

**ISO/IEC JTC1 SWG-A  
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**Preliminary report on  
the restructuring of the  
SWG-A User Needs  
Summary**

**Based on the revised  
Guide 71**

**Developed by  
Dr. Jim Carter**

**[Submitted on:  
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## Introduction

*ISO/IEC TR 29138-1:2009(E) Information Technology — Accessibility Considerations for People with Disabilities — Part 1: User Needs Summary* was organized based on the structure of guidance in clauses 8 and 9 of ISO/IEC Guide 71:2001.

ISO/IEC Guide 71 is being significantly revised to include a focus on accessibility goals and user accessibility needs. It is therefore appropriate for the replacement of the User Needs Summary to be reorganized based on the new structure presented by the revised Guide 71. By moving from the existing to the new structure, it will become more obvious that our current set of user needs are at a variety of levels of specificity and that there are a number of areas where we need to undertake work to identify additional user needs.

This is a very preliminary report suggesting that ISO/IEC Guide 71 can be used to expand and reorganize the existing User needs summary. It has no official status and will be modified considerably in the near future.

ISO/IEC JTC1 SWG-A has now established a new ad-hoc, led by Dr. Jim Carter (who prepared this draft on his own and with limited time). This new ad-hoc will develop an evolved draft for future consideration by ISO/IEC JTC1 SWG-A.

# **Preliminary report on the restructuring of the SWG-A User Needs Summary based on the revised Guide 71 standards**

## **1 Introduction**

When developing the original User Needs Summary, each time it was restructured the new structure helped to identify additional important use needs. Development finally ended once the structure of the original ISO/IEC Guide 71 was adopted.

ISO/IEC Guide 71 is now being revised. "The second edition of this Guide, retitled "Guide for addressing accessibility in standards," builds upon the edition published in 2001, titled "Guidelines for standard developers to address the needs of older persons and persons with disabilities". This edition takes account of developments in thinking and practice which have taken place since 2001 and takes a more inclusive approach."

The "accessibility goals" in Clause 6 of the new ISO/IEC Guide 71 provide a new structure that suggests that many further user needs might exist. This preliminary report suggests a possible mapping that identifies the need for much further exploration. It was already suggested that the SWG-A consider the needs related to individualization (which are absent in the original user needs summary). This possible mapping further suggests a number of areas where further exploration might uncover important user needs.

NOTE: the initial placement of the major chunks of needs from the original User needs Summary is initially based on a contribution from the convenor of the SWG-A to the Task Force that created the goals clause in Guide 71. As is noted in a few places, a number of individual needs might be moved to more suitable locations.

## **2 Preliminary analysis of user needs based on Guide 71's accessibility goals**

NOTE: This preliminary draft only focuses on the user needs and not on the "User problems" relating to these needs that help explain why these are user accessibility needs. It is expected that they will be added later in an informative annex which can be organized based on clause 7 of ISO/IEC Guide 71.

### 2.1.1 Suitability for the widest range of users

#### 2.1.2 Guide 71 materials:

**The goal:** A system is suitable for the widest range of users if it meets the needs of diverse users in diverse contexts.

User accessibility needs include:

- to be included as system users through the provision of accessible modes and methods of use;
- to have the system accessible to users with combinations of impairments and in adverse environmental conditions.

#### 2.1.3 Existing needs from *User Needs Summary*

16-6	electronic access to copyrighted and otherwise protected material
16-7	the product to be usable by those with multiple disabilities
16-8	a means to provide feedback about improvements to accessibility to meet their particular needs
16-9	product accessibility information to be disseminated to distributors, retailers, installers, system integrators, customer organizations, and people with disabilities

#### 2.1.4 Some potential additional user needs

##### Needs more work

Include needs from Guide 71

Perhaps should recognize a range of different environmental conditions (e.g. glare, noise, extreme hot or cold, public with lack of privacy, etc.)

## 2.2 Conformity with user expectations

### 2.2.1 Guide 71 materials:

**The goal:** A system conforms to user expectations if it is predictable based on the user's past experience, the context of use, laws and standards, and/or commonly accepted conventions.

User accessibility needs include:

- not to be surprised by the results of interactions with the system;
- to be able to apply personal knowledge and experience to interact successfully with the system;
- to receive instruction or training directed at preparing them for new knowledge needed to interact successfully with the system;
- to obtain immediate and easily accessible help or further instructions, where such help can be provided by the system.

### 2.2.2 Existing needs from *User Needs Summary*

### 2.2.3 Some potential additional user needs

Needs considerable work,

Include needs from Guide 71

Perhaps should identify some sources of expectations (e.g. organizational, cultural, application specific, platform specific, etc.)

## 2.3 Support for individualization

### 2.3.1 Guide 71 materials:

**The goal:** A system supports individualization if its components, functions or operations can be tailored to meet the needs of individual users.

User accessibility needs include:

- to be provided with (and to be able to choose) the way of interacting with a system that best works for them (including activating and deactivating built-in accessibility features);
- to be provided with information on available options for interacting with a system on which to base a choice of interaction methods;
- to be provided an accessible means to choose individualization features, to be maintained for future uses of the system, until changed by the user.

### 2.3.2 Existing needs from *User Needs Summary*

### 2.3.3 Some potential additional user needs

Needs considerable work

Can consult 9241-129 for further topics of importance

Include needs from Guide 71

This is the topic that the individualization ad hoc is supposed to be looking into

## 2.4 Approachability

### 2.4.1 Guide 71 materials:

**The goal:** A system is approachable if diverse users can overcome any physical or psychological barriers and physically or remotely access it to accomplish the task.

User accessibility needs include:

- to have adequate room to fit themselves and their assistive products or assistive technology;
- to have system controls located within close reach;
- to have interaction options clearly presented;
- to have appropriate levels of privacy and security;
- to be able to use the system remotely as well as directly.

### 2.4.2 Existing needs from *User Needs Summary*

11-1	products where hazards are obvious, easy to avoid, and difficult to trigger
11-2	products that do not rely on specific senses or fine movement to avoid injury EXAMPLE: Products that don't assume that body parts will never stray into openings or that only gentle body movements will occur around the products.
11-3	to use products safely without seeing hazards or warnings
11-4	to use products safely without hearing hazard warnings
11-5	to avoid visual patterns that causes them to have seizures
11-6	to avoid auditory patterns that causes them to have seizures
11-7	products that do not give off electromagnetic radiation NOTE Users might have embedded devices (e.g. pacemakers, bionic interfaces to replacement limbs) and/or attached devices (e.g. drug-pumps, or alarm cords) which could be sensitive to electromagnetism and are actually part of the "user".
11-8	products that do not give off chemicals that they are allergic to NOTE Further verification is needed to substantiate this user need for standard development purposes.

16-1	new technologies that are accessible when they are released
16-2	to access the controls that allow them to turn on and adjust the built in accessibility features
16-3	an accessible path and a means to position oneself within reach of installed products
16-4	timely access to trained customer service personnel (e.g. Help Desk)
16-5	accessible training and support materials
16-10	to have their accessibility functions available at all times, without disruption

### 2.4.3 Some potential additional user needs

#### Needs more work

Include needs from Guide 71

Perhaps should identify some of the main sources of barriers (both physical and psychological)

## 2.5 Perceivability

### 2.5.1 Guide 71 materials:

**The goal:** A system is perceivable if diverse users in diverse contexts can sense the information and functionalities it presents.

User accessibility needs include:

- to use a specific sensory modality (or a set of specific modalities) to perceive information;
- to control various presentation attributes of a modality;
- to be able to distinguish among the individual elements of information that are being presented;
- to control the physical environment (to the extent reasonable) so that it does not interfere with perceiving the information.

### 2.5.2 Existing needs from *User Needs Summary*

1-1	visual information also available in auditory form
2-1	auditory information also available in visual form
1-2	visual information also available in tactile form
2-2	auditory information also available in tactile form

1-3	sufficient brightness for visually presented information (luminance for displays -- illumination for printed)
1-4	any information (other than the colour itself) that is presented through colour to be also presented in another way that does not rely on colour.
1-5	to change the colours of information
1-6	text readable with reduced visual acuity Note: Automatically scroll large print text horizontally or vertically on a screen without the need to manually manipulate the source material.
1-7	information within viewable range of those of short stature or seated in wheelchairs
1-8	to avoid reflective glare
1-9	to avoid glare from excessive brightness (of material or surrounding)
1-10	to pause, and re-play information presented using audio, video or animation.
1-11	to perceive foreground visual information in the presence of background
1-12	to see and hear text simultaneously

2-3	to adjust the volume to a suitable level
2-4	auditory events, alerts etc, be multi-frequency
2-5	when vibration is used as a substitute for different auditory events, then some need vibration to have different vibration patterns (rather than vibration frequency or strength)
2-6	multi-channel auditory information available in monaural form
2-7	to pause, and re-play audio information
2-8	to perceive foreground audio information in the presence of background (including ambient noise)
2-9	to adjust the audio characteristics (e.g. pitch, balance)

3-1	to locate and identify all keys and controls via non-visual means without activating them Note: touch sensitive or very light touch controls located where they will not be touched while tactilely finding keys they must use to operate device.
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3-2	to have non-actionable elements (logos, decorative details) not look or feel like buttons or controls
3-3	sufficient landmarks and cues to be able to quickly re-find all keys and controls during use NOTE: Nibs, groupings, spacing are examples of tactile landmarks.
3-4	controls that visually contrast with their surroundings Note: some benefit from ability to adjust colors of on screen controls
3-5	controls to be in places where they can be easily found with low vision and with no sight
3-6	controls within viewable range of people of short stature or seated in wheelchairs
3-7	focus and pointing indicators that are visible with low vision
3-8	information describing the layout of the operational parts
3-9	location and layout of controls to be consistent

4-1	a non-visual equivalent to any visual indicators or operational cues, designed (power light) or intrinsic (e.g. visual movements)
4-2	a non-audio indicator for any auditory indicators or operational cues, designed (e.g. beeps, lights) or intrinsic (e.g. machine sounds, visual movements)
4-3	a non-tactile alternative to any subtle tactile feedback
4-4	alternatives that are different, when different signals are used (e.g. different ring tones, or tactile or visual indicators)
4-5	visual indicators (e.g. LEDs, on screen indicators, mouse cursors) that are visible with low vision
4-6	controls and indicators that are perceivable without relying on colour
4-7	sufficient quality (e.g. volume, direction, clarity, frequency) for audio cues
4-8	tactile indicators (i.e. for those who need indicator to be both non-visual and non-auditory)
4-9	information within viewable range of those of short stature or seated in wheelchairs

5-1	feedback to be audio or tactile (i.e. non-visual)
5-2	feedback to be tactile (i.e. both non-visual and non-auditory)
5-3	a visual or auditory alternative to any subtle tactile feedback
5-4	alternatives that are different, when different signals are used (e.g. different ring tones, or tactile or visual indicators)
5-5	visual feedback that is obvious with low vision
5-6	feedback that is perceivable without relying on colour
5-7	to adjust the colours to make things easier to read
5-8	sufficient quality (e.g. volume, direction, clarity, frequency) for audio feedback
5-9	audio feedback that does not require tone differentiation
5-10	visual or tactile feedback to occur at the same location as the control
5-11	clear feedback of connector engagement (e.g. power cord, PC card, USB connector, etc.)
5-12	feedback to be predictable

### 2.5.3 Some potential additional user needs

#### Can benefit from further reorganization

Include needs from Guide 71 (possibly to help structure)

Currently more detailed than other areas

Needs tactile specific items

Some items (e.g. 5.12) might better fit in conformity with user expectations

## 2.6 Understandability

### 2.6.1 Guide 71 materials:

**The goal:** A system is understandable if its information and functionalities are interpretable by diverse users.

User accessibility needs include:

- to be able to obtain an overview of the system and its components and functionalities;
- to be able to understand information presented by the system;
- to have information that supports their cognitive abilities;
- to have the steps for completing tasks minimized and clearly explained;
- to have cues to assist them in completing tasks;
- to have feedback that shows users the results of their actions;
- to be able to control the pace of interaction with the system;
- to be able to access help when needed.

### 2.6.2 Existing needs from *User Needs Summary*

13-1	to get overview and orient themselves to product and functions/parts without relying on visual presentation or markings on product
13-2	wording, symbols, and indicators used on products that are as easy to understand as possible given the device and task Note: Information and feedback is to be "salient," and "specific" rather than subtle or abstract in order to understand it.
13-3	products or services to use standard conventions, words and symbols for their culture (cross-cultural if possible)
13-4	clear and easy activation mechanisms for any access features
13-5	navigation that supports different thinking styles
13-6	to understand product if they have difficulty thinking hierarchically
13-7	any text read aloud to them
13-8	steps for operations that are minimized and clearly described
13-9	interfaces that limit the memorization required of the user to operate them successfully
13-10	cues to assist them in multi-step operations
13-11	simple interfaces that only require them to deal with the controls they need (advanced or optional controls removed in some fashion)
13-12	each function on its own key rather than having keys change their functions but look/feel the same
13-13	to know that a product is usable by them and how to set it up to work for them
13-14	information presented in an alternative to text based representation

14-1	textual material to be worded as clearly and simply as possible
14-2	text, illustrations and diagrams in spoken form
14-3	to not have device noise or regular audio output interfere with ability to understand accessibility audio
14-4	visual information generated by access features (such as captions) not to occur simultaneously with other visual information that they must view EXAMPLE: Captions that are not essential to understanding are not displayed at same time as critical

	information is presented on the screen.
14-5	image resolution and speed be sufficient to understand any sign language presented
14-6	to slow audio, video, or animated information down slightly
14-7	to replay, pause, change speed in order to understand information
14-8	to replay auditory information
14-9	enlargeable text wordwrap that stays on screen and is understandable
14-10	feedback using pictures or symbols
14-11	to silence audio output
14-12	information presented in an alternative to text
14-13	textual information presented using figures of speech (such as abbreviations, idioms, metaphors, etc.) is also presented in a way that does not require understanding of those figures of speech
14-14	information to be available regarding the meaning associated with colours and symbols

### 2.6.3 Some potential additional user needs

#### Can benefit from further reorganization

Currently more detailed than most other areas

## 2.7 Controllability

### 2.7.1 Guide 71 materials:

**The goal:** A system is controllable if the user is able to initiate and complete the interaction(s) required to accomplish the task.

User accessibility needs include:

- to be able to use a specific interaction modality (or a set of specific interaction modalities) to interact with the system;
- to be able to perform the task using various parts of the body and specific types of actions;
- to be able to perform tasks one step at a time;
- to be able to interact with the system at one's own pace.

### 2.7.2 Existing needs from *User Needs Summary*

(5.11 belongs more with approachability)

### 2.7.3 Some potential additional user needs

Needs major work

Needs to be parallel to perceivability

Include needs from Guide 71 (possibly to help structure)

## 2.8 Usability

### 2.8.1 Guide 71 materials:

**The goal:** A system is usable if it supports diverse users in their diverse contexts to accomplish their tasks with effectiveness, efficiency and satisfaction.

User accessibility needs include:

- to be able to avoid making mistakes in completing tasks;
- to perform tasks with a minimum of physical and cognitive exertion;
- to be able to complete tasks in an efficient manner relative to one's own abilities (i.e. what is efficient for one user will not necessarily be equally efficient for other users);
- to be able to complete tasks within the available time;
- to be able to complete tasks with the available resources;
- to be satisfied with the outcome of interacting with the system;
- to have confidence that using the system will not involve any negative consequences or unacceptable risks;
- to be satisfied that the system is worth using;
- to have a positive physical and psychological experience using the system.

### 2.8.2 Existing needs from *User Needs Summary*

### 2.8.3 Some potential additional user needs

Needs major work

Include needs from Guide 71 (possibly to help structure)

(This evolved from *Suitability for the task*)

## 2.9 Error tolerance

### 2.9.1 Guide 71 materials:

**The goal:** A system has error tolerance if despite predictable errors, diverse users can complete the intended task or activity with either no, or minimal, corrective action or negative consequences.

User accessibility needs include:

- to be able to explore a system without unintentionally activating components or their functionality;
- to be able to successfully operate a system with limited body control (e.g. strength, tremors);
- to be able to detect when errors have been made;
- to be able to recover from errors made from interacting with the system (whenever possible);
- to reset a system to an earlier or original condition as a means to responding to errors;
- to avoid errors by having negative consequences be obvious, easy to avoid, and difficult to trigger.

### 2.9.2 Existing needs from *User Needs Summary*

7-1	much more time to read displayed information
7-2	much more time to complete actions - and no feeling of time pressure
7-3	information necessary to plan their actions in advance
7-4	the ability to avoid visual or auditory distractions that prevent focusing on a task

8-1	products and controls designed so they can be explored without activation, either tactilely or through keyboard navigation
8-2	to operate controls with tremor or spasmodic movements without inadvertent entries
8-3	controls that are not activated by a slight touch or when they receive keyboard focus

9-1	notification when the product detects errors made by the user
9-2	unambiguous guidance on what to do in the event of a reported error
9-3	a means (e.g. a mechanism) to go back and undo the last thing(s) they did
9-4	to reset (to initial condition)

### 2.9.3 Some potential additional user needs

Could use more work

A good start

Include needs from Guide 71 (possibly to help structure)

## 2.10 Equitable use

### 2.10.1 Guide 71 materials:

**The goal:** A system provides equitable use if it allows diverse users to accomplish tasks in an identical manner whenever possible or in an equivalent manner when an identical manner is not possible.

User accessibility needs include:

- to be able to use a system that follows this standard in a manner that is as similar as possible to other users;
- to be able to use a system that follows this standard in a manner that is different from but equivalent to that of other users;
- to have available alternate ways of interacting with a system that follows this standard.

### 2.10.2 Existing needs from *User Needs Summary*

6-1	to operate all functionality using only tactilely discernable controls coupled with non-visual feedback Note: In order to operate products efficiently and in available time (see 6-7 and 6-12) some need to be able to access all computer software functionality from the keyboard (or keyboard emulator) without any visual feedback.
6-2	to access all functionality without having to use touch or very light touch activated controls
6-3	to fully operate the product without requiring a pointing device
6-4	to access all computer software functionality from the keyboard (or keyboard emulator) with only visual feedback
6-5	an alternative method to operate any speech controlled functions
6-6	a method to fully operate the product that does not require simultaneous actions
6-7	a method to fully operate the product that does not require much force
6-8	a method to fully operate the product that does not require much continuous force
6-9	a method to fully operate the product that does not require much stamina (includes sustained or repeated activity without sufficient rest)
6-10	a method to fully operate the product that does not require much reach (weakness,, stature or wheelchair)
6-11	a method to fully operate the product that does not require tight grasping
6-12	a method to fully operate the product that does not require pinching
6-13	a method to fully operate the product that does not require twisting of the wrist
6-14	a method to fully operate the product that does not require direct body contact
6-15	a method to fully operate the product that does not require much accuracy of movement Note: Some need the customization of the object area where a double click is effective
6-16	to adjust the speed and acceleration of input devices Note: Some need a setting for adjusting the acceleration of a pointer.
6-17	to operate the product with only a left or only a right hand
6-18	to operate the product without use of hands
6-19	to operate the product using only speech
6-20	alternatives to biometric means of identification
6-21	alternative modalities to text input
6-22	to have similar patterns of activation for similar actions
6-23	visual indication of keyboard shortcuts

10-1	private listening capability, when using audio alternatives to visual information in public places
10-2	protection of the privacy of their information, even if they are not able to do the “expected” things to protect it themselves
10-3	security of their information, even if they are not able to do the “expected” things to protect it

	themselves
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12-1	alternate modes of operation that are effective given the time constraints of the task
12-2	keyboard navigation that follows a meaningful sequence through form controls
12-3	to increase the rate of audio alternatives (unless there are minimal audio alternatives)
12-4	system level accessibility preference settings that apply across applications
12-5	to have applications not override or defeat built-in accessibility features
12-6	accessibility preference settings preserved unless explicitly changed Note: Any applications that want to change accessibility features can ask the user first, and return the setting when the application ends.
12-7	preference settings to change immediately preferably without requiring system reboot
12-8	to save and restore individual preference settings
12-9	accessibility functions that can be returned to an initial state individually or together after each user
12-10	hardcopy documents to be usable with one hand or mouthstick
12-11	structure when navigating long audio material
12-12	consistent and predictable user interfaces

### 2.10.3 Some potential additional user needs

Generally well covered

But, many of these might belong in controllability

Include needs from Guide 71 (possibly to help structure)

## 2.11 Compatibility with other systems

### 2.11.1 Guide 71 materials:

**The goal:** A system provides compatibility if it allows diverse users to use other systems as a means to interact with it to accomplish the task.

User accessibility needs include:

- to be able to use their own assistive products or assistive technology to interact with all the functionalities of the system;
- to have the system not interfere with their assistive products or assistive technology.

### 2.11.2 Existing needs from *User Needs Summary*

15-1	that the product not interfere with AT (e.g. No electrical noise interference with hearing devices.)
15-2	to use their AT with the device (e.g. Alternate display, amplifiers, or alternate controls)
15-3	full and efficient functional control of a product using their AT, including pass-through of user feedback and notifications such as error messages
15-4	an AT available that will work with new technologies, at the time of release of the new technology

### 2.11.3 Some potential additional user needs

Could use more work

A good start

Can consult 13066-1 to see if covered sufficiently

Include needs from Guide 71 (possibly to help structure)