International Standard

ISO 6273

First edition
2024-03

Assistive products — Accessibility guidelines and requirements to survey the needs of persons with sensory disabilities for assistive products and services

STANDARDSISO.COM : Click to view the full PDF of ISO 6273:2024

Reference number
ISO 6273:2024(en)

© ISO 2024

STANDARDSISO.COM : Click to view the full PDF of ISO 6273:2024

COPYRIGHT PROTECTED DOCUMENT

© ISO 2024

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

STANDARDSISO.COM : Click to view the full PDF of ISO 6273:2024

© ISO 2024 – All rights reserved

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 document 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).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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*, Subcommittee SC 7, *Assistive products for persons with impaired sensory functions*.

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.

STANDARDSISO.COM : Click to view the full PDF of ISO 6273:2024

© ISO 2024 – All rights reserved

Introduction

Surveying the needs of users of assistive products has increased in importance, as the range of disabilities that can be assisted by the products has been widened since the publication of the International Classification of Functioning, Disability and Health (ICF) by the World Health Organization (WHO) in 2001 and the United Nations (UN) Convention on the Rights of Persons with Disabilities in 2006. Recent advancement in information communication technology (ICT) have led to the development of new technological solutions for assisting persons with various disabilities to improve or facilitate their performance in a variety of activities. Information concerning user needs are necessary for policymakers, manufacturers and research institutes developing new assistive products, and user groups proposing development and improvement of assistive products.

This document was developed to meet the increasing demand for developing information on user needs of assistive products. Various methods and techniques have been developed for surveying user needs in market, opinion and social survey.

Surveyors encounter difficulties in conducting the survey on persons with sensory disabilities, because special considerations for accessibility are needed when communicating with them.

Guidelines for accessible communication, specially informed consent and ethical guidelines, are summarized in this document. The protection of privacy and personal data are regulated by legal provisions.

STANDARDSISO.COM : Click to view the full PDF of ISO 6273:2024

© ISO 2024 – All rights reserved

STANDARDSISO.COM : Click to view the full PDF of ISO 6273:2024

Assistive products — Accessibility guidelines and requirements to survey the needs of persons with sensory disabilities for assistive products and services

1 Scope

This document provides guidelines and requirements for surveying the user needs for assistive products and services of persons with sensory disabilities related to seeing and hearing.

This document does not provide guidelines or requirements for other disabilities such as physical, mental or cognitive. The methods described in the document do not reflect all possible methods for surveying, but are those most frequently used for assessing user needs.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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
accessibility
extent to which products, *systems* (3.24), services, environments and facilities can be used by people from a population with the widest range of *user* (3.27) needs, characteristics and capabilities to achieve identified goals in identified contexts of use

Note 1 to entry: Context of use includes direct use or use supported by *assistive products* (3.2).

[SOURCE: ISO 9241-11:2018, 3.2.2, modified — In the Note 1 to entry, “technologies” has been changed to “products”.]

3.2
assistive product
product that optimizes a person’s functioning and reduces disability

[SOURCE: ISO 9999:2022, 3.3, modified — Notes to entry have been deleted.]

3.3
consent
freely given agreements based on adequate information obtained prior to the collection or use of *participant* (3.15) data

[SOURCE: ISO 20252:2019, 3.20]

STANDARDSISO.COM : Click to view the full PDF of ISO 6273:2024

© ISO 2024 – All rights reserved

3.4
closed-ended question
question requiring *participants* (3.15) to select from a predetermined list of possible answers

[SOURCE: ISO 11136:2014, 3.2, modified — "Respondents" has been replaced with "participants".]

3.5
context of use
combination of *users* (3.27), goals and *tasks* (3.25), resources, and environment

Note 1 to entry: The "environment" in a context of use includes the technical, physical, social, cultural and organizational environments.

[SOURCE: ISO 9241-11:2018, 3.1.15]

3.6
data collection instrument
tool created for the purpose of gathering data from *participants* (3.15)

EXAMPLE Questionnaire, discussion guide, biometric device, web scraping technology, camera.

[SOURCE: ISO 20252:2019, 3.24]

3.7
effectiveness
accuracy and completeness with which *users* (3.27) achieve specified goals

[SOURCE: ISO 9241-11:2018, 3.1.12]

3.8
efficiency
resources used in relation to the results achieved

Note 1 to entry: Typical resources include time, human effort, costs and materials.

[SOURCE: ISO 9241-11:2018, 3.1.13]

3.9
focus group interview
open discussion with a small number of selected *participants* (3.15) conducted by a *moderator* (3.13)

Note 1 to entry: Focus groups can be conducted face-to-face, by telephone, online or by a combination of these. Online focus groups can be synchronous or real-time (e.g. chat sessions), or asynchronous over an extended period of time (e.g. message or bulletin boards).

[SOURCE: ISO 20252:2019, 3.42, modified — "interview" has been added to term; preferred term "group discussion" has been removed.]

3.10
impairment
problem in body function or structure related to a significant deviation or loss

Note 1 to entry: Impairments can be temporary or permanent; progressive, regressive or static; intermittent or continuous.

[SOURCE: ICF 2001, WHO]

3.11
interview
oral questioning technique which results in a transfer of information from the interviewee to an *interviewer* (3.12) or surveyor

Note 1 to entry: This technique obtains direct reactions to questions, in contrast to written *questionnaires* (3.20) or self-assessment (self-recording).

STANDARDSISO.COM : Click to view the full PDF of ISO 6273:2024

© ISO 2024 – All rights reserved

Note 2 to entry: Interviews can be subdivided according to the number of interviewees into one-to-one interviews and group interviews.

Note 3 to entry: Interviews can be structured, semi-structured or unstructured.

Note 4 to entry: Where semi-structured or unstructured interviews are used with a group of respondents, these are usually described as focus groups or group discussions.

[SOURCE: ISO 16439:2014, 3.30, modified — In the term, "researcher" has been changed to "surveyor".]

3.12
interviewer
person involved in the collection of data for market, opinion and social *survey* (3.23)

Note 1 to entry: Interviewers include, but are not limited to, face-to-face and telephone interviewers, recruiters for qualitative or other survey, and other people carrying out data collection by observation, and persons collecting data from retail outlets, following instructions from the surveyor.

[SOURCE: ISO 20252:2019, 3.40, modified — "Fieldworker" has been removed as preferred term, and "interviewer" changed from admitted to preferred term. In the Note 1 to entry, "research" has been changed to "survey" and "service provider" has been changed to "surveyor".]

3.13
moderator
individual responsible for facilitating the interactions among *participants* (3.15) of a focus group or other qualitative forums

[SOURCE: ISO 20252:2019, 3.53]

3.14
open-ended question
type of question where *participants* (3.15) are asked to answer in their own words

[SOURCE: ISO 20252:2019, 3.59, modified — Preferred term "open-ended response" has been removed.]

3.15
participant
respondent
subject
person or organisation from whom or about whom data are collected for a *survey* (3.23)

[SOURCE: ISO 20252:2019, 3.62, modified — Preferred term "data subject" has been replaced with "subject". In the definition, "research" has been changed to "survey".]

3.16
personal data
information relating to a natural living person that can be used to identify an individual

Note 1 to entry: The identification can be made for example by reference to direct identifiers (e.g. name, specific geographic location, telephone number, picture, sound, video recording or biometric data) or indirectly by reference to an individual's physical, physiological, mental, economic, cultural or social characteristics.

[SOURCE: ISO 20252:2019, 3.65]

3.17
qualitative data
data describing, but not measuring the attributes or properties of an object, in particular the reasons for human actions

Note 1 to entry: The attributes can be categorized into classes that may be assigned numeric values.

[SOURCE: ISO 16439:2014, 3.52]

STANDARDSISO.COM : Click to view the full PDF of ISO 6273:2024

© ISO 2024 – All rights reserved

3.18
qualitative survey
analysis of motivations, patterns of thought, opinion, attitude, assessment or behaviour, via *survey* (3.23) techniques such as focus groups, depth *interviews* (3.11), discourse content analysis and qualitative observational survey

[SOURCE: ISO 20252:2019, 3.72, modified — "Research" was changed to "survey" in the term and in the definition.]

3.19
quantitative data
data in numerical form expressing a certain quantity, amount or range, amenable to statistical manipulation

Note 1 to entry: Quantitative data are usually expressed in measurement units, e.g. number of loans, percentage of interviewees.

3.20
questionnaire
structured or partly structured tool or instrument for collecting data, consisting of a series of questions

Note 1 to entry: Questionnaires can be self-completion or administered by a surveyor.

[SOURCE: ISO 20252:2019, 3.74, modified — In the Note 1 to entry, "fieldworker" has been changed to "surveyor".]

3.21
sample
subset of the target population from which data are collected

[SOURCE: ISO 20252:2019, 3.86]

3.22
satisfaction
extent to which the *user's* (3.27) physical, cognitive and emotional responses that result from the use of a *system* (3.24), product or service meet the user's needs and expectations

Note 1 to entry: Satisfaction includes the extent to which the user experience that results from actual use meets the user's needs and expectations.

Note 2 to entry: Anticipated use can influence satisfaction with actual use.

[SOURCE: ISO 9241-11:2018, 3.1.14]

3.23
survey
data collection from a *sample* (3.21) of a target population to which inferences can be made

[SOURCE: ISO 20252:2019, 3.98]

3.24
system
product, service, or built environment or any combination of them with which the *user* (3.27) interacts

[SOURCE: ISO/IEC Guide 71:2014, 2.1]

3.25
task
activities required to achieve a goal

STANDARDSISO.COM : Click to view the full PDF of ISO 6273:2024

© ISO 2024 – All rights reserved

3.26
usability
extent to which a *system* (3.24), product or service can be used by specified *users* (3.27) to achieve specified goals with *effectiveness* (3.7), *efficiency* (3.8) and *satisfaction* (3.22) in a specified *context of use* (3.5)

Note 1 to entry: The "specified" users, goals and context of use refer to the particular combination of users, goals and context of use for which usability is being considered.

Note 2 to entry: The word "usability" is also used as a qualifier to refer to the knowledge, competencies, activities and design attributes that contribute to usability, such as usability expertise, usability professional, usability engineering, usability method, usability evaluation, usability heuristic.

[SOURCE: ISO 9241-11:2018, 3.1.1]

3.27
user
person with a disability for whom the *assistive product* (3.2) is intended

[SOURCE: ISO 21856:2022, 3.32]

3.28
user accessibility needs
user (3.27) needs related to features or attributes that are necessary for a *system* (3.24) to be accessible

Note 1 to entry: User accessibility needs vary over time and across contexts of use.

[SOURCE: ISO/IEC Guide 71:2014, 2.4]

4 Accessibility of surveys

4.1 Management of the survey process

4.1.1 Accessibility requirements and recommendations

The surveyor shall consult with representatives from users with a disability. To carry out a survey on persons with sensory disabilities, communication shall be accessible to participants. The instructions and questions should be easily understandable by the participants and participants should be encouraged to express their replies.

Questions on the extent of the disability and the context of use of assistive products are important, but questions concerning the personal situation and medical causes of persons with sensory disabilities should not be part of the survey.

4.1.2 Planning of the survey project

The surveyor shall define the research question intended to be addressed in the project. Based on the research question, the survey design shall be created as a practical framework that includes the type of data and the method to collect and analyse data. This framework shall include accessibility considerations. The location and time scale shall also be defined when considering the accessibility requirements of the participants.

The surveyor shall keep all records to enable the replication of the project or survey work and traceability for the purposes of verification and validation.

4.1.3 Documentation of the survey process

The survey process shall be documented. The variables in a survey are:

a) the size of the organization;

STANDARDSISO.COM : Click to view the full PDF of ISO 6273:2024

© ISO 2024 – All rights reserved

b) the type of disability of participants;

c) survey activities;

d) complexity of the research question;

e) complexity of and risks associated with the projects and the interactions with participants;

f) the competence of personnel to carry out the survey.

To support participants, the documentation should be provided in accessible formats. A survey project can be composed of a number of documents, including procedures on how to carry out the survey.

4.1.4 Design of the data collection instruments and pre-tests

The surveyor shall consider the content, structure, design, and accessibility of the data collection instruments. This should include wording, the sequence of individual questions, other topics being surveyed, the number of response alternatives and their order, and other factors that can affect the survey findings when developing data collection instruments.

The surveyor shall ensure that the data collection instruments are accessible to all participants and adapted to each methodology and device to be used.

A pre-test should be carried out for all data collection instruments if the surveyor considers it necessary. If the same data collection instrument has previously been tested and used in a comparable situation, such testing may be of a more limited scale. A pre-test is specifically needed to confirm that the instruments are accessible to the participants. If there is a pre-test, the findings should be recorded.

4.1.5 Recruitment of participants

4.1.5.1 General

The recruiting of participants should be performed either based on a random strategy, or based on other sampling criteria, such as inclusion and exclusion criteria for potential participants, the sample size and other demographic requirements. Other considerations such as accessible advertising and incentivising should be considered.

4.1.5.2 Invitations to participate in survey projects

The surveyor shall provide the following information to the potential participants:

a) name and address of the surveyor;

b) the condition under study or the purpose of the survey, or both;

c) inclusion and exclusion criteria in summary form;

d) a brief list of the procedures involved;

e) time or other commitment required (number of visits, total duration, etc);

f) full disclosure of incentive terms and conditions related to participation;

g) location of survey and contact person for further information;

h) information concerning accessibility of the location and information on the questionnaire or interview;

i) the opportunity to unsubscribe or opt out of the survey activity.

STANDARDSISO.COM : Click to view the full PDF of ISO 6273:2024

© ISO 2024 – All rights reserved

4.1.5.3 Participant consent

Where a survey project requires written informed consent (e.g. live interviews, recorded events or written questionnaire returns including personal data), the informed consent information shall be provided in an accessible format (e.g. large print, Braille, or audio/DAISY format) or in sign language video or live. The informed consent form should consist of two parts: the information about the project and a signature form. Tactile or colour markings, or tactile stencils can assist in finding the place for the signature.

4.1.5.4 Personal assistance

The potential participants should be provided with access to the necessary assistance or accommodation to support them in the research projects and to prevent isolation or segregation from the designed research process. Assistance may be offered by the surveyor of the project. Alternatively, a personal assistant shall be facilitated to accompany the participant depending on their needs.

Assistance can be offered for sign language interpretation, reading questions, or writing replies. Assistance can be provided in person or remotely.

Persons with a hearing impairment have difficulties understanding spoken messages or expressing spoken text. Where persons with a hearing impairment are included in oral interviews, sign language interpreting may be offered to interpret the questionnaire and the replies. Alternatively, questionnaires may be provided in the form of written documents, plain language documents or pre-recorded sign language videos.

4.1.6 Problems and complaints management

When problems and complaints are identified especially in the field of accessibility (either in the survey process or its outcome), they should be rectified and steps should be taken to prevent recurrence.

Records should be maintained, including details of complaints, problems, causes, actions and solutions.

4.2 Types of survey data

4.2.1 General

The results of the survey are classified into quantitative and qualitative data. In most cases, both types of data are produced.

4.2.2 Quantitative data

Quantitative data are numeric and usually expressed in measurement units, e.g. number of utilizations of an assistive product per day, percentage of interviewees who can read Braille.

Quantitative data are mostly analysed by statistics, either by descriptive statistics or by inferential statistics.

4.2.3 Qualitative data

Qualitative methods focus on understanding the reasons for human actions. The qualitative approach includes questionnaires and interview techniques, storytelling, and self-assessment. It is appropriate for gathering information and finding out new user needs of assistive products. It helps create hypotheses concerning user needs, whereas inferential statistics on quantitative data can examine evidence by hypothetical testing.

Care shall be given to use rigorous analytical methods taking into consideration disaggregated data to avoid biases. Qualitative analysis software can help identify relationships between qualitative data. The findings should be categorized into classes that can be assigned numeric values.

STANDARDSISO.COM : Click to view the full PDF of ISO 6273:2024

© ISO 2024 – All rights reserved

5 Data collection

5.1 General

Data collection is made either by written questionnaires or by interviews.

5.2 Questionnaires

5.2.1 Format of questionnaire

Questionnaires can be provided to the potential participants in different formats and ways, such as:

a) written questionnaires handed out;

b) written questionnaires sent by post;

c) telephone surveys;

d) questionnaires in electronic formats (e.g. PDF) sent by electronic mail;

e) online surveys on a website or a mobile application;

f) questionnaires in alternative formats (e.g. large print, Braille, or audio/DAISY format) or in sign language video or live.

The selected format and method of distribution depend on various factors. Response rate is highest when questionnaires are given to registered potential participants. The sample size (number of participants) should be sufficient to perform the planned analyses of the type of survey design, especially in the quantitative survey design.

5.2.2 Open-ended and closed-ended questions

5.2.2.1 General

There are two types of questions: open-ended and closed-ended questions.

5.2.2.2 Open-ended questions

Open-ended questions allow participants to express their impression, opinion and response in any way.

The advantage is that the answer can produce ideas that are different from the expected ones. New user needs can be found only in open-ended questions. The disadvantage is that participants might not feel comfortable and more time to complete the survey is required.

Because of the workload of the analysis, the sample size of open-ended questions can be limited.

5.2.2.3 Closed-ended questions

Closed-ended questions include only a limited number of pre-determined answers. Closed-ended questions are simpler to complete and easier to analyse than open-ended ones. Information obtained via the closed-ended questions is limited to the given answers. It is suitable to assess the strength of the request for user needs.

The possible answers to the question shall be carefully selected. Disadvantages of closed-ended questions can be:

a) that not all possible answers have been identified;

b) that too many options, e.g. more than 8 options, can confuse participants;

STANDARDSISO.COM : Click to view the full PDF of ISO 6273:2024

© ISO 2024 – All rights reserved

c) that participants can be biased towards the predefined answers.

5.3 Interviews and focus groups

5.3.1 General

Questions and answers in interviews are normally recorded as voice recordings. The recorded voice data are then transcribed into text data, transcribing the exact words. Text transcription can be supported by automatic tools. On the one hand, the face-to-face interview method can yield more detailed data from the participants than written questionnaires. On the other hand, such interviews are more time consuming than the questionnaires. Moreover, coding and analysis using the qualitative survey method are necessary for a detailed analysis.

When an interview is in sign language, it should be delivered synchronically in a text form.

5.3.2 Accessibility of interviews

When planning an interview, consideration should be given to the individual accessibility needs of the interviewees.

Interviewers should be trained to interact with persons with different types of sensory disabilities in an adequate and non-discriminating way. Mixing persons with different types of disabilities in groups or focus group interviews should be duly considered, because this can cause confusion in communication, and therefore have a negative effect on the performance and the results.

The different needs for features of assistive products depending on the type of disability should be considered. For example, the interests of persons with low vision can be very different from those of persons completely unable to see. Setting up very diverse groups can be very helpful when the project follows a Design-for-All approach. However, the surveyor has the responsibility to integrate all participants on an equal footing. In other projects, it might be helpful to form groups of participants with the same disability type but with different degrees of capabilities and training e.g. persons unable to see, including those who lost vision during childhood, adulthood or later in life.

5.3.3 Format of interviews

Interviews may also be conducted by using alternative formats, including:

a) interviews by telephone;

b) online interviews with video conferencing system, bulletin board systems or other internet tools.

In the case of a group interview, the interview is normally handled by an interviewer.

5.3.4 Types of interviews

5.3.4.1 General

Interviews are classified as follows:

a) structured interviews, that are scripted with predetermined questions;

b) unstructured interviews, giving interviewers freedom to explore topics;

c) semi-structured interviews, where questions are partially prepared in advance.

A special technique is the critical incident technique, which focuses on a specific event and experience. It can be used for the 3 types of interviews mentioned above.

STANDARDSISO.COM : Click to view the full PDF of ISO 6273:2024

© ISO 2024 – All rights reserved

5.3.4.2 Structured interviews

The questions in a structured interview are predetermined as a standardized list. The list can use both closed-ended and open-ended questions. The interviews should be conducted in the preferred language of the participants. The interviewer should keep the same conditions in each interview. Questions should be asked in the defined sequence and wording, and, if possible, in the same tone of voice and in the same way of signing (in the case of sign language), to minimize the impact from external factors.

Though the answers of different interviewees are comparable, this method is not suited for identifying new issues beyond the focus of the questionnaire.

5.3.4.3 Unstructured interviews

The interviewer should fully understand the goal of the project and the goal of the interview. The participants being interviewed are predetermined, but the sequence and wording of the questions can be changed by the interviewer for each interviewee.

To obtain a detailed picture of an interviewee's experience, so-called 'narrative interviews' can also be conducted, where the role of the interviewer is primarily to prompt the interviewee to select and tell relevant stories.

The advantage of unstructured interviews is that they can identify new ideas beyond the focus of the project. The disadvantage is that the method is labour-intensive, because the conversion of recorded voice data into text data and the coding and analysing of the coded data are time-consuming.

5.3.4.4 Semi-structured interviews

A semi-structured interview is a mix of structured and unstructured interviews, and it is the most common type of interview. The interviewer asks predetermined questions, paraphrasing and explaining the contents of the question.

The semi-structured interview combines the advantages of the structured and the unstructured interview, and it has greater flexibility than structured interviews.

5.3.5 Interviewee types

5.3.5.1 Individual interviews

An individual interview is usually conducted in person. Interviews via telephone, online meeting or online chatting or instant messaging tools can be used. For remote interviews, video communication is preferable to telephone communication for clearer understanding of the interviewee's non-verbal responses (gestures or facial expression).

5.3.5.2 Nominal group interviews

A commonly used group interview technique is the nominal group interview. The questions are given to all the interviewees simultaneously, and all are expected to respond to the questions asked by the moderator. To keep personal interactions to a minimum level, a time limit for answering including silent writing can be employed. To achieve a conclusion, the answers can then be discussed and prioritized one by one by the group. Group interviews can also be conducted by an online meeting and in a web-based environment.

Advantages of the nominal group technique are that:

a) it can produce well-considered ideas by giving time for reflection;

b) a more equal participation among group members will be achieved;

c) the influence of group opinion on the individual can be avoided to some extent;

d) the final prioritization can lead to clear results.

STANDARDSISO.COM : Click to view the full PDF of ISO 6273:2024

© ISO 2024 – All rights reserved

The disadvantage is that the method can reduce the richness of ideas generated by interaction of the participants. Sometimes, this technique can be combined with that of focus group interviews.

5.3.5.3 Focus group interviews

Focus group interviews are group interviews in the form of a discussion among a small number of selected individuals on topics introduced by a moderator. Data are gathered not only from participants' responses but also from the discussion among them. Focus group interviews explicitly utilize and rely on group interactions. The dialogue among participants generates a broad coverage of a topic and can raise additional questions.

Virtual focus group interviews can be conducted via computer-mediated discussion. They have both strengths (e.g. easy to convene and gather data) and weaknesses (e.g. difficult to detect deceit and to establish rapport among participants).

The focus group interview needs a moderator and someone taking notes. Moderators should be trained in facilitation.

6 User needs for assistive products

6.1 General

There are two types of user needs for assistive products:

a) user needs concerning already existing assistive products;

b) user needs concerning non-existing products that users wish to be developed.

6.2 User needs regarding existing assistive products

6.2.1 General

The objective of a survey on user needs for existing assistive products is to identify the needs of users based on their use of and experience with the products. Such needs assessments are often used to determine what modifications and adjustments are necessary and appropriate and, in some cases, to determine whether a new product is needed to replace the current one.

6.2.2 Identification of performance deficiencies, problems or potential improvements

The survey should explore performance deficiencies, problems or potential improvements in existing products. Deficiencies in performance are based on observed deviations from performance requirements and problems are based on reported difficulties with using a product. However, potential improvements are more participative in nature and are based on anticipated results. In many cases, potential improvements reported by users relate to the user's lack of satisfaction with the current product. Information concerning deficiencies is particularly relevant to performance requirements. Information on deficiencies, problems and potential improvement can come from various existing sources, in addition to the survey for user needs. Also, data related to deficiencies and problems can come from evaluating the usability of the products.

6.2.3 Usability of existing assistive products

6.2.3.1 General

The questions in the survey shall include usability-concerned questions to explore deficiencies and potential improvements of assistive products for persons with sensory disabilities.

STANDARDSISO.COM : Click to view the full PDF of ISO 6273:2024

© ISO 2024 – All rights reserved

6.2.3.2 Efficiency of assistive products

The resources used to determine effectiveness include: time, human effort, money and materials. These resources are considered as expendable resources in the context of use.

The time used is the time expended to achieve a goal. The human effort used is the mental and physical effort of individual user expended to complete specified tasks. These resources are considered as expendable resources in the context of use and they should all be considered when evaluating efficiency.

6.2.3.3 Satisfaction with assistive products

Satisfaction should be measured by using a psychological scale taking the following factors into account.

— Emotions are the affective components of satisfaction. They result from the experience of using the assistive product.

— Beliefs, preferences and perceptions are cognitive components of satisfaction. They result from the experience of using the assistive product.

— Comfort or discomfort is the physical component of satisfaction. It results from the physical experience of using the assistive product.

Effectiveness and efficiency can be evaluated by physical, physiological or mental measurements. However, satisfaction cannot be evaluated by such measurements.

6.3 User needs for new assistive products

If an assistive product does not exist, the purpose of a survey for such a product is to identify potential user needs for a hypothetical product. This type of user needs assessment is typically based on the intended context of use (e.g. disability types of users, tasks, environment) envisioned for the assistive products. This context of use could be an initial high-level description of the assumed context of use or an initial context of use. User needs are sometimes assessed in terms of needs for potential new features instead of needs related to an entire assistive product.

User needs should be understood in terms of context of use from the initial stage of development, when determining the context of use of an emerging assistive product. In such cases, information should be collected from potential user groups concerning their goals, tasks and environment and associated accessibility needs. This information can then be consolidated and used to produce a context of use description.

EXAMPLE Survey for inconvenience in the daily life.

An unstructured or semi-structured interview concerning inconvenience in the daily life of persons with disabilities can produce information on deficiencies, problems and potential improvement in context of use. Analysis of the information can lead to an idea for user needs for assistive products.

Another type of survey for user needs is the interview survey concerning newly developed assistive products. It includes trial use of the developed assistive products.

7 Accessibility guidelines for survey with persons with sensory disabilities

7.1 General

A survey of persons with sensory disabilities requires adapted methods including accessible documents and communication. The surveyor should inform the participants about the complete content of questionnaires to get useful responses. The exchange of complete information with participants is essential in interviews.

STANDARDSISO.COM : Click to view the full PDF of ISO 6273:2024

© ISO 2024 – All rights reserved

7.2 Accessibility principles in questionnaire and interview

7.2.1 General

The four web accessibility principles (perceivable, operable, understandable, and robust) are also applicable to websites and applications (software), multimedia content, electronic documents and, to some extent, to printed and Braille documents.

NOTE 1 For web accessibility, see Web Content Accessibility Guidelines 2.1.[21]

NOTE 2 For user accessibility needs on information technology, see ISO/IEC 29138-1.

7.2.2 Perceivable

7.2.2.1 Websites and applications

Websites and user interfaces of applications should be presented to users in ways that they can perceive. This can be supported by assistive tools.

The following are guidelines for presenting websites and applications.

a) Text alternatives should be given for relevant non-text content so that assistive software can convert it into large print, Braille or speech.

b) Content should be adapted by assistive software in different ways, without losing information or structure (e.g. magnification up to 200 %, simpler layout or changing colour contrast schemes).

c) Information should be provided in local, national or international sign language videos and alternatively in plain language.

NOTE An automatic translation from standard language to plain language or sign language in reasonable quality is not available yet for any human language.

7.2.2.2 Multimedia

Multimedia content should be presented to users in ways that they can perceive.

The following are guidelines for presenting multimedia content.

a) Time-based media should be provided in accessible formats that can be played by accessible media players or, if this is not possible, alternatives for time-based media should be provided.

b) Captions, subtitles, audio description, audio subtitles and sign language should be provided for multimedia content.

NOTE An automatic production of subtitles, audio subtitles, captions and audio captions in reasonable quality is available for some human languages.

7.2.2.3 Designing electronic documents

Electronic documents should be presented to users in ways that they can perceive. The following are guidelines to support persons with low vision and blind persons using assistive software.

a) Text structuring styles of the word processor should be used in the intended way.

b) Insertion of spaces between characters within a word e.g. titles or headings should be avoided.

c) Capitalization of titles and headlines should be avoided.

d) Text alternatives should be supplied for relevant images and icons.

e) Built-in accessibility checker of the word processor should be utilized.

STANDARDSISO.COM : Click to view the full PDF of ISO 6273:2024

© ISO 2024 – All rights reserved

f) The document should be saved including the font family used to support magnification tools.

g) The document should be saved with all attributes, which is not the default setting of many word processors.

h) Complex tables or (nested) tables for layout purpose should be avoided.

i) When saving or converting a document to another format, no information and attributes shall be lost (e.g. reading order or hyperlinks). (This is often not supported by the default settings of the tools).

j) Internationally standardized character sets such as UTF-8 should be used. Characters that cannot be presented in Braille should be avoided.

k) Questionnaires in spread sheet, HTML or PDF formats should be used if they conform to the respective accessibility guidelines of this formats.

l) A plain text file of the document should be provided as this can be helpful for some Braille readers. When creating the plain text file, the character set of the export should be considered.

m) Customisation of type, size, and colour of fonts and background should be allowed to meet the needs of persons with low vision.

NOTE These functions are usually provided by assistive tools or presenting software.

7.2.2.4 Designing printed documents

Printed documents should be presented to users in ways that they can perceive.

The following guidelines support persons with sight problems or low vision.

a) The size of the type (point size) should be between 12 and 14 (x-height 2 mm to 2,3 mm) in continuous texts. The size of the type in headlines should be between 18 and 24.

NOTE x-height is the distance between the baseline and the mean line of lower-case letters in a typeface.

b) Sufficient colour contrast between the background and the text should be ensured. The contrast is affected by the size and the weight of the type. Black text on a white background provides sufficient contrast.

c) If using white type, sufficient contrast with dark background colour should be ensured.

d) Photos, graphics, drawings, pictures, maps or textures should not be used as background.

e) Sufficient coloration and contrast of characters, graphic symbols, pictorial symbols and pictograms should be ensured.

f) Using glossy paper should be avoided. Using paper where the text is seen from the reverse side should be avoided.

g) Stylised typefaces, such as those with ornamental, decorative or handwriting styles should be avoided.

h) Typestyles such as italic type, all caps or underlining should be avoided.

i) Extended or condensed character width should be avoided.

j) Font types with the same character width for all letters (typewriter) should be avoided.

k) Space between lines (leading) should be 1,5 times to 2 times the space between words on a line.

l) Light type weights should be avoided. Semi-bold or bold weights are often preferred by persons with visual impairments.

m) Typeface with clearly distinguishable shapes for characters and numbers should be used. Clear letter shapes also support the digitalisation of documents by optical character recognition.

STANDARDSISO.COM : Click to view the full PDF of ISO 6273:2024

© ISO 2024 – All rights reserved