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Secretariat ISO/IEC JTC 1/SC 35 –Nathalie Cappel-Souquet – 11 Avenue Francis de

Pressensé93571 Saint-Denis La Plaine Cedex - France Address

Telephone: +33 1 41 62 82 55; Facsimile: 33 1 49 17 90 00; e-mail:

nathalie.cappelsouquet@afnor.org



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Information Technology - User Interfaces - Accessible User Interface for Accessibility Setting on Information Devices Part I : General and methods to start.

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

The work item consists of the following parts, under the general title "Information Technology - User Interfaces - Accessible User Interface for Accessibility Setting on Information Devices" :

- Part 1 : General and methods to start
- Part 2 : Method to set up

Introduction

Recent studies concerned accessibility have been making information devices, such as computer, ticket vending machine, ATM, etc., more accessible. These devices can present information in various manners, and have various input user interfaces. The people with disabilities in access, such as the people with visual, hearing, limbs impairment, etc., can operate these devices through various accessible interfaces.

In order to enable the accessible user interfaces, however, the accessibility setting should be done prior to using these devices. Unfortunately, in the information devices existed before this document is established, user interfaces of the ways to access the accessibility setting are not yet accessible enough for the people with disabilities in access to operate by themselves. Thus these people cannot make these devices accessible without other one's help.

In this document, necessity of standardization of user interface of the accessibility setting is described, and requirements of user interface of the accessibility setting are proposed. This standardization will make the information devices more accessible so that the people with disabilities in access can operate accessibility setting by themselves independently.

This work item includes both the methods to start the accessibility setting that include how to open the accessibility setting mode and how to enable the accessibility function directly, and methods to set up the accessibility functions in the accessibility setting mode. Thus, as mentioned in Foreword, this work item consists of multi parts. Part I : General and methods to start, and Part II : Methods to set up.

Information Technology - User Interfaces - Accessible User Interface for Accessibility Setting on Information Devices

Part I : General and methods to start

1 Scope

The people with disabilities in access cannot do the accessibility setting of the information devices by themselves as long as the user interface of the accessibility setting is not accessible.

This document describes requirements to make the user interface of the accessibility setting accessible. Part I mentions about the methods to open the accessibility setting mode where the user set up the various accessibility functions, and also describes about the methods to enable the accessibility functions directly without open the accessibility setting mode. Part II mentions about methods to set up the accessibility functions in the accessibility setting mode

This document focuses on the user interface of computer* for the present. For the future, the discussion will be hoped to extend to other information devices, such as ticket vending machine, ATM, PDA, portable phone, etc.

**The user interface in this document does not include the interface before OS activation.*

2 Normative references

ISO CD 9241-171 "Ergonomics of human-system interaction – Guidance on software accessibility."

NOTE : "CD" will be replaced "IS" or "TR" when this item becomes IS or TR.

ISO/IEC Guide 71 "Guidelines for standards developers to address the needs of older persons and persons with disabilities."

3 Definitions

3.1 information device

Devices which presents/receives information to/from user. They include computer, ticket

vending machine, ATM, PDA, portable phone, etc. In this document, the information device means computer mainly.

3.2 people with disability in access

People who have some disability in accessing the information because of various reason, such as visual, hearing, limbs impairments, etc.

3.3 accessibility function

Functions or techniques to make the user interface accessible for the person with disability in access.

NOTE : See Clause 4.

3.4 accessibility setting

Setting to make the user interface accessible for the person with disability in access. For example, the setting to make large text or zoom screen ON for the people with low vision.

3.5 accessibility setting mode

Mode where the user conducts the accessibility setting.

3.6 shortcut keys

Keys, key sequences, or key combinations which invoke an action immediately without displaying intermediate information (such as menus) or requiring pointer movement or any other user activity.

NOTE: Also called accelerator keys and hot keys. (cf. ISO CD 9241-171)

4 Accessibility functions

There are various accessibility functions that enable the people with disability in access to operate information devices. They include accessible input and output user interface. The accessible input user interface includes accessible key operations, shortcut keys, voice operation, etc. The output interface includes screen reader, Braille display, large characters, etc. For full details, refer to ISO CD 9241-171.

5 Requirements of accessibility setting interface

5.1 Provide accessible methods to start the accessibility setting

5.1.1 Provide accessible methods to open the accessibility setting mode

First of all, some actions that user should do when the user interface is not accessible shall be provided. These actions open the accessibility setting mode. These actions shall be enough accessible by accepting various user interfaces such as keyboard operation, voice operation, etc. The available modalities of actions should be extensible in future. Details are described in Clause 6.

5.1.2 Provide accessible shortcuts to enable the accessibility functions

Providing some shortcut accesses to enable the accessibility functions directly without opening the accessibility setting mode is convenient for accessing the functions that are frequently used. These shortcuts shall be enough accessible by accepting various user interfaces such as keyboard operation, voice operation, etc. The available modalities of shortcuts should be extensible in future. Details are described in Clause 7.

5.2 Provide accessible methods to set up

In the accessibility setting mode that was opened by the method described in 5.1.1, the setting sequence progresses in accessible conversation interface. As ideal manner, the setting sequence is performed not only by user setting, but also by automatic protocol that can find optimal values for user. Quantitative setting range (ex. volume of speech, contrast of large letters, etc.) should be referred to ISO/IEC Guide71 and the guidelines discussed in ISO TC159/WG2. The concrete specifications are described in Part II.

6 Method to open the accessibility setting mode

This clause defines the first actions that user should do when the user interface is not accessible. These actions open the accessibility setting mode.

6.1 Open by keyboard operation

Keyboard operation to open the accessibility setting mode shall be simple action so as to be accessible for various users including persons with limb impairment, hand tremor, etc.

Examples:

- a) Push help key for 5 seconds
- b) Push over 5 keys by palm simultaneously for 5 seconds
- c) So far, the action "pushing shift key 5 times" is assigned to "fix key" (see ISO CD 9241-171). This action is common to conventional OSs. Thus this action can be re-assigned to the common method to open the accessibility setting mode.

Note: These tentative examples proposed in this clause will be concrete specification when this document becomes IS.

6.2 Open by voice operation

If the information device can receive the voice operation, it shall provide the method to open the accessibility setting mode by voice operation. It is beneficial to the various users including persons with difficulties in operating keyboard and/or mouse.

Example:

- a) Talk "You are not accessible!" in voice

6.3 Open by mouse operation

If the information device has mouse, it shall provide the method to open the accessibility setting mode by mouse operation. Mouse operation is sometimes easier for some users than keyboard operation, because the mouse and its buttons are usually bigger than the keys of keyboard. It is beneficial to the various user including persons with difficulties in operating small keys.

Example:

- a) Push mouse button for 5 seconds
- b) Thrust mouse and slide it in unusually fast speed

6.4 Open by other operations

The available modalities for actions to open the accessibility setting mode should be extensible in future. For example, the present information devices are not equipped with eye sign interface for the persons with total paralysis, Braille input/output interface for the persons with visually impairment, etc. In future, when these user interfaces are built in, the information device shall be provide method to open the accessibility setting mode through that user interfaces. The method shall be also enough simple and accessible.

6.5 Feedback

If the accessibility setting mode is opened by above actions, the information device shall notify the user in accessible manners including sound, speech, large letters, Braille, etc.

7 Shortcuts to enable the accessibility functions

This clause defines the shortcut accesses to enable the accessibility functions directly without opening the accessibility setting mode.

7.1 Shortcut keys

Keyboard shortcuts to enable the accessibility function shall be simple action so as to be accessible for various users including persons with limb impairment, hand tremor, etc.

Examples:

- a) Pressing shift key 5 times enables StickyKeys (reserved by CD9241-171)
- b) Pressing right shift for 8 seconds enables SlowKeys (reserved by CD9241-171)
- c and later) Other accessibility functions such as the access features defined by CD9241-171 will be assigned to some shortcut keys.*

Note: These tentative examples proposed in this clause will be concrete specification when this document becomes IS.

7.2 Shortcut voice operation

This clause will describe shortcut voice operations.

7.3 Shortcut mouse operation

This clause will describe shortcut mouse operations.

7.4 Shortcut by other operations

This clause will describe future extension of shortcut.

7.5 Feedback

If the accessibility setting function is enabled by above shortcut, the information device shall notify the user in accessible manners including sound, speech, large letters, Braille, etc.

Annex A (informative) - Conventional methods to start accessibility setting

The following are examples of the methods to start the accessibility setting of the conventional OSs before this documents is established.

NOTE : The " conventional OSs" described in this document are the existing OSs in 2005. Only Windows* and Mac OS** are investigated (Unix*** and Linux**** are not investigated). This Annex may be deleted when this item becomes IS.

*Windows is a registered trademark of Microsoft Inc.

**Mac OS is a registered trademark of Apple Computer Inc.

***Unix is a registered trademark of The Open Group.

****Linux is a registered trademark of Mr. Linus Torvalds.

A.1 Start from "Help" function

A.1.1 Windows XP Professional

- 1) Shortcut key [Windows]+[F1]
- 2) "Help and Support" window
- 3) "User Assistance" window
- 4) "Visual Impairment" window
"Hearing Impairment" window
"Limbs Impairment" window
- 5) "User Assistance Options" window in Control Panel

A.1.2 Mac OS X Panther

- 1) Shortcut key [Command]+[?]
- 2) "Mac OS Help" window
- 3) "Browse Mac OS Help" window
- 4) "Customize Mac" window
- 5) "Make screen more visible..." window
- 6) Universal Access in System Setting

A.2 Start from "Control Panel"

A.2.1 Windows XP Professional

- 1) Open Control Panel in Start Menu.
- 2) "Control Panel" window
- 3) "User Assistance Options" window
- 4) Go to A.1.1. 5) or "Wizard of User Assistance" windows

A.2.2 Mac OS X Panther

- 1) "Open System Setting" in Apple Menu
- 2) "System Setting" window
- 3) See A.1.2.6)

A.3 Shortcut keys to enable the accessibility functions

description	Windows XP Professional		Mac OS X Panther	
	name	shortcut key	name	shortcut key
Sequential embellish key input	<input type="radio"/> Fix key	Shift key 5 times	<input type="radio"/> Complex key	Shift 5times
Short key pushing ignored	<input type="radio"/> Filter key	Shift key 8s	<input type="radio"/> Slow key	
Present sound when lock keys change	<input type="radio"/> Change key	NumLock 5s	?	
Blink screen with sound	<input type="radio"/> Sound display		<input type="radio"/>	
Present explanation with sound	<input type="radio"/> Sound explanation		?	
Color inverse	<input type="radio"/> High contrast	Alt+Left Shift+PrintScreen	<input type="radio"/>	Command+Option+Control+8
Gray scale	<input type="radio"/> High contrast	Alt+Left Shift+PrintScreen	<input type="radio"/>	
Character size	<input type="radio"/> High contrast	Alt+Left Shift+PrintScreen	<input type="radio"/>	
Contrast	<input type="radio"/> High contrast	Alt+Left Shift+PrintScreen	<input type="radio"/>	Command+Option+Control+ .or,
Zoom of screen	<input type="radio"/> Loupe		<input type="radio"/> Zoom	Command+Option+8 and -or^
Change of blink speed of cursor	<input type="radio"/>		?	
Change of cursor width	<input type="radio"/>		?	
Change of scroll bar size	<input type="radio"/>		?	
Change of icon size	<input type="radio"/>		<input type="radio"/>	
Operation of mouse pointer by ten key	<input type="radio"/> Mouse key	Alt+Left Shift+NumLock	<input type="radio"/> Mouse key	Option 5times
key input by pointer on screen	<input type="radio"/> Screen keyboard		<input type="radio"/> Key arrangement	
Selection by tab or cursor key	?		<input type="radio"/> Full keyboard access	Control+F1
Interface of serial input	<input type="radio"/>		?	
Repetition speed of key	<input type="radio"/>		<input type="radio"/>	
Time to cognize repetition input of key	<input type="radio"/>		<input type="radio"/>	
Speed of mouse	<input type="radio"/>		<input type="radio"/>	

A.4 Conventional user interface of accessibility setting and their problems

To enable the accessibility functions mentioned in Clause 4, the accessibility setting must be done in advance. If the people with disability in access wish to use information device, they must open the accessibility setting mode at first, and complete the setting.

Unfortunately, however, there are two major problems in the conventional user interface of accessibility setting.

A.4.1 User interface to open the accessibility setting mode is not unified.

The user interface to open the accessibility setting, such as shortcut keys, is quite different depending on OSs, and is not unified. Thus the people with disabilities in access cannot do accessibility setting when they operate unfamiliar information terminal (ex. computer with unfamiliar OS).

The conventional OSs provide some shortcut keys for the accessibility setting. However, they are also quite different depending on OSs, and are not unified, either. Furthermore, there is no shortcut key to open the accessibility setting mode directly, though there is shortcut key to open the HELP mode.

A.4.2 User interface of the accessibility setting is not accessible.

The user interface of the accessible setting is not accessible. For example, people who have difficulties in operating keyboard and/or mouse can hardly open the accessible setting operation, characters appear in the window of the accessible setting are too small to read for the low vision people, etc. Thus the people with disabilities in access cannot do accessibility setting by themselves.