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Ergonomics of human-system interaction —

Part 161:
Guidance on visual user-interface elements

Ergonomie de l'interaction homme-système —

Partie 161: Éléments de l'interface utilisateur

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Foreword

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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 documents 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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 159, *Ergonomics*, Subcommittee SC 4, *Ergonomics of human–system interaction*.

ISO/TS 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 5: Workstation layout and postural requirements*

— *Part 6: Guidance on the work environment*

— *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*

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*

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— *Part 129: Guidance on software individualization*

— *Part 143: Forms*

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

— *Part 154: Interactive voice response (IVR) applications*

— *Part 161: Guidance on visual user-interface elements*

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

— *Part 331: Optical characteristics of autosterescopic displays* [Technical Report]

— *Part 391: Requirements, analysis and compliance test methods for the reduction of photosensitive seizures*

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

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

— *Part 411: Evaluation methods for the design of physical input devices* [Technical Specification]

— *Part 420: Selection of physical input devices*

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

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

User-interface elements, ergonomic requirements for the reduction of visual fatigue from stereoscopic images, the evaluation of tactile and haptic interactions, and framework and guidance for gesture interactions are to form the subjects of future ISO 9241-392, ISO 9241-940 and ISO 9241-960.

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Introduction

In different communities in the interactive system development ecosystem, the use, the names and the understanding of user-interface elements differs significantly. One of the results is that users have to cope with elements which differ in terms of keyboard entry and control, mouse behaviour, visual presentation of functionality and different options to control elements. **Consistent element behaviour, functionality and rendering is crucial for the usability of user interfaces.** This causes added efforts in all stakeholders in human-centred design activities, since this multitude needs to be managed in order to ensure high-quality collaboration of various specialists. Especially in the light of new emerging user-interface concepts and designs, a common definition of visual user-interface elements and the rationale for their selection, as well as their use can be regarded as an effort to sustain cooperation and ensure a sound basis for professional conversation. It is also of importance to state that this part of ISO 9241 of visual user-interface elements in no ways predetermines a visual style of the elements themselves, thus avoiding to impress determinants in creation, brand usage and style development. In addition, this part of ISO 9241 is laid out in an independent of platform specifics, so that no specific industrial user-interface styleguide, implementation technology or development process needs to be observed in order to be compliant with this part of ISO 9241.

This part of ISO 9241 aims to provide information on visual user-interface elements to help those responsible for managing software design and re-design processes, create user interface specifications, styleguides and visual concepts to identify, plan and design effective, efficient and satisfactory interactive systems.

Visual user-interface elements described in this part of ISO 9241 complements existing systems design approaches, methods or processes. They can be referenced in any kind of user interface strategy, regardless of the technology used for the user interface.

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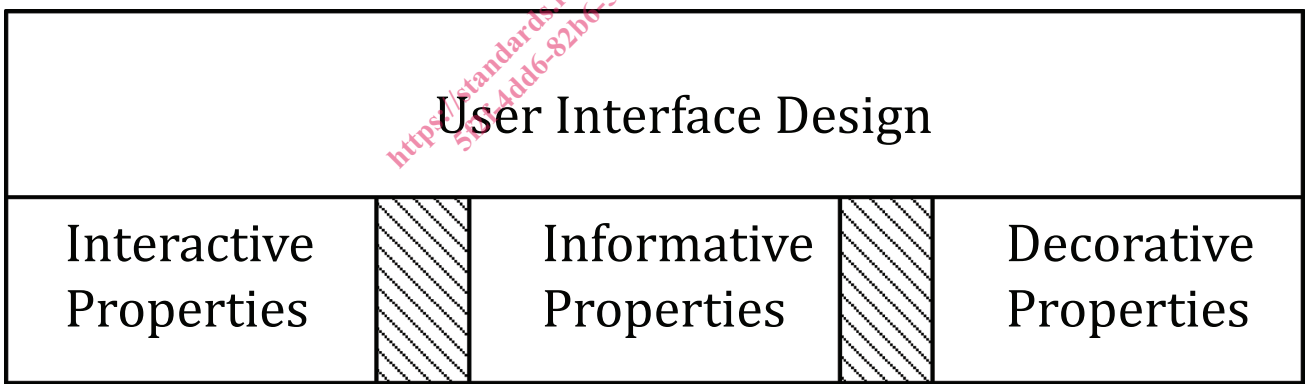
Table 1 — Overview of different visual user interface properties that are used to build a user interface design



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Ergonomics of human-system interaction —

Part 161:
Guidance on visual user-interface elements

1 Scope

This part of ISO 9241 describes visual user-interface elements presented by software and provides requirements and recommendations on when and how to use them. This part of ISO 9241 is concerned with software components of interactive systems to make human-system interaction usable as far as the basic interaction aspects are concerned.

This part of ISO 9241 provides a comprehensive list of **generic** visual user-interface elements, regardless of a specific input method, visualization, and platform or implementation technology. The guidance given in this part ISO 9241 is intended to be used in conjunction with ISO 9241 guidance on dialogue techniques. It recognizes that additional elements can evolve. It also addresses **derivates**, **compositions** (assemblies) and **states** of user-interface elements. It gives requirements and recommendations on selection, usage and dependencies of user-interface elements and their application. It is applicable regardless of a fixed, portable or mobile interactive system.

It does not provide detailed coverage of the methods and techniques required for design of user-interface elements. This part of ISO 9241 does not address implementation (e.g. graphical design of elements) and interaction details for specific input methods or technologies. It does not cover decorative user-interface elements that are intended to address solely aesthetic (hedonic) qualities in the user interface, e.g. background images.

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The information in this part of ISO 9241 is intended for use by those responsible for the selection and implementation of visual user-interface elements in interactive systems and for evaluating user interfaces. It is intended for use by those planning and managing platform specific aspects of user interface screen design. It also provides guidance for human factors/ergonomics and usability professionals involved in human-centred design. It addresses technical issues only to the extent necessary to allow users of this part of ISO 9241 to understand the relevance and importance of a consistent interface element usage and selection in the design process as a whole.

Annex A provides a guide to selection of different visual user interface elements depending of their appropriate application.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 9241-143:2012, *Ergonomics of human-system interaction — Part 143: Forms*

ISO 9241-171:2008, *Ergonomics of human-system interaction — Part 171: Guidance on software accessibility*

3 Terms and definitions

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

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