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Information technology — Virtual keyboards user interfaces — Part 2: On-screen keyboards with direct touch interface

Technologies de l'information — Interface utilisateur des claviers virtuels — Partie 2 : Claviers sur écran doté d'interface tactile

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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.

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents) or the IEC list of patent declarations received (see http://patents.iec.ch). http://patents.iec.ch).

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 Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 35, *User interfaces*.

A list of all parts in the ISO/IEC 22121 series can be found on the ISO website.

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

Introduction

Virtual keyboards can be difficult for users as different types of keyboards and functionalities exist, and they are spreading exponentially; with the rise of tactile mobile phones and devices, most users in the world will have to use such interfaces for communication, work or leisure.

The most widespread type of virtual keyboard is found on devices that use both a screen to display the virtual keyboard (on-screen keyboard) and a built-in, direct touch interface to operate it.

Devices that use an on-screen keyboard with a direct touch interface include at least one touchpad screen that allows both the display of the keyboard interface and the interaction with the user. These features are mostly found in handheld devices such as mobile phones, tablets and connected watches, but can also be seen in other devices such as laptop computers, kiosks, automated teller machine (ATM) whiteboards, or other touchpad devices used for presentation and demonstration purposes.

The main purpose of this document is to provide a reliable, harmonized and easy-to-use interface for all on-screen keyboards with a direct touch interface across the various devices that might be using it, especially mobile and connected devices. It considers a wide range of user needs such as changing keyboard layouts for multilingual users, customization, responding to accessibility, or adapting the available keys depending on the context of use, to allow faster typing.

The ISO/IEC 22121 series specifies the requirements and recommendations for all types of virtual keyboards. This document specifies the requirements and provides further recommendations for on-screen keyboards with direct touch interface. This document is harmonized with ISO/IEC 24757, which describes any type of keyboard.

Information technology — Virtual keyboards user interfaces — Part 2: On-screen keyboards with direct touch interface

1 Scope

This document specifies the design and specification of on-screen keyboards (keyboards that are displayed on a screen) with direct touch interface, including those with some audio feedback.

This document specifies keyboard layouts designed for on-screen keyboards with direct touch interface and ways for interaction with them.

It is not applicable to virtual keyboards that are not displayed on a screen, and on-screen keyboards that do not provide a direct touchscreen interface such as on-screen keyboards relying on an accessory unit like a trackpad or a remote control for interactions with the user.

It is not applicable to physical keyboards that use real or adaptable keys, which can be customized to user needs, for example, with LCD display.

2 Normative references

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

~~ISO~~ISO/IEC 9995-~~-~~1:2009, *Information technology — Keyboard layouts for text and office systems — Part 1: General principles governing keyboard layouts*

ISO/IEC 9995-7, *Information technology — Keyboard layouts for text and office systems — Part 7: Symbols used to represent functions*

3 Terms and definitions

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

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

— ISO Online browsing platform: available at ~~http://www.iso.org/obp~~https://www.iso.org/obp

— IEC Electropedia: available at ~~http://www.electropedia.org/~~https://www.electropedia.org/

3.1
on-screen keyboard
virtual keyboard (3.3) displayed on any type of screen

Note 1 to entry: On-screen keyboards are one specific type of virtual keyboards, probably the most common, that use a screen to display a visual keyboard.

Note 2 to entry: This type of virtual keyboard can be used on personal computer's screens, on feature phones and tablets, mobile phones and tablets, TVs, kiosks, whiteboards.

3.2
physical keyboard
mechanical or electronic input device using an arrangement of buttons or keys

Note 1 to entry: Some physical keyboards are adaptable (for example, using LCD screens instead of keys with printed symbols and characters).

3.3
virtual keyboard
software alternative to a *physical keyboard* (3.2)

3.4
associated character
alphabetic character derived from another alphabetic character

Note 1 to entry: Characters can be associated because a diacritic sign is added to it (for example, Ê is associated to letter E) or because of its close relation to it.

Note 2 to entry: For most languages, using associated characters is essential to write properly.

3.7
qwerty-like on-screen keyboard
virtual keyboard layout used for typing in Latin-based languages, with a layout of alphabetical characters similar to the physical keyboard layout from which it is derived (qwerty, qwertz, azerty…)

3.8
prediction
software-generated set of characters, i.e. word, phrase or text, based on user typing that can be selected as next input for faster typing

3.9
group
logical state of a keyboard providing access to a collection of *graphic characters* (3.13) or elements of graphic characters

Note 1 to entry: A group gives access to one collection of characters. Typically, when more than one language is used, multiple groups are required.

Note 2 to entry: Usually these graphic characters or elements of graphic characters logically belong together and can be arranged on several levels within a group.

Note 3 to entry: The input of certain graphic characters, such as accented letters, may require access to more than one group.

Note 4 to entry: Subsets of a group are called levels.

[SOURCE: ISO/IEC 9995-1:2009, 4.9]

3.10
level
logical state of a keyboard providing access to a subset of a collection of *graphic characters* (3.13) or elements of graphic characters in a *group* (3.9)

Note 1 to entry: In certain cases, the level selected may also affect function keys.

Note 2 to entry: With on-screen keyboards, it is usual that only one level be shown per panel at a time.

[SOURCE: ISO/IEC 9995-1:2009, 4.11]

3.11
space key
key associated with character U+0020 SPACE

[SOURCE: ISO/IEC 9995-9:2016, 3.18]

3.12
enter key
key associated with an enter or return function

[SOURCE: ISO/IEC 9995-9:2016, 3.9]

3.13
graphic character
character, other than a control function, that has a visual representation normally handwritten, printed or displayed

Note 1 to entry: Graphic characters with no visual representation can still be used, as per ISO/IEC 9995-7.

[SOURCE: ISO/IEC 9995-1:2009, 4.1, ~~note~~Note 1 to entry added~~].~~]

3.14
graphic symbol
visual representation of a *graphic character* (3.13), a control function, or a combination of one or more graphic characters and/or control functions

[SOURCE: ISO/IEC 9995-1:2009, 4.14]

3.15
symbol
any *graphic symbol* (3.14) which is none of a letter, a digit or a punctuation mark

[SOURCE: ISO/IEC 9995-9:2016, 3.24]

3.16
level 2 select
function that, if activated, will change the keyboard state to produce characters from level 2