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Ergonomics of human-system interaction —

Part 20:
Accessibility guidelines for information/communication technology (ICT) equipment and services

Ergonomie de l'interaction homme-système —

Partie 20: Lignes directrices sur l'accessibilité de l'équipement et des services des technologies de l'information et de la communication (TIC)

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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.

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 9241-20 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 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*

Guidance on software individualization is to form the subject of a future part 129.

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 110: Dialogue principles*

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

— *Part 171: Guidance on software accessibility*

— *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*

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

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

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

Framework for tactile and haptic interaction is to form the subject of a future part 910.

Introduction

The number of people using information/communication technologies (ICT) equipment and services, which combine hardware, software and network technologies, is increasing, as is the variety of ICT equipment and services. Our everyday lives are filled by such equipment and services.

This part of ISO 9241 is intended to help developers enable ICT equipment and services (and forthcoming novel or innovative equipment and services) so that they can be used by the widest range of people, regardless of their capabilities or disabilities, limitations or culture.

This part of ISO 9241 is based on the current understanding of the characteristics of individuals who have particular physical, sensory and/or cognitive impairments. However, accessibility is an issue that affects many people. The users of interactive systems are consumers or professionals with roles such as home occupiers, school pupils, engineers, clerks, salespersons and web designers. The individuals in such target groups vary significantly as regards physical, sensory and cognitive abilities and each target group will include people with different abilities. Thus people with disabilities do not form a specific group that can be separated out and then disregarded. The differences in capabilities may arise from a variety of factors that serve to limit the capability to engage in the activities of daily living, and are a "universal human experience". Therefore, accessibility addresses a widely defined group of users including

— people with physical, sensory and cognitive impairments present at birth or acquired during life,

— elderly people (a growing percentage of the population), who can benefit from new products and services but who experience reduced physical, sensory and cognitive capacities,

— people with temporary disabilities, such as a person with a broken arm or someone without his or her reading glasses, and

— people who experience difficulties in particular situations, such as a person who works in a noisy environment or has both hands occupied by other activities.

This part of ISO 9241 is prepared as guidance to secure and improve accessibility to ICT equipment, software and services when they are used by people within the widest range of capabilities. It presents:

a) a framework based on the ergonomic concept of context of use, and

b) principles for the accessibility of ICT equipment and services.

Their presentation is intended to assist the users of this part of ISO 9241 in the consideration of accessibility issues. It also describes major product attributes with design examples, provides information for the planning, design and development of ICT equipment and services and acquisition and evaluation of ICT equipment and services. It recognizes the importance of following general ergonomic guidance as well as the more accessibility-specific guidance found in this and other accessibility-specific standards in achieving full use of ICT equipment, software and services.

While many of the requirements and recommendations in this part of ISO 9241 also apply outside the domain of accessibility, they are especially important to this domain. The checklist of Annex B has also been included to help users examine the accessibility features of ICT equipment and services.

Ergonomics of human-system interaction —

Part 20:
Accessibility guidelines for information/communication technology (ICT) equipment and services

1 Scope

This part of ISO 9241 is intended for use by those responsible for planning, designing, developing, acquiring, and evaluating information/communication technology (ICT) equipment and services. It provides guidelines for improving the accessibility of ICT equipment and services such that they will have wider accessibility for use at work, in the home, and in mobile and public environments. It covers issues associated with the design of equipment and services for people with a wide range of sensory, physical and cognitive abilities, including those who are temporarily disabled, and the elderly.

A detailed design for particular equipment or a service can be developed based on its recommendations. If a specific detailed standard exists concerning the accessibility of equipment or services, then it can be used in conjunction with that more specific standard. Where such standards are not available, this part of ISO 9241 can then form the basis for the design of the accessibility features of ICT equipment and services.

It also provides general guidelines for acquiring and evaluating ICT equipment and services, including both hardware and software aspects of information processing equipment, electronic communication facilities, office machines, and other similar technologies and services, used at work, in the home, and in mobile and public environments.

In addition, it gives important information about context of use. Accessibility is increased by expanding the range of contexts where equipment and services can be used. Context of use can result from the various components of the equipment or service, including user, task and equipment (hardware, software and materials) characteristics, as well as those of physical and social environments. Context of use can be considered when planning, designing, developing, acquiring and evaluating ICT equipment and services.

NOTE   This part of ISO 9241 is a high-level standard applicable to all ICT equipment and services, therefore, detailed descriptions specific to equipment or services have been avoided. It can be referred to for the prevention of barriers to trade or the movement of people in respect of each national, regional and international standardization activity in this area. More specific recommendations on software accessibility are contained in ISO 9241-171.

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 9241-5, *Ergonomic requirements for office work with visual display terminals (VDTs) — Part 5: Workstation layout and postural requirements*

ISO 9241-11:1998, *Ergonomic requirements for office work with visual display terminals (VDTs) — Part 11: Guidance on usability*

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

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

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

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

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

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

ISO 9241-110:2006, *Ergonomics of human-system interaction — Part 110: Dialogue principles*

ISO 9241-151, *Ergonomics of human-system interaction — Part 151: Guidance on World Wide Web user interfaces* [1]

ISO 9241-171, *Ergonomics of human-system interaction — Part 171: Guidance on software accessibility* [1]

ISO 9241-300, *Ergonomics of human-system interaction — Part 300: Introduction to electronic visual display requirements* [1]

ISO 9241-302, *Ergonomics of human-system interaction — Part 302: Terminology for electronic visual displays* [1]

ISO 9241-410, *Ergonomics of human-system interaction — Part 410: Design criteria for physical input devices*

ISO 13407:1999, *Human-centred design processes for interactive systems*

ISO 14915 (all parts), *Software ergonomics for multimedia user interfaces*

3   Terms and definitions

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

3.1
accessibility
⟨interactive systems⟩ usability of a product, service, environment or facility by people within the widest range of capabilities

NOTE 1   The concept of accessibility addresses the full range of user capabilities and is not limited to users who are formally recognized as having disability.

NOTE 2   The usability-oriented concept of accessibility aims to achieve levels of effectiveness, efficiency and satisfaction that are as high as possible considering the specified context of use, while paying attention to the full range of capabilities within the user population.

3.2
assistive technology
hardware or software, added to or incorporated within a system, which increases accessibility for an individual

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[1]   To be published.