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Information technology — User interfaces — Unifying input actions across devices

Technologies de l'information — Interfaces utilisateur — Unification des actions d'entrée sur les dispositifs physiques et logiciels

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Contents

Page

Foreword ... **iv**

Introduction ... **v**

1 Scope ... **1**

2 Normative references ... **1**

3 Terms and definitions ... **1**
3.1 Terms related to actions ... 1
3.2 Terms related to devices ... 2
3.3 Terms related to systems ... 3

4 Background to unifying input actions across devices ... **4**
4.1 Overview of input action, input device and interaction with user interface ... 4
4.2 Physical input actions ... 4
4.3 Logical input actions ... 4
4.4 Physical and logical input actions for ICT device connections ... 5

5 Need for unifying input actions ... **5**
5.1 Overview ... 5
5.2 Device-specific input actions on user interfaces ... 6
5.3 Unifying input actions on user interfaces ... 6

6 Use cases of unifying input actions across devices ... **7**
6.1 A simple closed system ... 7
6.2 A system with attached peripheral devices ... 7
6.3 Two systems interacting with one another ... 8
6.4 More complicated configurations ... 8

7 Framework of unification module for input actions ... **8**

8 Requirements and recommendations ... **9**
8.1 Functional requirements and recommendations ... 9
8.1.1 Input action receiving function ... 9
8.1.2 Physical input actions recognition function ... 9
8.1.3 Logical input actions identification function ... 9
8.1.4 Input actions conversion function ... 9
8.2 Additional requirements and recommendations ... 9
8.2.1 User interface ... 9
8.2.2 Conversion capability ... 10
8.2.3 Flexibility ... 11
8.2.4 Customizability ... 11
8.2.5 Scalability ... 11
8.2.6 Accessibility ... 12

Bibliography ... **13**

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Foreword

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Introduction

User interfaces are an essential medium for information transmission between human and machines. It is a basic need to realize natural and efficient input interaction experience on the user interfaces.

With more and more smart devices entering and being distributed in people's daily life, user interfaces are widely used and collaborated between smart phones, tablets, desktop computers, smart watches, televisions, in-vehicle systems, virtual and augmented reality, and other information and communications technology systems.

The main purpose of uniformly converting the input actions across different input devices is to reduce the workload of designers and developers of systems and software applications, and to ensure the consistency of user input experience in cross-device scenarios.

With various smart devices, the industry has been researching and developing user interface technologies that support multiple input methods to improve cross-device input experiences. At present, research and development on the automatic conversion of input actions on the cross-devices has entered the practice and implementation level.

A standardized framework of input action unification module can be used to support the implementation of operations across device user interfaces and promote the development of cross-device software applications technology and industry.

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Information technology — User interfaces — Unifying input actions across devices

1 Scope

This document specifies a unification module for input actions, including its framework, requirements and recommendations, for consistently accessing the operations across multiple types of devices. This document recognizes the input actions as user behaviours that are commonly used to manipulate system or application operations (functions) through user interfaces. It also identifies the need and use cases of unifying input actions across devices.

This document does not specify parameter settings and details of the input actions. This document is applicable to all types of organizations.

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/IEC 13066-1, *Information technology — Interoperability with assistive technology (AT) — Part 1: Requirements and recommendations for interoperability*

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 Terms related to actions

3.1.1
action
user action
user behaviour that a system accepts as a request for a particular *operation* (3.1.4)

EXAMPLE Pressing a key, clicking a mouse button, moving the pointer over an object, speaking a command.

[SOURCE: ISO/IEC TR 11580:2007, 2.3, modified — “user action” has been added as an admitted term.]

3.1.2
input action
action that initiates *operation* (3.1.4) through an *input device* (3.2.2)

EXAMPLE Clicking a mouse button to initiate an operation for sending mail.

Note 1 to entry: Submitting data to a system is typically referred to as a control action. However, since entering data and submitting it usually occur at the same time we refer to the sequence as an input action.

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3.1.3
physical input action
input action (3.1.2) connected with a person's body that is discrete and observable in real world

3.1.3.1
logical input action
intended meaning of one or a series of a *physical input action* (3.1.3)

3.1.4
operation
predefined system behaviour that a user initiates

EXAMPLE Sending mail, printing, modifying the data or properties of an object.

Note 1 to entry: A user performs an action or a set of actions to initiate an operation.

[SOURCE: ISO/IEC TR 11580:2007, 2.4]

3.1.5
function
task specific *operation* (3.1.4) of an *object* (3.1.6)

Note 1 to entry: Objects can have zero, one, or many functions.

[SOURCE: ISO/IEC TR 11580:2007, 2.5]

3.1.6
user interface element
user interface object
object
entity of the user interface that is presented to the user by the software

EXAMPLE 1 User interface elements in a graphical user interface include such things as basic objects (such as icons, window title bars, menu items, push buttons, image maps, and editable text fields) or containers (such as windows, grouping boxes, menu bars, menus, groups of mutually-exclusive option buttons, and compound images that are made up of several smaller images).

EXAMPLE 2 User interface elements in an audio user interface include such things as menus, menu items, messages, and action prompts.

EXAMPLE 3 User interface elements in tactile interfaces include such things as tactile dots, tactile bars, surfaces, knobs, and grips.

Note 1 to entry: User interface elements can or cannot be interactive.

Note 2 to entry: Both entities relevant to the task and entities of the user interface are regarded as user interface elements. Different user interface element types are text, graphics and controls. A user interface element can be a representation or an interaction mechanism for a task object (such as a letter, a sales order, electronic parts, or a wiring diagram) or a system object (such as a printer, hard disk, or network connection). It can be possible for the user to directly manipulate some of these user interface elements.

[SOURCE: ISO/IEC 13066-1:2011, 2.26, modified — “object” has been added as an admitted term, occurrences of "may" have been changed to "can", “icons” has been added to the example 1, and all examples have been moved in front of the notes to entry.]

3.2 Terms related to devices

3.2.1
device
hardware or software, or the combination of them that allows a user to interact with a system

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3.2.2
input device
user controlled *device* (3.2.1) that transmits information to a system

[SOURCE: ISO 9241-400:2007, 3.6.3]

3.2.3
processing device
system controlled *device* (3.2.2) that processes inputs and information within a system, and generates outputs

3.2.4
output device
system controlled *device* (3.2.2) that renders and transmits outputs to the user

3.2.5
device driver
software component that permits a system to control and communicate with a *peripheral device* (3.2.6)

[SOURCE: ISO/IEC 13066-1:2011, 2.10]

3.2.6
peripheral device
input device (3.2.2) or *output device* (3.2.4) connected to but separate from a system that contains a *processing device* (3.2.3)

Note 1 to entry: A peripheral device in this document refers to a device only has input or output function.

3.3 Terms related to systems

3.3.1
application
app
software application or application software

[SOURCE: ISO/IEC 30113-12:2019, 3.2]

3.3.2
application programming interface
API
collection of invocation methods and associated parameters used by one piece of software to request actions from another piece of software

[SOURCE: ISO/IEC 13066-1:2011, 2.3]

3.3.3
assistive technology
AT
hardware or software that is added to or incorporated within a system that increases accessibility for an individual

EXAMPLE Braille displays, screen readers, screen magnification software and eye-tracking devices.

[SOURCE: ISO/IEC 13066-1:2011, 2.5, modified — the notes to entry have been removed.]

3.3.4
information and communication technology
ICT
technology for gathering, storing, retrieving, processing, analysing and transmitting information

[SOURCE: ISO/IEC 13066-1:2011, 2.14, modified — the "/" has been changed to "and", the example has been removed.]

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