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Part 60:

General guidance on gestures for screen readers

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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. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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 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).

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For an explanation on 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 the following URL www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/IEC JTC 1, Information technology, SC 35 User interfaces.

ISO/IEC 30113 consists of the following parts, under the general title Information technology — Gesture-based interfaces across devices and methods:

- *Part 1: Framework*
- *Part 5: Gesture Interface Markup Language (GIML)*
- *Part 11: Single-point gestures for common system actions*
- *Part 12: Multi-point gestures for common system actions*
- *Part 21: Single-point gestures for device control*
- *Part 22: Multi-point gestures for device control*
- *Part 31: Single-point gestures for document and image viewing*
- *Part 32: Multi-point gestures for document and image viewing*
- *Part 41: Single-point gestures for music and video playing*
- *Part 42: Multi-point gestures for music and video playing*
- *Part 51: Single-point gestures for Web navigation*
- *Part 52: Multi-point gestures for Web navigation*
- *Part 60: General guidance on gestures for screen readers*
- *Part 61: Single-point gestures for screen readers*

— Part 62: Multi-point gestures for screen readers

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Introduction

Even if users with visual impairments utilize a same hardware as sighted users, it is possible that they will prefer to use different gestures or to perform the same gestures differently from the sighted users. Even the sighted users can perform the differently when they lack visual feedback.

Users with visual impairments experience problems in understanding shapes or outlines of gestures for ICT devices, even though they appear simple to sighted users. The critical problem is basically visual information and feedback from ICT devices. Therefore, it is required to equip them with special gestures for users with visual impairments.

Screen readers support their users in identifying and understanding content displayed on a screen of an ICT device. The information about the content is loudly read back to the users by the screen readers which might utilize text-to-speech or braille output devices. While sighted users visually scan and understand the content of the screen, the users with visual impairments utilize screen readers to understand the content. The screen is generally composed of page regions, headings, navigation elements, text links, images, etc. It is necessary for users of screen readers to identify the elements and navigate the pages. Therefore, specially designed gestures of screen readers are required. The gestures should be standardized for the users of screen readers.

This document provides a general guidance on the standard gestures for screen readers running on various ICT devices. The gestures are primarily utilized by the users of screen readers, when they interact with ICT devices. [Annex A](#) provides informative descriptions about specific instances of the gestures for screen readers.

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Information technology — Gesture-based interfaces across devices and methods —

Part 60: General guidance on gestures for screen readers

1 Scope

This document provides a general guidance on gestures for screen readers running on various ICT devices.

This document does not define or require specific technologies for recognizing the gestures. It focuses on descriptions of gestures and functions for screen readers running on ICT devices.

2 Normative references

The following referenced documents are indispensable for the application 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/IEC 30113-1, *Information technology — User interface — Gesture-based interfaces across devices and methods — Part 1: Framework*

ISO/IEC 30113-11, *Information technology — Gesture-based interfaces across devices and methods — Part 11: Single-point gestures for common system actions*

ISO/IEC 24786, *Information technology — User interfaces — Accessible user interface for accessibility settings*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

3.1

gesture command

instruction to a system resulting from a gesture input by a user

[SOURCE: ISO/IEC 30113-1:2015 (en), 3.3]

3.2

screen reader

function that reads the characters and other information on the screen aloud to the user to allow access to the information on screen without viewing the screen

[SOURCE: ISO/IEC 24786:2009 (en)]

**3.3
point of interest**

POI_{SEP}^L

specific point location that a user utilizes to formulate a gesture

[SOURCE: ISO/IEC 30113-11:2017, 3.1]

Note 1 to entry: A POI is used by a user to interact with an object on a screen and does not need to be a specific location on an object. It could be located anywhere on an object.

**3.4
closed gesture**

gesture of which start point and end points coincide

**3.5
accessibility**

extent to which products, systems, services, environments and facilities can be used by people from a population with the widest range of user needs, characteristics and capabilities to achieve identified goals in identified contexts of use

Note 1 to entry: Context of use includes direct use or use supported by assistive technologies.

[SOURCE: ISO 9241-112:2017, 3.15]

**3.6
path-based gesture**

gesture which start from a start point and goes through at least one intermediate point before arriving an end point to complete the gesture

**3.7
length**

cumulative sum of Euclidean distance (in pixels) between adjacent points of a path of a gesture

4 Guidance

4.1 General

This document expands the guidance in ISO/IEC 30113-1 by focusing on gestures specific for screen readers. The gestures for screen readers shall be accessible by all users of screen readers including people with visual impairments.

4.2 Guidance on a syntax

4.2.1 Simplicity

The syntax of the gestures shall be as simple as possible.

NOTE If gestures for screen readers are complicated, it is quite difficult or impossible for users of screen readers to accomplish a task using the gestures. Design alternatives usually exist to allow simple gestures.

4.2.2 Time

Time required for completing a gesture or a sequence of gestures shall be adjustable to allow users to perform their gestures for a task.

NOTE 1 If there is a time constraint on performing gestures for screen readers, it would increase chances of making errors (such as failures in gesture recognition) by users of screen readers. Speed of performing gestures by the people with disabilities is generally slow.

NOTE 2 It takes approximately twice longer time for people with visual impairment to perform the same gestures than sighted people.

4.2.3 Number of POI

A number of POI's to perform a gesture shall be reduced as much as possible.

NOTE When multiple POI's are required to perform gestures for a task, it is difficult for users of screen readers to perform the gestures and accomplish the task.

4.2.4 Path

A complicated path-based gesture shall be avoided. The complexity of the path-based gesture can be generally defined in terms of its shape and length. If a complicated path-based gesture is required to accomplish a task, users of screen readers tend to deviate from the required path of the gesture.

NOTE People with visual impairments have difficulties in making gestures with a right angle or steep angles. They prefer to use gestures with rounded angles, e.g. larger than 28 degrees.

4.2.5 Closed gesture

The use of closed gestures shall be avoided.

NOTE It is difficult for people with visual impairments to complete a closed gesture such as drawing a complete circle.

4.3 Guidance on semantics

4.3.1 Denotation

The intention of the gestures shall conform to user expectations.

NOTE ISO 9241-110 describes conformity with user expectations.

EXAMPLE The left gesture is used to move a POI to the previous applications. Since it resembles an action of moving a window on a document, the users can easily comprehend the meaning of the gesture.

4.3.2 Consistency

The gestures shall be consistent across context and functions.

NOTE The tapping gesture with a single POI is designed to read aloud an item under a POI. In the same context, the tapping gesture with three POI's is for reading aloud page number or row to find user's location.

4.3.3 Learnability

The gestures shall be easy to learn.

NOTE If gestures are easy to learn, it reduces time for training and chance of making errors while performing the gestures.

4.4 Guidance on evaluation

4.4.1 Feedback

A screen reader shall provide feedback on a gesture. Users of screen readers should be able to know progress and/or result of performing a gesture by means of non-visual feedback (i.e. audible feedback or tactile feedback).