



SLOVENSKI STANDARD
SIST EN ISO 9241-16:2001
01-junij-2001

**Ergonomske zahteve za pisarniško delo s slikovno zaslonko opremo - 16. del:
Dialog za neposredno upravljanje (ISO 9241-16:1999)**

Ergonomic requirements for office work with visual display terminals (VDTs) - Part 16:
Direct manipulation dialogues (ISO 9241-16:1999)

Ergonomische Anforderungen für Bürotätigkeiten mit Bildschirmgeräten - Teil 16:
Dialogführung mittels direkter Manipulation (ISO 9241-16:1999)

Exigences ergonomiques pour travail de bureau avec terminaux a écrans de
visualisation (TEV) - Partie 16: Dialogues de type manipulation directe (ISO 9241-
16:1999)

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Ta slovenski standard je istoveten z: EN ISO 9241-16:1999

ICS:

13.180	Ergonomija	Ergonomics
35.180	Terminalska in druga periferna oprema IT	IT Terminal and other peripheral equipment

SIST EN ISO 9241-16:2001

en

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EUROPEAN STANDARD

EN ISO 9241-16

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 1999

ICS 13.180; 35.180

English version

Ergonomic requirements for office work with visual display
terminals (VDTs) - Part 16: Direct manipulation dialogues (ISO
9241-16:1999)

Exigences ergonomiques pour travail de bureau avec
terminaux à écrans de visualisation (TEV) - Partie 16:
Dialogues de type manipulation directe (ISO 9241-16:1999)

Ergonomische Anforderungen für Bürotätigkeiten mit
Bildschirmgeräten - Teil 16: Dialogführung mittels direkter
Manipulation (ISO 9241-16:1999)

This European Standard was approved by CEN on 21 July 1999.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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EN ISO 9241-16:1999

Foreword

The text of the International Standard ISO 9241-16:1999 has been prepared by Technical Committee ISO/TC 159 "Ergonomics" in collaboration with CEN/CS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2000, and conflicting national standards shall be withdrawn at the latest by March 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

NOTE FROM CEN/CS: The foreword is susceptible to be amended on reception of the German language version. The confirmed or amended foreword, and when appropriate, the normative annex ZA for the references to international publications with their relevant European publications will be circulated with the German version.

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The text of the International Standard ISO 9241-16:1999 was approved by CEN as a European Standard without any modification.

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INTERNATIONAL STANDARD
ISO 9241-16:1999
ERGONOMICS
PART 16
USABILITY
USABILITY TESTING
METHODS

INTERNATIONAL STANDARD

ISO
9241-16

First edition
1999-09-01

Ergonomic requirements for office work with visual display terminals (VDTs) —

Part 16:

Direct manipulation dialogues

iTeh STANDARD PREVIEW
*Exigences ergonomiques pour travail de bureau avec terminaux à écrans
de visualisation (TEV) —
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Partie 16: Dialogues de type manipulation directe

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Reference number
ISO 9241-16:1999(E)

ISO 9241-16:1999(E)

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International Organization for Standardization
Case postale 56 • CH-1211 Genève 20 • Switzerland
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Printed in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

This part of ISO 9241 was prepared by Technical Committee ISO/TC 159, *Ergonomics*, Subcommittee SC 4, *Ergonomics of human-system interaction*.

ISO 9241 consists of the following parts, under the general title *Ergonomic requirements for office work with visual display terminals (VDTs)*:

- Part 1: General introduction
- Part 2: Guidance on task requirements
- Part 3: Visual display requirements
- Part 4: Keyboard requirements
- Part 5: Workstation layout and postural requirements
- Part 6: Guidance on the work environment
- Part 7: Requirements for display with reflections
- Part 8: Requirements for displayed colours
- Part 9: Requirements for non-keyboard input devices
- Part 10: Dialogue principles
- Part 11: Guidance on usability
- Part 12: Presentation of information
- Part 13: User guidance
- Part 14: Menu dialogues
- Part 15: Command dialogues
- Part 16: Direct manipulation dialogues
- Part 17: Form filling dialogues

Annex A of this part of ISO 9241 is for information only.

Introduction

ISO 9241 deals with several aspects of the use of visual display terminals (VDTs). Currently, the individual parts can be grouped in the following categories:

ISO 9241-1: General introduction

ISO 9241-2: Guidance on task requirements

ISO 9241-5 and ISO 9241-6: Workstation and environment

ISO 9241-3, ISO 9241-4, ISO 9241-7, ISO 9241-8 and ISO 9241-9: Ergonomics pertaining to hardware

ISO 9241-10 through ISO 9241-17: Ergonomics pertaining to software interfaces

This part of ISO 9241 is concerned with the ergonomic design of direct manipulation dialogues where users perform operations by acting on displayed objects in ways analogous to manipulating physical entities.

This part of ISO 9241 serves the following types of user

- a) the user interface designer, who will apply this part of ISO 9241 during the development process;
- b) the buyer, who will reference this part of ISO 9241 during the product procurement process;
- c) evaluators responsible for ensuring that products meet the recommendations in this part of ISO 9241;
- d) designers of user interface development tools to be used by interface designers;
- e) end-users who will gain from the potential benefits provided by this part of ISO 9241.

This part of ISO 9241 consists of a number of recommendations, some of which are conditional, concerning direct manipulation dialogues. Conditional recommendations are recommendations that should be met only within the specific context for which they are relevant (e.g. particular kinds of users, tasks, environments, technology).

It should be noted that ISO 9241-10 describes dialogue principles that are relevant for the design of direct manipulation dialogues. These principles provide the designer and evaluator with additional information concerning the ergonomic rationale for the various recommendations in this part of ISO 9241 and, therefore, assist in making trade-offs. However, it may be necessary to base trade-offs on other considerations as well.

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Ergonomic requirements for office work with visual display terminals (VDTs) —

Part 16: Direct manipulation dialogues

1 Scope

This part of ISO 9241 provides guidance on the design of direct manipulation dialogues. In direct manipulation dialogues the user directly acts on objects on the screen, for example, by pointing at them, moving them and/or changing their physical characteristics (or values) via the use of an input device. Such objects are typically concrete, often graphical, representations of abstract software structures or capabilities and generally fall into two categories.

- a) Task object — a metaphorical representation of a real-world artefact manipulated to support the user's task (e.g. a sheet of paper, pen, spanner, graph).
- b) Interface object — an object introduced into the interface so that the user can perform tasks related to the use of the computer application or system. This introduced object may be a real-world object but the metaphor is not directly related to the user's real work task (e.g. button, slider, window, screen).

Objects and their representations on the display are referred to as objects, except where it is necessary to make a clear distinction.

Interfaces that use stereoscopic or virtual reality-type interfaces are not covered in this part of ISO 9241.

In practice, the term direct manipulation is often used interchangeably with graphical user interfaces (GUIs). However, within GUIs other dialogue techniques, such as menu dialogues or command dialogues, are often implemented as well. Though GUIs can provide many direct manipulation features, not every user input in GUIs can be interpreted as direct manipulation. For example, printing a document by moving a document icon upon a printer icon implies a higher degree of direct manipulation than a mouse click on a push button labelled "print".

This part of ISO 9241 covers usability issues of direct manipulation dialogues. Recommendations on GUI components are given only if they are related specifically to features of direct manipulation.

Features of direct manipulation dialogues such as step-by-step input may be inefficient (e.g., if one wishes to delete all files starting with "d"). Therefore, other interaction techniques; for example, command input or menus, may be more appropriate and are typically used to supplement direct manipulation.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 9241. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 9241 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 9241-12:1998, *Ergonomic requirements for office work with visual display terminals (VDTs) — Part 12: Presentation of information.*

ISO 9241-13:1998, *Ergonomic requirements for office work with visual display terminals (VDTs) — Part 13: User guidance.*

ISO 9241-14:1997, *Ergonomic requirements for office work with visual display terminals (VDTs) — Part 14: Menu dialogues.*

ISO/IEC 11581-1:—¹⁾, *Information technology — User System Interfaces — Icon symbols and functions — Part 1: Icons — General.*

ISO/IEC 11581-2:—¹⁾, *Information technology — User System Interfaces — Icon symbols and functions — Part 2: Object icons.*

ISO/IEC 11581-3:—¹⁾, *Information technology — User System Interfaces — Icon symbols and functions — Part 3: Pointers.*

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3 Terms and definitions

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For the purposes of this part of ISO 9241, the following terms and definitions apply.

3.1 attribute
property of an object or its representation (e.g. colour) which may be modified by user actions in certain contexts

3.2 choice list
list containing a number of items which a user can select

NOTE Single selection or multiple selection may be possible. The number of items may be fixed or may change during the dialogue.

3.3 clicking
operation of pressing and immediately releasing a button on a pointing device without moving the pointer off the selected input-sensitive area

3.4 control
graphic, often analogous to physical controls such as dials, radio buttons, which allows a user to directly manipulate data, other objects or their attributes

¹⁾ To be published.

3.5**cursor**

visual indication of the focus for alphanumeric input

3.6**direct manipulation**

dialogue technique by which the user has the impression of acting directly on objects on the screen; for example by pointing at them, moving them and/or changing their physical characteristics (or values) via the use of an input device

3.7**dragging**

moving or changing an object after attaching the object or a portion of it to the pointer

3.8**double clicking**

operation of pressing and immediately releasing a button of a pointing device twice in succession within a specified time period

3.9**handle**

permanent or temporary graphical indication of a control point on an object

3.10**icon**

graphic on a visual display terminal that represents an object, action or a function

3.11**input focus**

in relation to a given input device, the indication of the object upon which the user directs input

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3.12**metaphor**

use of concepts and properties which are already familiar to the user and from which the user can predict the function, behaviour and organizational structure of the system

3.13**object**

entity which is presented to the user during the dialogue

NOTE Both entities relevant for the task (such as a letter, a sales order, electronic parts, a wiring diagram) and entities of the user interface (such as an icon, a window, a push button) are regarded as objects. Different object types are text objects, graphical objects or control objects. It may be possible for the user to directly manipulate some of these objects.

3.14**pane**

working area within a window frame

NOTE Panes can be split to create multiple panes within one window.

3.15**pointer**

graphical symbol that is moved on the screen according to operations with a pointing device

NOTE Users can interact with elements displayed on the screen by moving the pointer to that location and starting a direct manipulation.

3.16**pointing**

operation of positioning the pointer on an object or position by using a pointing device