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

**Part 10:**

Dialogue principles

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*Exigences ergonomiques pour travail de bureau avec terminaux à écrans  
de visualisation (TEV)*

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Partie 10: Principes de dialogue



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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.

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.

International Standard ISO 9241-10 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
- Part 2: Guidance on task requirements
- Part 3: Visual display requirements
- Part 4: Keyboard requirements
- Part 5: Workplace requirements
- Part 6: Environmental requirements
- Part 7: Display requirements 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.

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## Introduction

This part of ISO 9241 deals with ergonomic design of software for visual display terminals (VDTs) and describes general ergonomic principles which are independent of any specific dialogue technique, but should be applied in accordance with ISO 9241.

When specifying, developing or evaluating dialogue systems, these principles can be applied, but as general guidelines only. The manner in which each dialogue principle can be applied will depend on the characteristics of the intended user of the system, the tasks, the environment and the specific dialogue technique used. Guidance on identifying relevant aspects of the users' tasks and environment of use is given in ISO 9241-11. Specific guidance on the use of techniques such as menus, command languages, direct manipulation and form-based entry will be found in Parts 14 to 17 of ISO 9241.

The ultimate beneficiary of the standard will be the end user at the VDT. It is the needs of this user that provide the ergonomic requirements used by the International Standards developers. Although it is unlikely that the end user will read the standard or even know of its existence, its application should provide user interfaces that are more usable, consistent and that enable greater productivity.

This part of ISO 9241 contains one informative annex that lists the sources used during its development.

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

## Part 10: Dialogue principles

### iTeh STANDARD PREVIEW (standards.iteh.ai)

#### 1 Scope

This part of ISO 9241 provides ergonomic principles formulated in general terms, i.e. they are presented without reference to situations of use, application, environment or technology. These principles are intended to be used in specifications, design and evaluation of dialogues for visual display terminals (VDTs).

#### 2 Definitions

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

**2.1 dialogue:** Interaction between a user and a system to achieve a particular goal.

**2.2 user:** Individual interacting with the system.

#### 3 Dialogue principles

##### 3.1 General

The following seven principles have been identified to be important for the design and evaluation of a VDT dialogue:

- suitability for the task;
- self-descriptiveness;
- controllability;
- conformity with user expectations;
- error tolerance;

- suitability for individualization;
- suitability for learning.

The dialogue principles are presented in 3.2 to 3.8, together with a short description and typical applications followed by examples. The examples illustrate possible implementations. Applications and examples are chosen for clarification and are not exhaustive.

### 3.1.1 User characteristics

The dialogue principles should be applied taking into consideration user characteristics such as:

- attention span;
- limits of short-term memory;
- learning behaviour;
- level of work and system experience;
- the user's internalized view of the underlying structure and purpose of the system with which the user will interact.

### 3.1.2 Task characteristics

The performance of a task at hand is enabled by the system's dialogue features. The effectiveness and efficiency of the performance can be improved if the requirements of task performance have been satisfied.

### 3.1.3 Relationship between the principles

The dialogue principles are not independent, and it may be necessary to trade off the benefits of one principle against others. The applicability and the relative importance will vary with the specific field of application, user groups and the dialogue technique chosen. This implies taking into account the following aspects:

- goals of the organization;
- needs of the intended (end) user group;
- tasks to be supported;
- available technologies and resources.

It may be necessary to establish priorities on a case-by-case basis when applying the principles.



### 3.2 Suitability for the task

A dialogue is suitable for a task when it supports the user in the effective and efficient completion of the task.

<b>Application:</b>	<b>Examples include:</b>
The dialogue should present the user only with information related to the completion of the task.	Formatting information such as colour, and information such as current day, date, etc. are presented only if they facilitate completion of the task.
Help information should be task-dependent.	When the user requests help, the dialogue system presents information relevant to the current task (e.g. list of editing commands if in editing state). When a particular dialogue box is displayed and the user requests help, the interface software presents information relevant to that dialogue box.
Any actions that can appropriately be allocated to the interface software for automatic execution should be carried out by the software without user involvement.	The cursor is automatically positioned at the first entry field relevant for the task.  System startup procedures are automatically processed.
When designing the dialogue, consideration should be given to the complexity of the task with respect to the user's skills and abilities.	In a public access system, where there is a set of alternative inputs, a menu is used to present the possible choices.
The format of input and output should be appropriate to the given task and user requirements.	Input screens are structured so that all of the data to be obtained from a single source are together, and these items are ordered and formatted in the same way as in the data source, regardless of whether or not the underlying system will use the data in that order or format.  The precision of input is equal to the precision required by the task.
The dialogue should support the user when performing recurrent tasks.	The dialogue system allows sequences of activities to be saved and allows the user to reuse them (e.g. usage of macros).
If default input capabilities exist for a given task (e.g. standard default values), it should not be necessary for the user to input such values. It should also be possible to replace default values by other values or other appropriate default values.	If the current date is required by the task, it need not be typed in, but can be modified by the user.
During performance of a task in which data are changed, the original data should remain accessible if the task requires this.	By pressing the [Esc] key, the contents of an entry field revert to the state before the field was edited.
The dialogue should avoid forcing unnecessary task steps.	The user is able to save a document and exit in a single step.

### 3.3 Self-descriptiveness

A dialogue is self-descriptive when each dialogue step is immediately comprehensible through feedback from the system or is explained to the user on request.

<b>Application:</b>	<b>Examples include:</b>
<p>After any user action, the dialogue should provide feedback where appropriate. If severe consequences may result from the user action, the system should provide explanation and request confirmation before carrying out the action.</p>	<p>Echoing of keying activity together with modification status of data are necessary to help the user in understanding what happens in the application and what the user can control. If the dialogue can be reversed, the application indicates this by giving explicit information on what can be reversed.</p> <p>If a deletion cannot be reversed, the dialogue system asks for confirmation.</p>
<p>Feedback or explanations should be presented in a consistent terminology which is derived from the task environment rather than from dialogue system technology.</p>	<p>The technical terms used in the dialogue are those actually used in the specific field of application. In addition, the user can have a term explained by inputting the relevant keyword. Thus, following input of the term "change of scale", the user is provided with an explanation of the task involved, reference also being made to the relevant program and to supplementary information to be found in the user manual.</p>
<p>Feedback or explanations should assist the user in gaining a general understanding of the dialogue system as a possible supplement to user training.</p>	<p>During the saving of a file, a message "Data being saved to file... please wait" is displayed.</p>
<p>Feedback or explanations should be based on the level of knowledge which the typical user may be expected to have.</p>	<p>A clerical user receives a definition in terms of the data entry task, while a technical user receives information in terms of the technical context of the system.</p>
<p>Feedback or explanations varying in type and length, based on user needs and characteristics, should be available to the user.</p>	<p>By pressing the "Help" key once, the user obtains a brief explanation; by pressing twice, a detailed explanation of the command concerned is received.</p> <p>The user can choose between an explanation given in general terms and one in the form of an example.</p>
<p>To enhance their value for the user, feedback or explanations should strictly relate to the situation for which they are needed.</p> <p>The quality of feedback or explanations should minimize the need to consult user manuals and other external information, thus avoiding frequent media switches.</p>	<p>The dialogue system offers help which is sensitive to the context of the current activity.</p>
<p>If defaults exist for a given task, they should be made available to the user.</p>	<p>Display of current date is provided in a form-filling dialogue.</p> <p>The interface software presents a list of valid alternatives that can be entered into a field.</p>

<b>Application:</b>	<b>Examples include:</b>
The user should be informed about changes in the dialogue system status that are relevant to the task.	Insight regarding the current dialogue status is achieved by showing the user performance situations such as: <ul style="list-style-type: none"> <li>— when input is expected;</li> <li>— command currently being processed;</li> <li>— overview of future steps in interaction, including possible user response alternatives;</li> <li>— history of interaction.</li> </ul>
When input is requested, the dialogue system should give information to the user about the expected input.	The dialogue system requests input by presenting a field name together with information on data type (e.g. date, numbers, flag) and the input format (e.g. yy.mm.dd).
Messages should be formulated and presented in a comprehensible, objective and constructive style and in a consistent structure. Messages should not contain any value judgements, such as "This input is nonsense".	Message reads: "For date of birth, please use the following format: YY/MM/DD".

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