
**Ergonomics of human-system
interaction —**

**Part 110:
Dialogue principles**

Ergonomie de l'interaction homme-système —

Partie 110: Principes de dialogue



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Contents

Page

Foreword.....	iv
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions.....	2
4 Dialogue principles and recommendations	3
4.1 Overview	3
4.2 Relationships between dialogue principles	4
4.3 Suitability for the task	4
4.4 Self-descriptiveness	6
4.5 Conformity with user expectations	6
4.6 Suitability for learning	8
4.7 Controllability	9
4.8 Error tolerance	10
4.9 Suitability for individualization.....	11
5 Framework for using the dialogue principles and recommendations	12
5.1 General.....	12
5.2 Example for use of this part of ISO 9241 in the analysis of interactive systems.....	13
5.3 Example for use of this part of ISO 9241 in design of interactive systems (Relationship with ISO 9241-13 to ISO 9241-17)	14
5.4 Example for use of this part of ISO 9241 in evaluation of interactive systems.....	15
6 Relationship between this part of ISO 9241 and ISO 9241-11 and ISO 9241-12.....	15
Annex A (informative) Overview of the ISO 9241 series.....	17
Bibliography	21

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 2.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 9241-110 was prepared by Technical Committee ISO/TC 159, *Ergonomics*, Subcommittee SC 4, *Ergonomics of human-system interaction*.

This first edition of ISO 9241-110 cancels and replaces ISO 9241-10:1996, which has been technically revised as follows:

- the explanation of suitability for the task (4.3) has been made more comprehensible;
- for each dialogue principle given in 4.3 to 4.9, general recommendations have been made;
- examples for each of these general recommendations have been given;
- a framework for the use of the dialogue principles has been added to Clause 5;
- an explanation of the relationship with ISO 9241-11 and ISO 9241-12 has been given in Clause 6;
- Annex A, presenting an overview of the ISO 9241 has been added.

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 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*

ISO 9241 also consists of the following parts, under the general title *Ergonomics of human-system interaction*:

- *Part 20: Accessibility guidelines for information communication equipment and services*
- *Part 110: Dialogue principles*
- *Part 400: Principles for physical input devices — Introduction and requirements*

The following parts, under the general title *Ergonomics of human-system interaction*, are under preparation:

- *Part 151: Guidance on World Wide Web software user interfaces*
- *Part 171: Guidance on software accessibility*
- *Part 300: Introduction to requirements and measurement techniques for electronic visual displays*
- *Part 302: Terminology for electronic visual displays*
- *Part 303: Requirements for electronic visual displays*
- *Part 304: User performance test methods for electronic visual displays*
- *Part 305: Optical laboratory test methods for electronic visual displays*
- *Part 306: Field assessment methods for electronic visual displays*
- *Part 307: Analysis and compliance test methods for electronic visual displays*
- *Part 410: Design criteria for products for physical input devices*
- *Part 420: Selection procedures for physical input devices*
- *Part 421: Workplace assessment methods for physical input devices*

Introduction

This part of ISO 9241 deals with the ergonomic design of interactive systems and describes dialogue principles which are generally independent of any specific dialogue technique and which are applicable in the analysis, design and evaluation of interactive systems.

These dialogue principles concern the development of user interfaces and help prevent users of those products from experiencing usability problems such as

- additional unnecessary steps not required as part of the task,
- misleading information,
- insufficient and poor information on the user interface,
- unexpected response of the interactive system,
- navigational limitations during use, and
- inefficient error recovery.

In this part of ISO 9241, a dialogue is the “interaction between a user and an interactive system as a sequence of user actions (inputs) and system responses (outputs) in order to achieve a goal”, where user actions include not only entry of data but also navigational and other (control) actions of the user.

The priority with which each dialogue principle is weighted 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 can be found in ISO 9241-14 to ISO 9241-17.

The ultimate beneficiary of ISO 9241 will be the user of an interactive system. It is the needs of this user that provide the ergonomic requirements used by the International Standards developers. Although it is unlikely that the user will read ISO 9241 or even know of its existence, its application will lead to user interfaces that are more usable, consistent and that enable greater productivity.

This part of ISO 9241 comprises the following:

- a) the dialogue principles;
- b) recommendations corresponding to the dialogue principles;
- c) a framework for requirements concerning analysis, design and evaluation that gives guidance on
 - the specification of dialogue requirements, based on the dialogue principles, for the design of interactive systems that adhere to ISO 9241-110, and this part of ISO 9241,
 - the specification of appropriate design solutions based on the recommendations for the application of dialogue techniques according to ISO 9241-14 to ISO 9241-17;
 - the evaluation of interactive systems against the dialogue requirements.

Ergonomics of human-system interaction —

Part 110:

Dialogue principles

1 Scope

This part of ISO 9241 sets forth ergonomic design principles formulated in general terms (i.e. presented without reference to situations of use, application, environment or technology) and provides a framework for applying those principles to the analysis, design and evaluation of interactive systems.

While this part of ISO 9241 is applicable to all types of interactive systems, it does not cover the specifics of every context of use (e.g. safety critical systems, collaborative work).

It is intended for the following types of users:

- designers of user interface development tools and style guides to be used by user interface designers;
- user interface designers, who will apply the guidance during the development process;
- developers, who will apply the guidance during design and implementation of system functionality;
- buyers, who will reference this part of ISO 9241 during product procurement;
- evaluators, who are responsible for ensuring that products meet its recommendations.

This part of ISO 9241 focuses on dialogue principles related to the ergonomic design of the dialogue between user and interactive system, and does not consider any other aspect of design such as marketing, aesthetics or corporate design.

The list of recommendations for each of the dialogue principles is not exhaustive.

2 Normative references

The following referenced documents are indispensable for the application 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 9241-11:1998, *Ergonomics — Ergonomic requirements for office work with visual display terminals (VDTs) — Part 11: Guidance on usability*

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

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

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

ISO 9241-15, *Ergonomics — Ergonomic requirements for office work with visual display terminals (VDTs) — Part 15: Command dialogues*

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

ISO 9241-17, *Ergonomics — Ergonomic requirements for office work with visual display terminals (VDTs) — Part 17: Form filling dialogues*

3 Terms and definitions

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

3.1
context of use
users, tasks, equipment (hardware, software and materials), and the physical and social environments in which a product is used

[ISO 9241-11:1998, 3.5]

3.2
dialogue
interaction between a user and an interactive system as a sequence of user actions (inputs) and system responses (outputs) in order to achieve a goal

NOTE 1 User actions include not only entry of data but also navigational actions of the user.

NOTE 2 Dialogue refers to both the form (syntax) and the meaning (semantics) of interaction.

3.3
dialogue principles
set of general goals for the design of dialogues

NOTE Dialogue principles are not bound to any specific technology or technique.

3.4
dialogue requirement
characteristic of a dialogue which satisfies user needs within the identified context(s) of use

3.5
goal
intended outcome

[ISO 9241-11:1998, 3.8]

3.6
interactive system
combination of hardware and software components that receive input from, and communicate output to, a human user in order to support his or her performance of a task

[ISO 13407:1999, 2.1]

NOTE 1 The term “system” is often used rather than “interactive system”.

NOTE 2 The term “interactive system” is not to be confused with the term “work system” as used in ISO 9241-11.