SLOVENSKI STANDARD
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Ergonomija medsebojnega vpliva človek-sistem - 115. del: Navodila za konceptualno zasnovo, zasnovo interakcije med uporabnikom in sistemom, zasnovo uporabniškega vmesnika in zasnovo navigacije (ISO/DIS 9241-115:2023)

Ergonomics of human-system interaction - Part 115: Guidance on conceptual design, user-system interaction design, user interface design, and navigation design (ISO/DIS 9241-115:2023)

Ergonomie der Mensch-System-Interaktion - Teil 115: Empfehlungen für die Gestaltung von konzeptuelles Design, Benutzer-System-Interaktion, Benutzungsschnittstelle und Navigation (ISO/DIS 9241-115:2023)

Ergonomie de l'interaction homme-système - Partie 115: Lignes directrices sur la conception conceptuelle, la conception de l'interaction utilisateur-système, la conception de l'interface utilisateur et la conception de la navigation (ISO/DIS 9241-115:2023)

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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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Foreword

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

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

Introduction

An interactive system implements a design whether or not the design has been separately developed and/or documented or not.

This design can be divided into two main categories, each with their own sub-categories:

— Human-centred design 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.

— Technical design 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 12207:2008 for further information relating to the technical design of software systems]

ISO 9241-210:2019 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." According to 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 9241-220:2019 elaborates on ISO 9241-210: 2019 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.

In particular this document focuses on guidance on the outcomes of conceptual design, user-system design, user interface design, and navigation design.

Ergonomics of human-system interaction —

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

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, HFI (human factors integration), agile and rapid development).

This document refers to applicable international standards, where available, rather than duplicating their content. It also provides guidance that is not available in other international standards.

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 terminological databases for use in standardization at the following addresses:

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

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

3.1 Major types of designs

3.1.1
design
description of some or all aspects of an interactive system

Note 1 to entry: Formal designs are often referred to as specifications rather than as descriptions.

3.1.2
interactive system design
all outcomes of the *design* (3.1.1) of an interactive system that are perceivable and can be interacted with by the user

Note 1 to entry: An interactive interface design includes: a conceptual design, a user-system interaction design, a user interface design, and a navigation design.

Note 2 to entry: The relationship of various outcomes of interactive system design is discussed in clause 4.

3.1.3
conceptual design
design (3.1.1) that describes at an abstract level how the user will interact with the interactive system

Note 1 to entry: Conceptual design is discussed in clause 5.

3.1.4
interaction design
user-system interaction design
design (3.1.1) that describes how *interaction sets* (3.5.3) serve each of the *tasks* (3.3.4) within an interactive system

Note 1 to entry: Interaction design is discussed in clause 6.

3.1.5
interface design
user interface design
design (3.1.1) that describes the selection, combination, arrangement and the behaviour of *user interface elements* (3.5.7) for all views as required for *interaction* (3.5.1) between the *user* (3.3.2) and the *user interface* (3.5.5)

Note 1 to entry: Interface design is discussed in clause 7.

3.1.6
navigation design
design (3.1.1) that describes how users can access interface elements and *interactions* (3.5.1)

Note 1 to entry: Navigation design, at an abstract level, is sometimes referred to as the information architecture.

Note 2 to entry: Different users and user groups can have different needs for navigation, which can be served differently by a common navigation design.

Note 3 to entry: Concrete navigation design is discussed in clause 8.

3.1.7
information design
design (3.1.1) that describes the presentation of meaningful information (texts, labels, icons, symbols etc.) in order to support the comprehensibility and interpretability of the contents presented in the task objects

Note 1 to entry: Information design includes: designs of individual interfaces, groups of user interface elements , individual user interface elements, information and sensory experiences.

3.1.8
sensory design
design (3.1.1) of intended *sensory experiences* (3.1.8.1)

Note 1 to entry: Sensory experiences result from the user's interactions with a system.

3.1.8.1
sensory experience
the way users perceive the user interface (3.5.5) across the available sensory channels

Note 1 to entry: Sensory channels, also referred to as “modalities” include visual (seeing); auditory (hearing); tactile/haptic (touching); olfactory (smelling); gustatory (tasting).

3.2 modelling

3.2.1
mental model
belief and understanding users have of themselves, others, the environment, and the objects with which they interact

3.2.2
task model
description of a *task* (3.3.4) and its subtasks that have to be carried out in order to reach the *user's* (3.3.2) *goals* (3.3.3)

3.2.3
conceptual model
designer's understanding of how each *user's* (3.3.2) *task* (3.3.4) will be performed supported by the interactive system

3.2.4
scenario
use scenario
a description of the sequence of events from the *user's* (3.3.2) perspective to perform a *task* (3.3.4) in a specified *context of use* (3.3.1)

[SOURCE: ISO/IEC 25062:2006, A.17, Modified with "context of use" replacing "context"]

3.3 context of development

3.3.1
context of use
combination of *users* (3.3.2) , *goals* (3.3.3) and *tasks* (3.3.4), resources, and environment

Note 1 to entry: The "environment" in a context of use includes the technical, physical, social, cultural and organizational environments.

[SOURCE: ISO 9241-11:2018, 3.1.15]

3.3.2
user
person who interacts with a system, product or service

Note 1 to entry: Users of a system, product or service include people who operate the system, people who make use of the output of the system and people who support the system (including providing maintenance and training).

[SOURCE: ISO 9241-11:2018, 3.1.7]

3.3.3
goal
intended outcome

[SOURCE: ISO 9241-11:2018, 3.1.10]

3.3.4
task
set of activities undertaken in order to achieve a specific *goal* (3.3.3)

Note 1 to entry: These activities can be physical, perceptual and/or cognitive.

Note 2 to entry: While goals are independent of the means used to achieve them, tasks describe particular means of achieving goals.

[SOURCE: ISO 9241-11:2018, 3.1.11]

3.3.5
user need
prerequisite identified as necessary for a *user* (3.3.2), or a set of users, to achieve an intended outcome, implied or stated within a specific *context of use* (3.3.1)

EXAMPLE 1 A presenter (user) needs to know how much time is left (prerequisite) in order to complete the presentation in time (goal) during a presentation with a fixed time limit (context of use).

EXAMPLE 2 An account manager (user) needs to know the number of invoices received and their amounts (prerequisite), in order to complete the daily accounting log (goal) as part of monitoring the cash flow (context of use).

Note 1 to entry: A user need is independent of any proposed solution for that need.

Note 2 to entry: User needs are identified based on various approaches including interviews with users, observations, surveys, evaluations, expert analysis, etc.

Note 3 to entry: User needs often represent gaps (or discrepancies) between what should be and what is.

[SOURCE: ISO 25065:2019, 3.1.9, with note to entry 4 removed]

3.3.6
user requirements
set of requirements for use that provide the basis for *design* (3.3.1) and evaluation of interactive systems to meet identified *user needs* (3.3.5)

Note 1 to entry: User requirements are derived from user needs and capabilities in order to allow the user to make use of the system in an effective, efficient, safe and satisfying manner.

Note 2 to entry: User requirements are not requirements on the users.

Note 3 to entry: User requirements include *user-system interaction requirements* and *use-related quality requirements*.

Note 4 to entry: In software engineering terms, user requirements include both "functional" and "non-functional" requirements derived from user needs and capabilities.

[SOURCE: ISO 9241-220:2019, 3.46]

3.3.7
user-system interaction requirements
user requirements (3.3.6) that specify *interactions* (3.5.1) (including: recognizing information, making inputs, making selections, and receiving outputs) required by the *users* (3.3.2) to achieve the *goals* (3.3.3)

[SOURCE: ISO 25065:2019, 3.1.11]

3.3.8
use-related quality requirements
user requirements (3.3.6) that specify the intended outcomes of use of the interactive system and associated quality criteria

[SOURCE: ISO 25065:2019, 3.1.12]

3.3.9
user assistance
information to help a *user* (3.3.2) to interact with an interactive system

3.3.10
human-centred quality
extent to which requirements for *usability* (3.4.2) , *accessibility* (3.4.1), *user experience* (3.4.3) and avoidance of *harm from use* (3.4.4) are met

Note 1 to entry: Provision of the necessary technical functionality is a prerequisite for human-centred quality.

