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Ergonomics of human-system interaction —

Part 115: Guidance on conceptual design, user-system interaction design, user interface design and navigation design

Ergonomie de l'interaction homme-système —

Partie 115: Recommandations relatives à la conception conceptuelle, la conception de l'interaction utilisateur-système, la conception de l'interface utilisateur et la conception de la navigation

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Contents

Page

Foreword ..... **v**
Introduction ..... **vi**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
3.1 Major subjects of designs 1
3.2 Modelling 2
3.3 Context of use, user needs and user requirements 3
3.4 Outcomes of use 4
3.5 Interactions and content 5
3.6 Navigation techniques 7
3.7 Links 7
4 Human-centred design in the context of this document **9**
4.1 Human-centred design activities 9
4.2 General guidance 9
4.2.1 Mental model of the user 9
4.2.2 Support of appropriate user interface technology 9
4.2.3 Constraints on design 9
4.2.4 Overall consistency 10
4.2.5 Aesthetics 10
4.2.6 Accessibility 10
5 Conceptual design **10**
5.1 General 10
5.2 Contents of a conceptual design 11
6 User-system interaction design **11**
6.1 General 11
6.2 Types of interactions 12
6.3 The design of interaction scenarios 12
6.4 Compatibility of interaction scenarios 12
6.5 The design of user actions to be supported by the system 12
6.6 Interactions from the user's perspective 12
7 User interface design **13**
7.1 General 13
7.2 Contents of a user interface design 13
7.2.1 Structure 13
7.2.2 User interface instances 13
7.2.3 User interface elements 14
7.3 Information architecture 14
7.3.1 Purpose of an information architecture 14
7.3.2 Contents of an information architecture 14
7.4 Information design 15
7.5 Design recommendations 15
7.5.1 User interface 15
7.5.2 User interface instances 15
7.5.3 User interface elements 16
7.5.4 Supporting different target devices 16
7.5.5 Accessibility 17
7.5.6 Innovative solutions 17
8 Navigation design **17**
8.1 General 17
8.2 Contents of navigation sequence design 18
8.3 Navigation with additional user interface elements 18

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8.4 Use of navigation structures 18
8.4.1 Use of linear structures 18
8.4.2 Navigation in linear structures 18
8.4.3 Use of tree structures 18
8.4.4 Navigation in tree structures 18
8.4.5 Use of network structures 19
8.4.6 Navigation in network structures 19
8.4.7 Navigation in hybrid structures 19
8.4.8 Navigation in dynamic structures 19
8.4.9 Determining navigation techniques 19
8.5 Guidance on the design of navigation to meet user needs 20
8.5.1 Minimizing user effort 20
8.5.2 Providing alternative navigation paths 20
8.5.3 Returning to an interrupted task 20
8.5.4 Supporting exploration 20
8.6 Guidance related to the use of links for navigation 20
8.6.1 Use of links 20
8.6.2 Use of system-activated links 20
8.6.3 Use of user-activated links 21
8.6.4 Use of permanent links 21
8.6.5 Use of temporal links 21
8.6.6 Duration of temporal links 21
8.6.7 Avoiding temporal link errors 21
8.6.8 Use of computed links 21
8.6.9 Recognizing computed links 22
8.6.10 Use of user-defined links 22
8.6.11 Supporting multiple sets of user-defined links 22
8.6.12 Discriminability of links 22
8.7 Guidance related to the use of general navigation functions 23
8.7.1 Providing users with navigation information 23
8.7.2 Providing search capabilities 23
8.8 Navigating across sessions 23
8.8.1 Saving the current state 23
8.8.2 Returning to a saved state 23
8.8.3 Restarting at a previous state 23
8.8.4 Exiting 24
Bibliography **25**

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 159, *Ergonomics*, Subcommittee SC 4, *Ergonomics of human-system interaction,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 122, *Ergonomics,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This first edition of ISO 9241-115 cancels and replaces the first edition of ISO 14915-2:2003, which has been technically revised.

The main changes are as follows:

— much of the content of ISO 14915-2:2003 has been removed or simplified. The content which has been retained is included in Clause 8;

— the Scope has been expanded significantly from just navigation design to "conceptual design, user-system interaction design, user interface design and navigation design". New material has been added accordingly.

A list of all parts in the ISO 9241 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

Every interactive system has a user interface, regardless of whether or not its design was planned, organized and documented. Risks related to the use of interactive systems can increase due a lack of a planning, organization and documentation in their design.

Within this context, there are two main categories of design for interactive systems, each with their own sub-categories.

1) Human-centred design: this deals with the design of interactive aspects of the system and its uses.

   — Human-centred design focuses on satisfying user needs and meeting user requirements.

   — Human-centred design includes conceptual design, user-system interaction design, user interface design and navigation design.

2) Technical design: this enables the required interactions between humans and the interactive system from an internal design perspective.

   — Technical design is beyond the scope of this document (see ISO/IEC/IEEE 12207 for further information relating to the technical design of software systems).

ISO 9241-210:2019, 7.1 provides high-level guidance on the human-centred design of interactive systems and recognizes that "human-centred design activities can be incorporated in design approaches as diverse as object-oriented, waterfall, HFI (human factors integration), agile, and rapid development, etc." As stated in the introduction of ISO 9241-210:2019, "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."

ISO 9241-220 elaborates on ISO 9241-210 to identify processes, typical activities and process outcomes for enabling, executing and assessing human-centred design within organizations. Many of the process outcomes focus on attributes of the design of interactive systems.

While both ISO 9241-210 and ISO 9241-220 focus on design activities, there is a need for guidance on the outcomes of those design activities.

This document therefore focuses particularly on guidance concerning the outcomes of conceptual design, user-system design, user interface design and navigation design.

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Ergonomics of human-system interaction —

Part 115: Guidance on conceptual design, user-system interaction design, user interface design and navigation design

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1 Scope

This document provides guidance on aspects of the design of human-system interaction, including conceptual design, user-system interaction design, user interface design and navigation design for interactive systems.

This document applies to all design and development approaches and methodologies, including human-centred design, object-oriented, waterfall, human factors integration (HFI), agile and rapid development.

It is intended for the following types of users:

— user interface designers, who will apply the guidance during the development process;

— developers, who will apply the guidance during the design and implementation of system functionality;

— evaluators, who are responsible for ensuring that products meet the recommendations;

— designers of user interface development tools and style guides to be used by user interface designers;

— project managers, who are responsible for managing development processes.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1 Major subjects of designs

3.1.1
design, verb
<process> to define the architecture, system elements, interfaces, and other characteristics of a system or system element

[SOURCE: ISO/IEC/IEEE 12207:2017, 3.1.1]

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