TECHNICAL REPORT

ISO/TR

9241-100

Ergonomics of human-system interaction —

Part 100:
Introduction to standards related to software ergonomics

Ergonomie de l'interaction homme-système —

Partie 100: Introduction aux normes relatives à l'ergonomie des logiciels

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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 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.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

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/TR 9241-100 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 4: Keyboard requirements*

— *Part 5: Workstation layout and postural requirements*

— *Part 6: Guidance on the work environment*

— *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 technology (ICT) equipment and services*

— *Part 100: Introduction to standards related to software ergonomics* [Technical Report]

— *Part 110: Dialogue principles*

— *Part 129: Guidance on individualization*

— *Part 151: Guidance on World Wide Web user interfaces*

— *Part 171: Guidance on software accessibility*

— *Part 210: Human-centred design for interactive systems*

— *Part 300: Introduction to electronic visual display requirements*

— *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 308: Surface-conduction electron-emitter displays (SED)* [Technical Report]

— *Part 309: Organic light-emitting diode (OLED) displays* [Technical Report]

— *Part 400: Principles and requirements for physical input devices*

— *Part 410: Design criteria for physical input devices*

— *Part 420: Selection procedures for physical input devices*

— *Part 910: Framework for tactile and haptic interaction*

— *Part 920: Guidance on tactile and haptic interactions*

The following parts are under preparation:

— *Part 143: Forms-based dialogues*

— *Part 154: Design guidance for interactive voice response (IVR) applications*

— *Part 310: Visibly,aesthetics and ergonomics of pixel defects* [Technical Report]

Evaluation methods for the design of physical input devices is to form the subject of a future part 411.

Introduction

The ISO 9241 series covers both the hardware and software-ergonomics aspects of human-system interaction. The individual parts of ISO 9241, their interrelationships, and the expected users of the parts are described in ISO 9241-1.

As part of the revision of ISO 9241, the scope of ISO 9241 has been broadened from "office work with visual display terminals (VDTs)" to cover a wide range of interactive systems and the title of the series was changed to "Ergonomics of human-system interaction". In order to allow systematic integration of emerging standards into the ISO 9241 series, a structure and numbering scheme was introduced that allows standards to be grouped by subject area.

Ergonomics is the scientific discipline and systematic study concerned with the understanding of the interactions among human and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance. Software ergonomics, therefore, is the application of ergonomics to the software aspects of interactive systems.

The standards referred to in this part of ISO 9241 provide general guidance, principles, recommendations and requirements focusing on the interaction between human and system and also the processes and methods required to achieve usable and accessible interactive systems (e.g. ISO 9241 "200" subseries dealing with human-centred design).

NOTE   There are a number of software-ergonomics standards which are not yet part of the ISO 9241 "100" series (e.g. ISO 14915). These standards will be revised and are presented in this part of ISO 9241 in their intended position within the structure of the ISO 9241 "100" subseries.

There are numerous International Standards, related to user interface design, which can be applied to software ergonomics. These cover a wide range of needs of standards users including ergonomists, designers, project managers, managers, workers or their representatives, consumers/their representatives, procurers and certification bodies.

This part of ISO 9241 is designed to help the potential users of software-ergonomics standards identify which of these standards are relevant to their needs.

The principles, recommendations and requirements given in the software-ergonomics standards help prevent users 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;

— inefficient error recovery.

In addition, the application of the principles, recommendations and requirements contributes to increased levels of accessibility.

Ergonomics of human-system interaction —

Part 100:
Introduction to standards related to software ergonomics

1   Scope

This part of ISO 9241 enables users of standards related to software ergonomics to identify ergonomics standards particularly relevant to software development, gain an overview on the content of software-ergonomics standards, understand the role of software-ergonomics standards in specifying user requirements as well as designing and evaluating user interfaces and understand the relationship between the various standards.

The software-ergonomics standards are applicable to all those software components of an interactive system affecting usability, including:

— application software (including web-based applications);

— operating systems;

— embedded software;

— software development tools;

— assistive technologies.

The range of standards discussed in this part of ISO 9241 includes general International Standards relating to software ergonomics, International Standards for processes and methods related to software ergonomics and software-ergonomics standards.

This part of ISO 9241 provides summary information on standards relevant to the following professions:

— ergonomists;

— usability professionals;

— designers;

— project managers;

— managers;

— workers or their representatives;

— consumers or their representatives;

— procurers;

— certification bodies.