
**Ergonomics of human–system
interaction —**

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

Ergonomie de l'interaction homme–système —

*Partie 210: Conception centrée sur l'opérateur humain pour les
systèmes interactifs*



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

This document is a preview generated by EVS



COPYRIGHT PROTECTED DOCUMENT

© ISO 2010

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction.....	vi
1 Scope.....	1
2 Terms and definitions	1
3 Rationale for adopting human-centred design.....	4
4 Principles of human-centred design	5
4.1 General	5
4.2 The design is based upon an explicit understanding of users, tasks and environments.....	5
4.3 Users are involved throughout design and development.....	6
4.4 The design is driven and refined by user-centred evaluation	6
4.5 The process is iterative.....	6
4.6 The design addresses the whole user experience	7
4.7 The design team includes multidisciplinary skills and perspectives	8
5 Planning human-centred design.....	8
5.1 General	8
5.2 Responsibility	8
5.3 Content of plan	9
5.4 Integration with project plan	9
5.5 Timing and resources	9
6 Human-centred design activities	10
6.1 General	10
6.2 Understanding and specifying the context of use	11
6.3 Specifying the user requirements	12
6.4 Producing design solutions	14
6.5 Evaluating the design	16
7 Sustainability and human-centred design	19
8 Conformance	19
Annex A (informative) Overview of the ISO 9241 series	21
Annex B (informative) Sample procedure for assessing applicability and conformance	22
Bibliography.....	32

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 9241-210 was prepared by Technical Committee ISO/TC 159, *Ergonomics*, Subcommittee SC 4, *Ergonomics of human-system interaction*.

This first edition of ISO 9241-210 cancels and replaces ISO 13407:1999, of which it constitutes a technical revision. The changes include the following:

- clarifying the role of iteration in the whole design process (not just evaluation);
- emphasizing that human-centred methods can be used throughout the system life cycle;
- explaining design activities;
- clarifying the principles of human-centred design.

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 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 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 129: Guidance on software individualization
- Part 143: Forms-based dialogues
- Part 310: Visibility, aesthetics and ergonomics of pixel defects [Technical Report]

Design guidance for interactive voice response (IVR) applications and evaluation methods for the design of physical input devices are to form the subjects of future parts 154 and 411.

Introduction

Human-centred design is an approach to interactive systems development that aims to make systems usable and useful by focusing on the users, their needs and requirements, and by applying human factors/ergonomics, and usability knowledge and techniques. This approach enhances effectiveness and efficiency, improves human well-being, user satisfaction, accessibility and sustainability; and counteracts possible adverse effects of use on human health, safety and performance.

There is a substantial body of human factors/ergonomics and usability knowledge about how human-centred design can be organized and used effectively. This part of ISO 9241 aims to make this information available to help those responsible for managing hardware and software design and re-design processes to identify and plan effective and timely human-centred design activities.

The human-centred approach to design described in this part of ISO 9241 complements existing systems design approaches. It can be incorporated in approaches as diverse as object-oriented, waterfall and rapid application development.

The principles of human-centred design and the related activities have not changed substantially since ISO 13407 was produced and have been validated by ten years of application. This part of ISO 9241 reflects this by making requirements as well as recommendations.

Ergonomics of human–system interaction —

Part 210:

Human-centred design for interactive systems

1 Scope

This part of ISO 9241 provides requirements and recommendations for human-centred design principles and activities throughout the life cycle of computer-based interactive systems. It is intended to be used by those managing design processes, and is concerned with ways in which both hardware and software components of interactive systems can enhance human–system interaction.

NOTE 1 Computer-based interactive systems vary in scale and complexity. Examples include off-the-shelf (shrink-wrap) software products, custom office systems, process control systems, automated banking systems, Web sites and applications, and consumer products such as vending machines, mobile phones and digital television. Throughout this part of ISO 9241, such systems are generally referred to as products, systems or services although, for simplicity, sometimes only one term is used.

This part of ISO 9241 provides an overview of human-centred design activities. It does not provide detailed coverage of the methods and techniques required for human-centred design, nor does it address health or safety aspects in detail. Although it addresses the planning and management of human-centred design, it does not address all aspects of project management.

The information in this part of ISO 9241 is intended for use by those responsible for planning and managing projects that design and develop interactive systems. It therefore addresses technical human factors and ergonomics issues only to the extent necessary to allow such individuals to understand their relevance and importance in the design process as a whole. It also provides a framework for human factors and usability professionals involved in human-centred design. Detailed human factors/ergonomics, usability and accessibility issues are dealt with more fully in a number of standards including other parts of ISO 9241 (see Annex A) and ISO 6385, which sets out the broad principles of ergonomics.

The requirements and recommendations in this part of ISO 9241 can benefit all parties involved in human-centred design and development. Annex B provides a checklist that can be used to support claims of conformance with this part of ISO 9241.

NOTE 2 Annex A and the Bibliography contain information about relevant related standards.

2 Terms and definitions

For this document, the following terms and definitions apply.

2.1

accessibility

⟨interactive systems⟩ usability of a product, service, environment or facility by people with the widest range of capabilities

[ISO 9241-171]