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**Information technology — User system  
interfaces — Dialogue interaction —**

**Part 1:**

Cursor control for text editing

*Technologies de l'information — Interfaces de systèmes de  
l'utilisateur — Interaction par le dialogue —*

*Partie 1. Commande du curseur pour l'édition de texte*

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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. 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. 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.

International Standard ISO/IEC 10741-1 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*.

ISO/IEC 10741 consists of the following parts under the general title *Information technology — User system interfaces — Dialogue interaction*:

*Part 1: Cursor control for text editing*

*Part 2: Cursor control for spreadsheets*

Annex A of this part of ISO/IEC 10741 is for information only.

## Introduction

This part of ISO/IEC 10741 specifies how incremental cursor control is effected as a result of user interaction with a text editor. Cursor control in form filling and spread sheet applications, cursor control in editing other forms of text such as graphics, and cursor control in manipulating simple and complex documents are not covered in this part of ISO/IEC 10741.

The clauses in this part of ISO/IEC 10741 are basic to a set of proposed standards dealing with user/computer dialogue interaction.

The specifications in ISO/IEC 10741 are consistent with the three ways in which text editing data may be considered:

- the internal data structure (the internal computer storage),
- the displayed data (the interface presented by the computer system to the user), and
- the conceptual data structure (the user's interpretation of what is presented).

Cursor control identifies and changes the location of user/system interaction through a change in focus. The accurate and appropriate mapping of the user's focus and intent to the active position displayed by the system and the processing of the internal data structure is the objective of cursor display and control. The ease of changing the focus and the predictability of the results are central to the user's comfort level and sense of control.

Some text editors implement formatting controls that are part of the text string in the internal data structure and that are displayed or available to be displayed to the user as a part of the displayed data. Other text editors implement formatting control as a separate function that creates a template controlling the output of the text string. The specifications in this part of ISO/IEC 10741 permit both types of formatting control implementation.

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# Information technology — User system interfaces — Dialogue interaction —

## Part 1: Cursor control for text editing

### 1 Scope

This part of ISO/IEC 10741 defines how a number of system capabilities for cursor control in text editing systems shall be initiated, controlled, and monitored by users by means of cursor control functions. It covers bounded linear text and open page text mode editing.

The scope of this part of ISO/IEC 10741 is limited to text editing of left-to-right writing styles by use of keyboard keys or other input devices; but the principles delineated may be applicable to text in other scripting styles. Cursor control in right-to-left and top-to-bottom writing styles may be the subject of future standardization.

This part of ISO/IEC 10741 applies only to information systems that display text to a user for editing on a screen. It concerns the human user of the application, but is intended to be used by those who design and develop computer applications. It will also assist procurers in specifying a harmonized and consistent user interface.

### 2 Conformance

An application claiming conformance to this part of ISO/IEC 10741 shall conform to clauses 5, 6, and 7.

### 3 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC 10741. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO/IEC 10741 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 9241-3:1992, *Ergonomic requirements for office work with visual display terminals (VDTs) — Part 3: Visual display requirements.*

ISO/IEC 9995-5:1994, *Information technology — Keyboard layouts for text and office systems — Part 5: Editing section.*

ISO/IEC 9995-7:1994, *Information technology — Keyboard layouts for text and office systems — Part 7: Symbols used to represent functions.*

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## 4 Definitions

For the purposes of this part of ISO/IEC 10741, the following definitions apply.

**4.1 active document:** Document that contains the current cursor or selection marker. It is a (possibly empty) body of text that is ready to receive input.

**4.2 active position:** Character position that will display the graphic symbol representing the next graphic character, or relative to which the next control function [1] will be executed .

Note — The external indication of the active position in an active document is the cursor.

**4.3 beginning of line:** First position of the line that could be occupied by a graphic character.

**4.4 between-objects cursor:** Cursor that visibly identifies the boundary immediately prior to the active position.

**4.5 bounded linear text mode:** Mode in which it is only possible to move the cursor among existing characters or formatting or presentation indicators, within the active document. For example, the cursor cannot be moved beyond the last character of a line.

**4.6 character:** Member of a set of elements used for the organization, control, or representation of data [2].

**4.7 character path:** Sequential order of character positions along a line of presented data [2].

**4.8 co-located cursor:** Cursor that occupies the active position.

**4.9 cursor:** Special indicator used in a display to mark the active position.

Note - The word "cursor" should not be confused with "pointer," which is reserved for indicating the symbol controlled by the mouse or other input device to change the point of focus (for example, the cursor) on a graphical user interface [3].

**4.10 editing:** Modification of content or layout of text. Editing processes include creation, insertion, deletion, and re-arrangement of text.

**4.11 end of line:** 1) In bounded linear text mode the character position after the last graphic character or formatting or presentation indicator. If the line is empty, the end of line is the same as the beginning of line. 2) In open page text mode, the last position in the line that could be occupied by a graphic character.

Note - A carriage return, and a software carriage return that is automatically inserted by a text editing system for word wrapping, are special cases of formatting characters. A character cursor can move onto these characters but a between-objects cursor cannot move over them. That is, in bounded text mode, a between-objects cursor moves after visible or formatting characters but before a (software and/or hardware) carriage return. A character cursor can move to a (software and/or hardware) carriage return.

**4.12 formatting or presentation indicator:** Indicator of a function that affects the layout or appearance of the text. The indicator has a visual representation that can be operated on as a unit.

Note - Examples of formatting or presentation indicators can be the words "TAB," "INDENT," "RIGHT-JUSTIFY," and "BOLD". Whether these examples are formatting or presentation indicators is application dependent.

**4.13 graphic character:** Character that has a visual representation normally displayed, handwritten, or printed.

Note — A SPACE is a graphic character.

**4.14 incremental cursor control:** User-controlled function that moves the cursor in increments dictated by the application. In character-based text editing, the increment is typically one character in the horizontal direction and one line in the vertical direction.

**4.15 input:** User action taken in order to do editing.

**4.16 mode:** Manner in which user instructions to the system are interpreted. Modes are those states of a system in which user actions result in a specific set of outcomes, some of which may be peculiar to those states. Qualifiers of the word "mode" are used to indicate the specific state intended.

**4.17 open page text mode:** Mode in which the cursor may move anywhere within a rectangular work area.

Note — In open page text mode, the work area is analogous to sheets of paper. The user may, for example, directly create notes in the margin of a document. Typically, this mode is implemented by prefilling the work area with spaces.

**4.18 selection marker:** Visual differentiation of (perhaps multiple and contiguous) character(s) or formatting or presentation indicator(s) that represents the current focus.

**4.19 target position:** When moving the cursor up or down, the horizontal position on the line that is closest to the original horizontal starting position.

## 5 Cursor presentation

The cursor that indicates the active position in an active document shall be either a between-objects cursor immediately to the left of the active position, or a cursor co-located with the active position. The appearance of the cursor may be used to differentiate between insert and type-over mode.

### 5.1 Co-located cursor

A co-located cursor shall consist of a visible indication that makes the cursor position distinguishable from other positions in the text (for example, by highlighting, underlining, or color-inversion).

### 5.2 Between-objects cursor

A between-objects cursor shall consist of a visible indicator (for example, a line perpendicular to the direction of the character path or a caret) that is distinguishable from the text characters.

### 5.3 Cursor blinking rate

If a blinking cursor is provided, the cursor blinking rate shall be in accordance with 6.22 and 6.23 of ISO 9241-3. It should be possible to switch off the blinking of the cursor. The stable cursor need not be the same type or shape as the blinking cursor.

### 5.4 Current view

The cursor shall be visible at the end of any operation that establishes the cursor location.

Note — The cursor need not be located in view in the beginning of an operation, (e.g., when the cursor has been moved out of view).

## 6 User cursor control

It shall be possible for the user to establish the location of the cursor at any permissible character position. When the user activates any cursor control function, and the active position is changed, there shall be system feedback to the user. It is recommended that this feedback be visible on the screen at all times. However, this part of ISO/IEC 10741 does not exclude implementations where the feedback is realized on currently invisible formatting or presentation indicators that are available to the user for display.

The cursor, or the selection marker realized as visually differentiated objects, shall reflect the current active position. Movement of the cursor shall have no effect on the content or format of the active document.

Incremental cursor control by means of four basic user controls shall be provided. The four basic controls correspond to cursor up, cursor down, cursor left, and cursor right.

Note - It is also possible to move the cursor by controlling it with the pointer of a graphical user interface.

## 6.1 Cursor control mechanism

Cursor control shall be available through a keyboard or some other input device. When incremental cursor control is implemented through a keyboard, the implementation shall provide the functions through a set(s) of four keys positioned and marked as specified in ISO/IEC 9995-5 and ISO/IEC 9995-7.

## 6.2 Bounded linear text mode

**6.2.1 Cursor left function.** Activating the cursor left function shall cause the cursor to move one character position, or one intervening formatting or presentation indicator, to the left except:

- if the cursor is at the beginning of line in any line other than the first line of the document, the cursor shall move to the end of the preceding line.
- if the cursor is at the beginning of a document, the cursor shall not move.

**6.2.2 Cursor right function.** Activating the cursor right function shall cause the cursor to move one character position, or one intervening formatting or presentation indicator, to the right except:

- if the cursor is at the end of line in any line other than the last line of the document, the cursor shall move to the beginning of the next line.
- if the cursor is at the end of a document, the cursor shall not move.

**6.2.3 Cursor up function.** Activating the cursor up function shall cause the cursor to move up one line except where the cursor is on the top line of a document when it shall not move.

The cursor shall move to a graphic character or to a formatting or presentation indicator that is in the closest horizontal position above the cursor position at the beginning of the sequence of cursor up or cursor down operation(s). In particular:

- if the target position is affected by formatting, the cursor shall move to the closest potentially active position in the target line.
- if the line above has insufficient graphic characters or formatting or presentation indicators to extend to the target position, the cursor shall move to the end of that line.
- in proportional text systems with between-objects cursor, if the target position is equidistant between two potential new positions, the target position shall be the one located after the character.