequently used emoticons as choices.

EXAMPLE 3 A web page aimed at young children uses images or comics that are easy to understand to provide knowledge.

b) ISO 21801-1:2020, 6.2.2 is less applicable to:

- Systems for which symbol information is not needed to understand their use.
- Systems that do not give information visually.

EXAMPLE 4 A mobile charger has a plug at one end whose shape is standard.

6.2.3 Simplify the message structure

a) ISO 21801-1:2020, 6.2.3 is particularly applicable to:

- Systems using complex information.

EXAMPLE 1 A bank website that provides a lot of information about a new product and breaks it down into short paragraphs using plain language.

EXAMPLE 2 An instruction manual on how to assemble a product offers videos of the steps to follow or an easy-to-read version.

b) ISO 21801-1:2020, 6.2.3 is less applicable to:

- Systems using only a few words or short sentences.

EXAMPLE 3 An exit sign.

6.2.4 Promote understanding across language barriers

a) ISO 21801-1:2020, 6.2.4 is particularly applicable to:

- Systems used by non-native language users.

EXAMPLE 1 A ticket machine for buying bus or train tickets to an international airport.

- Systems intended to sell in other countries with different language.

EXAMPLE 2 A website of a non-profit organization includes information about its activities in different languages.

EXAMPLE 3 The manufacturer of a remote control uses the words (cool, heat) and also easy-to-understand icons on the buttons for people who do not understand English language.

b) ISO 21801-1:2020, 6.2.4 is less applicable to:

- Systems intended to be sold in other countries with a different language.
- Internal systems used by professionals.

EXAMPLE 4 A manufacturer of toilet seats sold only in Denmark provides product information in Danish only.

EXAMPLE 5 A computer programming language used by engineers.

6.2.5 Support translation processes

a) ISO 21801-1:2020, 6.2.5 is particularly applicable to:

- Systems used by users who likely want to translate information from the language used in the system to a language they are more familiar with.

EXAMPLE 1 A web page with information on international travel regulations.

b) ISO 21801-1:2020, 6.2.5 is less applicable to:

- Systems that have officially provided language versions.

EXAMPLE 2 A website of a local television channel.

EXAMPLE 3 A train ticket machine in a central station with a large influx of tourists, which standardly includes in the design a translation in different languages.

6.2.6 Provide and optimize options for finding information

a) ISO 21801-1:2020, 6.2.6 is particularly applicable to:

- Systems that present large amounts of information or contain critical information to which users must pay attention.

- Systems for which the inability to find information would preclude people from successfully using the system.

EXAMPLE 1 A government or corporate website has content organized in a clear structure using easy-to-understand content.

EXAMPLE 2 The first page of the instructions for use contains a design that draws the user's attention to the need of inserting the battery before use.

- b) ISO 21801-1:2020, 6.2.6 is less applicable to:

- Systems where the amount of information is minimal, where all information is presented upfront and at one point.

EXAMPLE 3 A glucometer displays the measurement result on the screen.

6.2.7 Provide equal opportunities for comprehension

- a) ISO 21801-1:2020, 6.2.7 is particularly applicable to:

- Systems intended for any user that usually provide information in a specific format.

EXAMPLE 1 A bus tour website provides information about trips, tickets, and security in written format, but also in easy language, sign language, and audio formats. It is also accessible for screen readers.

- b) ISO 21801-1:2020, 6.2.7 is less applicable to:

- Simple and straightforward systems that are single step/action.
- Systems intended for a specialized group of trained users.

EXAMPLE 2 A socket strip with a single on / off button.

EXAMPLE 3 A camera surveillance system that films people outside a shop and displays the output.

6.3 Spatial orientation and understanding of values and sizes

6.3.1 Provide means for comparing entities and sizes

- a) ISO 21801-1:2020, 6.3.1 is particularly applicable to:

- Systems where users must select from options or provide input on values or sizes.

EXAMPLE 1 A beverage dispensing machine gives users the options of small, medium, and large sizes and includes these words and their associated easy-to-understand symbols to help selection.

- b) ISO 21801-1:2020, 6.3.1 is less applicable to:

- Systems that provide or receive one size only.

EXAMPLE 2 A drinks dispenser machine provides drinks in only one size.

6.3.2 Provide means for understanding scales and relative values

- a) ISO 21801-1:2020, 6.3.2 is particularly applicable to:

- Systems with variable parameters.

EXAMPLE 1 A light switch that incorporates several positions to increase or decrease the illumination includes easy-to-understand symbols for each position.

EXAMPLE 2 An air conditioner with a free selection of the temperature in degrees also provides easy-to-understand, predefined profiles.

b) ISO 21801-1:2020, 6.3.2 is less applicable to:

- Systems with fixed parameters that are straightforward.
- Systems not using scales and values.

EXAMPLE 3 An electric juicer with selection of only two operating speeds.

EXAMPLE 4 A light switch that only has the on/off options.

6.3.3 Provide means for understanding position in space

a) ISO 21801-1:2020, 6.3.3 is particularly applicable to:

- Systems that usually include understanding a map in any format.
- Systems that involve the user navigating through space.

EXAMPLE 1 A map displayed in a shopping centre gives a “You are Here” indication and is oriented consistent with the map placement, allowing the user to find the route to follow to his or her selected destination.

EXAMPLE 2 A mobile Global Positioning System (GPS) application allows configuration that shows the user their selected route (and where they are on it) with directions offered in easy-to-understand language.

EXAMPLE 3 An arrow in the end of a corridor points out the direction to the elevators.

b) ISO 21801-1:2020, 6.3.3 is less applicable to:

- Systems where spatial information is not important in relation to the user.

EXAMPLE 4 A stopwatch.

6.4 Simple, understandable and logical

6.4.1 Apply a logical and consistent design

a) ISO 21801-1:2020, 6.4.1 is particularly applicable to:

- Systems that have many steps, many ways to use them or many sections.

EXAMPLE 1 An instruction manual includes the same structure in each chapter.

EXAMPLE 2 A bank's website offers its information always using the same structure, colours, fonts, design and symbols on each web page of its website.

b) ISO 21801-1:2020, 6.4.1 is less applicable to:

- Systems that have very few interactions, and only one way to use them.

EXAMPLE 3 A Quality-of-Service survey consisting of selecting among several emoticons, using popular and frequent used emoticons as choices.

6.4.2 Activate or supply background knowledge

a) ISO 21801-1:2020, 6.4.2 is particularly applicable to:

- New versions of systems that replace similar systems.
- Systems that require users to complete forms where the labels on the form's fields are only familiar to users with previous experience.

EXAMPLE 1 A new version of an existing microwave that has the same modalities and functions as the previous versions, and a new modality of 'grilling' that is possible to activate in a similar way to all the other modalities with a selector knob.

EXAMPLE 2 A card payment system that prompts the user for data also incorporates the card illustration to facilitate the location of the data for users who are not familiar with online card payments.

b) ISO 21801-1:2020, 6.4.2 is less applicable to:

- New functions added to systems intended for use only by specially trained users.

EXAMPLE 3 A computer-based automobile diagnostic tool used by mechanics.

6.4.3 Maximize transfer and generalization

a) ISO 21801-1:2020, 6.4.3 is particularly applicable to:

- Systems with the same purpose of use as other similar ones, but that change the operation or handling.
- Systems that need to be updated from time to time.

EXAMPLE 1 A new cooking surface such as the induction hob, includes an instruction manual in easy-to-read language to facilitate understanding of its use and the differences with the glass ceramic hob.

EXAMPLE 2 An electric juicer is designed in the same way as a manual juicer to make it easier to understand its use.

EXAMPLE 3 A new update of an operating system or a software keeps the same icons and presents the menus in the same place and order.

b) ISO 21801-1:2020, 6.4.3 is less applicable to:

- Systems that do not require any learning effort.
- Systems that are very similar to previous ones in design and function.

EXAMPLE 4 A pacifier, since there is no need for any learning effort.

EXAMPLE 5 A bathroom scale whose new model has only changed the colour of the surface.

6.4.4 Provide options to understand underlying concepts and ideas

a) ISO 21801-1:2020, 6.4.4 is particularly applicable to:

- Situations where the correct use of the system requires that underlying concepts and ideas are known and understood by the user.

EXAMPLE 1 An induction hob requires understanding how the heating mechanism works, so it includes an instruction manual with easy-to-understand, step-by-step explanations and images.

EXAMPLE 2 A new payment system between persons (friends, family) through the use of a mobile app includes on its download website an explanatory guide that is easy to understand for users who have never used technology for payments.

- Systems whose functions are not obvious to the user.

EXAMPLE 3 A travel website provides a tutorial explaining how a traveller's personal travel card deducts money for each trip based on the time of day and distance travelled, so that travellers understand why they must connect their card to the system at both the start and end of the journey.

b) ISO 21801-1:2020, 6.4.4 is less applicable to:

- Simple or well-known systems that users are demonstrably familiar with.

EXAMPLE 4 A conventional landline with telephone numbers and associated photos stored in it.

6.4.5 Minimize complexity

a) ISO 21801-1:2020, 6.4.5 is particularly applicable to:

- Systems with many functionalities, many possible combinations of ways for users to interact with them, or many requirements on the user's understanding of underlying concepts and principles.

EXAMPLE 1 A multifunction oven or microwave allows the user to select default settings, e.g. enter "favourite settings" or "quick-use" functions.

EXAMPLE 2 A subway ticket machine includes an option in an easy-to-understand way for the user who just wants to buy a ticket for one-way or round-trip.

b) ISO 21801-1:2020, 6.4.5 is less applicable to:

- Systems with one or few functions, one or few ways of interacting, and which have minimal demands in terms of understanding underlying concepts and principles.

EXAMPLE 3 An automatic soap dispenser that shows a symbol where to position the hand.

7 Action

7.1 General

The report shall consider how people differ in taking action.

NOTE For further information, see ISO 21801-1.

7.2 Means of expression

7.2.1 Provide multiple customizable media for information, expression and communication

a) ISO 21801-1:2020, 7.2.1 is particularly applicable to:

- Systems that require users to input or receive information.

EXAMPLE 1 A public facing self-service machine such as an ATM. Such machines can have controls allowing a wide range of users, often with no or limited personal assistance. Such machines can have controls allowing users features such as:

- A choice of interaction in the language of the interface.
- The ability to listen (by headphones) to spoken instruction and spoken feedback during the interaction.
- The availability of instructions that use animations, etc.

EXAMPLE 2 Electronic passport checking gates at airports that automatically adjust optics for use, requiring only insertion of the passport or ID document.

b) ISO 21801-1:2020, 7.2.1 is less applicable to:

- Systems where users cannot interact with expressions and communication

EXAMPLE 3 A web page with information.

7.3 Organization, planning and time management

7.3.1 Guide goal-setting

a) ISO 21801-1:2020, 7.3.1 is particularly applicable to:

- Systems that allow users to choose or set goals, especially where this is done in relation to their available resources.

EXAMPLE 1 A treadmill offers different workouts categorised as “gentle, moderate, difficult, and extreme” and “short, medium, long” to allow the user to set their own goal based on their time and energy available.

EXAMPLE 2 A learning application offers students a choice between different learning goals for each individual user.

b) ISO 21801-1:2020, 7.3.1 is less applicable to:

- Systems where all goals are fixed.

EXAMPLE 3 A sound recording app that has a single red record button.

EXAMPLE 4 A flashlight. Only a switch is used to turn it on or off.

7.3.2 Simplify decision-making

a) ISO 21801-1:2020, 7.3.2 is particularly applicable to:

- Systems where users must decide between given options.
- Systems that require users to take an action to progress.

EXAMPLE 1 A coffee dispensing machine. To retrieve a cup of coffee the user controls the system by yes and no buttons.

EXAMPLE 2 A grocery chain shopping website, where a desired item is also presented with price per common unit, and several alternatives.

b) ISO 21801-1:2020, 7.3.2 is less applicable to:

- Systems that do a single, simple task.

EXAMPLE 3 A thermometer with one button and a single display that shows the temperature.

7.3.3 Support strategic activities

a) ISO 21801-1:2020, 7.3.3 is particularly applicable to:

- Complex systems that require users to complete complex tasks, tasks that are potentially dangerous, or tasks with multiple steps.

EXAMPLE 1 A health monitoring app allows users to input targets and will give some hints of strategies to achieve those goals.

EXAMPLE 2 A recipe application provides the list of ingredients to gather and the list of equipment to gather. The steps to make the food are illustrated with photos or videos along with the instruction. The recipe provides an indicative time frame for completion. The recipe replaces mathematical fractions with colour codes.

b) ISO 21801-1:2020, 7.3.3 is less applicable to:

- Systems that comprise only simple tasks.

EXAMPLE 3 A digital scale to weigh food. It offers the user information about the weight on screen and also through voice output.

EXAMPLE 4 A magnifying glass with a light. The user must only press the power button to switch the light on or off. The system does not require that users complete complex tasks or tasks that are potentially dangerous.

7.3.4 Provide options for strategic activities

a) ISO 21801-1:2020, 7.3.4 is particularly applicable to:

- Complex systems where different planning, action and monitoring strategies can be used.
- Systems with increased risk of errors or danger.

EXAMPLE 1 A calendar application provides the possibility of sorting tasks by day, week and month and offers a range of possible reminding features.

EXAMPLE 2 A flight booking system shows comparisons of the ticket costs, flying times, stopover times, and overall travel time for trips with multiple legs.

b) ISO 21801-1:2020, 7.3.4 is less applicable to:

- Systems with simple tasks, including systems that have one or two possible goals.

EXAMPLE 3 A pair of binoculars in which the users only have the possibility to vary the degree of magnification of the lens according to the distance of the object they want to see.

7.3.5 Protect the user from time constraints

a) ISO 21801-1:2020, 7.3.5 is particularly applicable to:

- Systems that require users to make one or more choices, within a particular time frame, to complete a task.
- Systems that involve time-outs or systems involving test taking.

EXAMPLE 1 A bank website that logs out the user after a set time.

EXAMPLE 2 A smart stove (or hob).

b) ISO 21801-1:2020, 7.3.5 is less applicable to:

- Systems that users can use at their leisure.

EXAMPLE 3 A mobile application consisting of a reward game. When the game time ends, the user has the possibility to start the game again, saving the rewards achieved in the previous game.

EXAMPLE 4 A kitchen timer does not provide options for strategic activities. It reminds the user of the correct processing time.

7.3.6 Provide options for time perception

a) ISO 21801-1:2020, 7.3.6 is particularly applicable to:

- Systems where users are given limited time to complete their goals.

EXAMPLE 1 On a website designed to take an exam, a clock is displayed in which each of the four quadrants is filled with colour as the time to take the exam is completed.

b) ISO 21801-1:2020, 7.3.6 is less applicable to:

- Systems that are not time dependent.

EXAMPLE 3 A portable fan without time settings; only with a power button and two speeds.

7.3.7 Provide options for orientation to time

a) ISO 21801-1:2020, 7.3.7 is particularly applicable to:

- Systems that involve time as a concept or systems that impose time limits.

EXAMPLE 1 A digital calendar is a page-a-day calendar displaying the date with big letters, day of the week and time. It automatically changes the date and day of the week every day.

EXAMPLE 2 A message or note-taking system automatically inserts the date, day and time when composing a new message.

b) ISO 21801-1:2020, 7.3.7 is less applicable to:

- Systems that are not time dependent.

EXAMPLE 3 External speakers for the computer, whose use is plug and play.

7.3.8 Provide options to communicate time or preferences for time management

a) ISO 21801-1:2020, 7.3.8 is particularly applicable to:

- Systems that include concepts of time or impose time limits.

EXAMPLE 1 A web search that offers the option of searching for information within listed time ranges.

EXAMPLE 2 An online test with limited response time for each answer.

b) ISO 21801-1:2020, 7.3.8 is less applicable to:

- Systems that are not time dependent.

EXAMPLE 3 A mobile application that consists of colouring a drawing or making a free drawing without time limit to use.

7.3.9 Provide options for adapting time demands

a) ISO 21801-1:2020, 7.3.9 is particularly applicable to:

- Systems that assist people with planning, time management, or crisis management.

EXAMPLE 1 An app for booking a cab provides time estimates for when the cab will arrive at the departure location and when the cab will arrive at the destination. The options and calls to action are provided through a notification. The app provides predictions about what is likely to happen.

b) ISO 21801-1:2020, 7.3.9 is less applicable to:

- Systems unrelated to planning, time management, or crisis management that a user can use at leisure.

EXAMPLE 2 A headset is not designed to assist the user with planning, time management, or crisis management.

7.4 Flexibility and equal opportunities

7.4.1 Provide accomplishment of tasks in an identical manner whenever possible or in an equivalent manner when an identical manner is not possible

a) ISO 21801-1:2020, 7.4.1 is particularly applicable to:

- Systems designed for use by the general population.
- Any system with interaction.

EXAMPLE 1 A self-service check-out in a shop

EXAMPLE 2 A workplace allows an employee to update their timesheet by selecting the time “now” and location “here” instead of inputting a specific time in a particular format, e.g. 5pm or 17.00 or detailed address.

b) ISO 21801-1:2020, 7.4.1 is less applicable to:

- A system designed for a limited set of users.

EXAMPLE 3 A software designed for augmentative and alternative communication that includes all possible settings and access and options intended to be used by users with communication disabilities.

7.4.2 Optimize access to systems and interoperability

a) ISO 21801-1:2020, 7.4.2 is particularly applicable to:

- Systems intended for use by the general public and video, audio, and computerized systems.

EXAMPLE 1 A treadmill that provides a 3,5-mm headphone jack for users who need audio feedback (confirmed through physical inspection).

b) ISO 21801-1:2020, 7.4.2 is less applicable to:

- Systems that are so complex and specialized and that must only be operated by trained persons.
- Systems that are simple with one function and intended to be used alone and not connected to other systems.
- Systems that have self-contained accessibility features.

EXAMPLE 2 A computer that does not need to be interoperable with external screen readers because a screen reader function is implemented directly in the operating system of the computer.

EXAMPLE 3 A digital thermometer.

EXAMPLE 4 A portable closed-circuit television CCTV system that does not need to provide access to the system because providing access to the system would contradict the purpose of a portable CCTV system.

7.4.3 Provide alternative and multiple means of user interaction

a) ISO 21801-1:2020, 7.4.3 is particularly applicable to:

- Complex systems, systems with many options, and any system requiring significant or sustained user input.

EXAMPLE 1 A washing machine that supports choosing a wash cycle by turning the knob; adjusting the water temperature, spin speed, and water level; and then pushing the “start” button. Alternatively, the user can press the “quick wash” button and the “start” button.

b) ISO 21801-1:2020, 7.4.3 is less applicable to:

- Simple systems requiring limited user input.

EXAMPLE 2 An identity checking machine that uses facial recognition.

7.4.4 Clarify options and alternatives that can be chosen and decisions that must be taken

a) ISO 21801-1:2020, 7.4.4 is particularly applicable to:

- Systems that provide access to systems and interoperability, alternative and multiple means of user interaction, adjustable parameters, or individualized access.

EXAMPLE 1 An app that primarily presents alternatives, options for settings, and necessary decisions in dialogue boxes, which contain the alternatives, options, or decisions in the headline and buttons.

EXAMPLE 2 An Application that uses the common gear icon, or has menu items for options or personalization settings, which is available on the home page of the app.

EXAMPLE 3 A mobile application to make a medical appointment at a health centre. In the (first) registration session in the system, the user has the possibility to individualize their profile for future access, and how the health system interacts with them.

- Systems based on branching decision trees, where early decisions determine further options presented to the user.

EXAMPLE 4 A clinic booking system first asks a user whether they would like the first available appointment which could be at any clinic location or would only like appointments at a specific clinic location. This decision must be made before available appointments are shown for the user to select from.

- b) ISO 21801-1:2020, 7.4.4 is less applicable to:

- Systems requiring limited user input.

EXAMPLE 5 An elevator uses standard elevator controls (up/down buttons; numbered floor buttons; open/close buttons; emergency button). There are no further mechanisms possible to incorporate to clarify options, alternatives and decisions.

EXAMPLE 6 An automatic hydroalcoholic gel dispenser that is located in an accessible place for users and shows an icon and an explanation of its use in an easy-to-understand language.

7.4.5 Provide default configuration and adjustable parameters

- a) ISO 21801-1:2020, 7.4.5 is particularly applicable to:

- Complex systems, systems with many options, and any system requiring significant or sustained user input.

EXAMPLE 1 A microwave offers a variety of both functionality options and user-interface options.

EXAMPLE 2 A camera that has multiple default configurations ("modes") related to taking various types of pictures under varying conditions, and also has manual modes where individual settings can be adjusted (zoom, shutter time, f-stop, etc.).

- b) ISO 21801-1:2020, 7.4.5 is less applicable to:

- Systems with fixed parameters that cannot be made adjustable.
- Systems that automatically adapt to user behaviour.

EXAMPLE 3 A mobile application to retouch photos that works by applying different stored themes on it, without the possibility of adjusting them or modifying their content (contrast, brightness, etc.).

7.4.6 Provide individualized access and reuse of user profiles

- a) ISO 21801-1:2020, 7.4.6 is particularly applicable to:

- Systems that are highly adjustable.
- Systems intended to be used by the same individual(s) regularly.

EXAMPLE 1 A camera that stores the latest adjustments to parameters in internal memory.

EXAMPLE 2 A language-learning app that stores user profiles.

b) ISO 21801-1:2020, 7.4.6 is less applicable to:

- Systems that have few, easily adjustable parameters.
- Systems that have multiple default configurations.

EXAMPLE 3 A hair dryer with only two adjustable functions: speed and degree of heat or cool. The user has the possibility to set the degree of heat and vary only the speed each time it is used.

7.4.7 Ensure that the intended outcome of the system is easily accessible

a) ISO 21801-1:2020, 7.4.7 is particularly applicable to:

- Systems that produce changes in the end-user's environment

EXAMPLE 1 Setting up a thermostat

b) ISO 21801-1:2020, 7.4.7 is less applicable to:

- Systems that immediately and obviously cease being active on command.
- Systems that produce an artefact as an outcome to the final state of said system.

EXAMPLE 2 A light switch, because turning a light switch on produces a field of light in the area controlled.

7.5 Support for completion of tasks

7.5.1 Support sustained attention and concentration throughout the process

a) ISO 21801-1:2020, 7.5.1 is particularly applicable to:

- Systems that require a specific sequence of discrete interactions to support the end-user.

EXAMPLE 1 A microwave because a set of steps is needed to use it for cooking food. Often the digital display informs the user with updates (time left) of the cooking process.

EXAMPLE 2 A banking program, with a sequence that includes entering credentials to sign in, requesting an action, confirming the request, and then signing out.

b) ISO 21801-1:2020, 7.5.1 is less applicable to:

- Systems that produce the desired action by one single and short interaction.

EXAMPLE 3 A toilet because using the flush handle requires a single step with an immediately apparent result.

7.5.2 Provide means for avoiding mistakes

a) ISO 21801-1:2020, 7.5.2 is particularly applicable to:

- Systems or products that provide possible multiple outcomes to the user.
- Systems involving financial transactions.

EXAMPLE 1 A time registration system at a workplace.

EXAMPLE 2 A banking program displays the account details and amount of money to be transferred for confirmation, with the options to cancel or to go back and edit details before the transfer is processed.

b) ISO 21801-1:2020, 7.5.2 is less applicable to:

- Systems or devices that have only one outcome and one binary input from the user.

EXAMPLE 3 In a train station, the user places a near field communication card (NFC) on the surface of the entrance access, opening the door automatically. An icon indicates the place to locate the card.

EXAMPLE 4 Taking explicit actions to providing means for “avoiding mistakes” is not applicable to this single-handle toilet because there is no way for the system to provide any but the one outcome that using the system initiates.

7.5.3 Clarify mistakes and errors

a) ISO 21801-1:2020, 7.5.3 is particularly applicable to:

- Systems or products that provide possible multiple outcomes to the user.

EXAMPLE 1 A banking program provides a message explaining why a transfer could not be made rather than just an error message.

b) ISO 21801-1:2020, 7.5.3 is less applicable to:

- Systems or devices that have only one outcome and one binary input from the user.

EXAMPLE 3 A light switch whose use is learned by cause and effect and where the user can press the switch again to turn it off.

7.5.4 Simplify corrections of mistakes and errors

a) ISO 21801-1:2020, 7.5.4 is particularly applicable to:

- Systems or products that provide possible multiple outcomes to the user.

EXAMPLE 1 A project planning system that provides a number of different outcomes to the user dependent on the user's sequential or multiple inputs, which can contain 'slips or mistakes' and easily produce unintended or unwanted outcomes. Systems such as these should have 'undo' or backup functions that are easily accessed.

b) ISO 21801-1:2020, 7.5.4 is less applicable to:

- Systems or devices that have only one outcome and one binary input from the user.
- Systems without user input of data or without user interaction.

EXAMPLE 2 A single-handle toilet with no way for the system to provide any but the one outcome (or obviously fail to do so) that using the system initiates.

7.5.5 Provide appropriate support functions

a) ISO 21801-1:2020, 7.5.5 is particularly applicable to:

- Complex systems supporting goals that can take a significant amount of time (hours) to accomplish in changing contexts.
- A system that requires task completion, different choices and where errors can occur.

EXAMPLE 1 A GPS system for navigating in public transportation with alert options for being on track.

EXAMPLE 2 A transit support application that in any point in following a route there is a 'help' icon that allows activating an escalating set of phone calls connecting the user with a person or system that would provide necessary support.

b) ISO 21801-1:2020, 7.5.5 is less applicable to:

- Single function systems that immediately (or in a very short time) accomplish the task.

EXAMPLE 3 An electric water heater, with a single on and off function.

7.5.6 Provide content-integrated contextual help

a) ISO 21801-1:2020, 7.5.6 is particularly applicable to:

- Any system that requires multiple steps to use.

EXAMPLE 1 Each step in a system has a clickable icon that presents information about the specific step.

- Complicated systems.

EXAMPLE 2 A chat function in the system can be utilized by the user to address specific problems directly to a support person.

- Systems new or unfamiliar to many users.

EXAMPLE 3 A section for Questions and Answers give information about the most common issues raised by new users.

b) ISO 21801-1:2020, 7.5.6 is less applicable to:

- Simple and straightforward systems or systems well known by the targeted user group.

EXAMPLE 4 A blog where users can read blogposts.

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Annex A (informative)

Example of reporting template

A.1 Context of use

A.1.1 Tasks and goals for the system

Identify the main tasks and goals for the system.

A.1.2 Environment

Identify the environment where the system will be used.

A.1.3 Other sources of accessibility information

Identify if any other sources of accessibility information are relevant for the system.

A.1.4 Known limitations of cognitive accessibility

List any ways in which the system is known not to meet recommendations for cognitive accessibility and provide an explanation for why.

A.2 Example of detailed reporting template

Subclause:	Recommendation:	Applicable:
Describe how the system meets the recommendation:		
Describe the method used to verify that the recommendation is being met:		
If recommendation is not applicable, explain why:		
If recommendation is applicable, but not implemented, explain why:		

Annex B (informative)

Examples of test methods and how to apply them

B.1 General

As implied in [Clause 4](#), multiple test methods exist that can provide evaluators with information about how well a system meets the recommendations in ISO 21801-1. Test methods can provide information that applies to multiple clauses in ISO 21801-1, so results from a single test method can apply to several sections of the report. Anyone trying to use this document might find it difficult to know which test methods to use for the different sections of the report. They also might not be aware of all the different types of testing that could be used.

This annex provides examples of test methods, the information that might be gathered from them, and where that information could be included in a report based on this document (i.e. under which clauses from this document). This annex is intended to give people ideas about how to test their system so that they have a better idea whether their system actually meets all the recommendations in ISO 21801-1. It also gives them ideas about how individual tests, techniques, or methods might apply to more than one clause in ISO 21801-1.

The test method examples in this annex are grouped under headings intended to provide some clarity about which part of the system is being examined. The order of utilizing the chosen test methods is flexible, enabling evaluators to be more efficient in both testing the system and writing the conformance report.

Cognitive accessibility, as part of universal accessibility, means taking into account other aspects related to physical accessibility. The user needs to understand how to handle a device or product (e.g. open the package when purchasing it, insert the batteries or battery, and see the physical buttons and understand what each is for).

Examining, measuring, and documenting the physical design of a system can give important information to support claims of conforming to the recommendations in ISO 21801-1. Any appropriate test methods for evaluating the physical design may be used. In this annex, most of the test method examples for examining the physical design of a system in a test lab environment are drawn from ANSI/RESNA CA-1:2018, Sec. 1. [Table B.1](#) provides a cross-reference guide between the ISO 21801-1 recommendations and specific clauses from ANSI/RESNA CA-1:2018, Sec. 1 that can be applicable.

NOTE Although written in the original source as test methods to use on a system available for consumer purchase, many of these methods from ANSI/RESNA CA-1:2018, Sec. 1 can be used during the development and evaluation processes for a system. If used during iterative development processes, results from the methods could reveal some aspects of the system that could be improved.

The test methods in this annex will not provide a “pass or fail” result. Instead, the results indicate a degree of confidence that a system is usable and possibly indicate some requirements or parameters that might indicate or contraindicate the system.

B.2 System set up and standard maintenance

If the context of use report indicates the system is a consumer product intended for autonomous use in the home or similar environments, it can be useful to examine how the product is provided to the consumer. The first interaction that a user has with the product could cause the user to abandon it if they do not understand how to handle it.

Some more complex systems, such as those for task support, require configuration or customization to the needs and context of the intended use, which could be completed by a third party. In these cases, evaluation in this section should involve the relevant parties.

The following methods can be useful in evaluating and reporting about how the system meets the recommendations affected by system set up and standard maintenance:

- a) Document whether the system—as the consumer receives it—is ready for immediate and autonomous use (see 5.2.3). In particular, document whether batteries or external power sources are required, whether batteries come pre-installed or need to be inserted by the user upon initial receipt of the product, and whether the external power source comes attached or if it needs to be attached by the user (see ANSI/RESNA CA-1:2018, Sec. 1, 5.1).
- b) Document whether initial set-up steps—including any additional required assembly and configuration—or standard maintenance (such as changing batteries) are intended to be completed by the user or a third party. Document any issues related to set up and maintenance that might limit immediate or autonomous use (see 5.2.3) (see ANSI/RESNA CA-1:2018, Sec. 1, 5.1).
- c) Document how information about standard maintenance requirements are provided to the user. In particular, document whether the user is provided with information about how to correct system errors (see 7.5.4), given support options (see 7.5.5), or provided content-integrated contextual help (see 7.5.6) when the system requires maintenance (see ANSI/RESNA CA-1:2018, Sec. 1, 5.1).

B.3 Intended outcome and operation of the system

The following methods can be useful in evaluating and reporting how the system meets the recommendations about the intended outcome and operation of the system:

- a) Document the results of user trials indicating users' ability to independently achieve the intended goals of the system (see 5.2.3, 5.2.6). Document observations of coping strategies that support successful use of the system, and any barriers which users encounter to applying their preferred coping strategies (see 5.2.10).
- b) Document the results of user trials, including eye gaze analysis if available, indicating the ability of the system to support sustained attention necessary to successfully complete the goals of the system. In particular, document the frequency of confusion or distraction related to delays turning on or off the system (see 5.2.6, 5.3.3 and 7.5.1).
- c) Document the results of user interviews, self-reports, or focus group feedback expressing perceived relevance of the system to meeting user goals (see 5.2.4); perceived self-determination and confidence when using the system (see 5.2.11); and perceived trust in the system or perceived threats to successful use of the system (see 5.2.12). Document any aspects of the system that cause confusion for some users or classes of users (see 6.4.1, 6.4.2, 6.4.3).
- d) Document any potential risks related to use of the system, and results of user interviews, self-reports, or focus group feedback expressing perceived threats from the system itself (see 5.2.12, 5.2.13).
- e) Document types of background knowledge necessary to use the system, and/or ways in which the system can support users who are lacking in background knowledge. Document any user feedback of aspects of the system which were confusing due to a lack of appropriate background knowledge (see 6.4.4).
- f) Document user feedback or results of user observations, indicating aspects of the system which were confusing or perceived as overly complex (see 6.4.5).
- g) Document, based on user observations or self-reports, whether users are able to locate key information within the system based on prompts (e.g. identify information likely to be needed for technical support) (see 7.5.5).

- h) Document the navigation and menu options, including the number of steps it takes to achieve intended outcomes and the number of options presented at each step. Success or non-adoption of a system can hinge on ease of use, including selecting a task (see [5.2.6](#) and [7.3.2](#)), complexity of menus (see [5.3.1](#), [5.3.2](#), [6.2.3](#), [6.4.5](#) and [7.4.4](#)) and system navigation in general (see [5.2.10](#), [5.2.11](#), [6.4.1](#)) (see ANSI/RESNA CA-1:2018, Sec. 1, 6.3.4, 6.3.5 and 6.3.5.2).
- i) Document the results of user observations, including eye gaze analysis if available, indicating users' ability to identify (verbally or as indicated by eye gaze or user interaction with the system) the onscreen object with focus (see [5.3.1](#)) and continue to identify and attend to the object with focus as the system shifts focus (see [5.3.2](#)).
- j) Document what features are included to engage and sustain user interest, and whether those features are customizable to varying age range or user interests. Document the results of any user studies of sustained attention to the system (see [5.2.1](#), [5.2.6](#) and [5.2.7](#)).
- k) Document how the system is turned on and off. Depending on the intended context of use, systems that are too difficult or too easy to turn on or off could result in inappropriate actions, so the complexity should be appropriate to the intended use (see [5.3.3](#), [6.4.5](#)). In particular, document whether any "on" mechanism requires more than one step, and how many steps it takes to turn the system on. Document whether any "off" mechanism requires more than one step, and how many steps it takes to turn the system off. Document whether the "on" or "off" mechanism needs to be activated for a certain amount of time in order to change the power status of the system, and how long each needs to be activated. Document how long it takes the system to turn on and to turn off (see ANSI/RESNA CA-1:2018, Sec. 1, [6.3.2](#) On/off activation; 6.3.2.1 Time required for activation and completion of on/off functions).

B.4 Error avoidance, error correction, and time constraints

The following methods can be useful in evaluating and reporting about how the system meets the recommendations regarding error avoidance, error correction, and time constraints:

- a) Document results of user interviews or self-reports in which users reflect on their system usage and levels of success (see [5.2.8](#), [5.2.9](#)). Care should be taken to mitigate Hawthorne bias.
- b) Document features to minimize the effects of errors. Document the results of user observations or interviews in which users verbalize or demonstrate how to interpret and act on error warnings (see [7.5.3](#) and [7.5.4](#)).
- c) Document features that support self-regulation, self-assessment, and coping. Document users' ability to identify and recover from errors. Document any results of user trials or user observations that indicate that system feedback triggered inappropriate reactions (see [5.2.8](#), [5.2.9](#)). Of particular interest are any cases where the system indicates a problem or error when in fact there is no error (a type I error). Document observations of user coping strategies when recovering from errors, and any barriers which users encountered to applying their preferred coping strategies (see [5.2.10](#)).
- d) Document user feedback or results of user observations, indicating aspects of the system which were confusing or perceived as overly complex (see [6.4.5](#)).
- e) Document any commonly observed errors in user trials, related to timing errors or system time-outs (see [7.3.5](#)).
- f) Document features to support decision making and error avoidance. Document any frequent errors, or expressions of use confusion, resulting from ambiguity in the user interface (see [7.3.2](#)) or decision-making demands of the system (see [7.4.4](#)).
- g) Document the method for backing out of menu layers, particularly whether it is a method for which users could have background knowledge, allowing the user to correct mistakes while avoiding making new ones (see [6.4.2](#), [7.5.2](#) and [7.5.4](#)) (see ANSI/RESNA CA-1:2018, Sec. 1, 6.3.7.2).

- h) Document whether the system has a dedicated “home” button or option and how that is actuated. Users could use this to correct mistakes and errors by starting over (see [7.5.4](#)) (see ANSI/RESNA CA-1:2018, Sec. 1, 6.3.7.1).
- i) Document whether the system has a dedicated “help” button or option and how that is actuated (see [7.5.5](#)).
- j) Document whether the built-in support features include content-integrated contextual help (see [7.5.6](#)).
- k) Document whether, if no response is given, the system automatically resets or times out. If the system automatically resets or times out, time how long it takes after no response is provided for the system to automatically reset or time out. Document whether it automatically resets to “home,” times out and returns to the same place when reactivated, or some other option (see [7.3.5](#)) (see ANSI/RESNA CA-1:2018, Sec. 1, 6.3.7.3).
- l) Document observations of users’ ability to access and use support features, and any common user difficulties (see [7.5.5](#) and [7.5.6](#)).

B.5 Input and output mechanisms

The following methods can be useful in evaluating and reporting about how the system meets the recommendations affected by input and output mechanism design:

- a) Document from user interviews, observations, or self-reports whether users are able to verbalize or indicate which input or output mechanism(s) are associated with each label, and the meaning of the label (see [6.3.3](#), and [6.4.1](#)).
- b) Document the organization and type of input and output mechanisms. Determine and document whether any input mechanisms are designed in a way that increases complexity, such as being recessed, guarded, or meant to be gripped (see [6.4.5](#)). Input and output mechanism organization that draws on background knowledge (see [6.4.2](#)) and uses logical and consistent design (see [6.4.1](#)) could help users avoid inappropriate reactions (see [5.2.9](#)) and inadvertent changes of focus (see [5.3.3](#)) (see ANSI/RESNA CA-1:2018, Sec. 1, 6.1.1)

NOTE 1 Input mechanism types include, but are not limited to, buttons, switches, number pads, keyboards, wireless connectivity (such as Bluetooth or Wi-Fi) and microphones.

NOTE 2 Output mechanism types include, but are not limited to, ports, displays (such as screens or dials), and text.

- c) Document the functions for which each input and output mechanism is used, and whether or not they are customizable (see [7.2.1](#) and [7.4.5](#)). Document whether key functions have dedicated input/output mechanisms (see [6.4.5](#)) (see ANSI/RESNA CA-1:2018, Sec. 1, 6.1.2).

NOTE 3 Key functions include, but are not limited to, power, volume control, start/go, and stop/cancel.

- d) Document whether simultaneous use of input mechanisms is required to reach intended outcomes of the system (see [6.4.5](#)), and whether this is customizable (see [7.2.1](#) and [7.4.5](#)) (see ANSI/RESNA CA-1:2018, Sec. 1, [6.3.3](#)). Simultaneous use of input mechanisms can lead to inappropriate reactions (see [5.2.9](#)) or inadvertent changes of focus (see [5.3.3](#)) and could decrease confidence in the system (see [5.2.11](#)).

B.6 Labels

The following methods can be useful in evaluating and reporting about how the system meets the recommendations affected by label design:

- a) Document from user interviews whether users have high confidence in knowing how to interact with the system based on system labels (see [5.2.11](#), [5.2.12](#)).