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Ergonomics of human-system interaction

Part 126: Guidance on the presentation of auditory information

bsi.

National foreword

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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*.

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Introduction

Interactive systems have used auditory information as primary sources and, more commonly, to enhance interactions in primarily visual systems since about the time the digital computer was invented. Even before that, one can consider telephone conversations to be a type of interactive system where information is presented aurally. The way participants in a telephone conversation present information to one another is largely based on learned and subconscious conventions. In the digital realm, sound has been used in increasingly symbolic ways, straying out of necessity from the realistic representations of objects and actions in the physical world.

Unlike visual displays, the information conveyed through sound is typically sparse, and it seems more difficult to intuitively understand what makes a sound scheme usable, whether in its design or its presentation. Since the main communication medium of modern interactive software is the visual display, it is not surprising that a need was first identified for guidelines relating to presentation of visual information. However, designers developing for both visual and auditory information would benefit from guidelines rooted in scientific discovery, that lead to clear and usable communication of information, while not inhibiting the creative process.

This document focuses on guidelines for presentation of information in the auditory modality.

The success of this document will depend on its positive impact on usability of future systems presenting auditory information using these guidelines. However, this document is not necessarily designed to be used by the direct beneficiaries of this desired usability increase. Instead, it serves the following types of users:

a) the user interface designer, who will apply these guidelines during the development process;

b) the buyer, who will reference this document during the product procurement process, and whose end users will gain from the potential benefits provided by the guidelines;

c) those responsible for ensuring products meet the recommendations in this document;

d) designers of auditory interface development tools to be used by auditory interface designers;

e) writers of software industry standard guides to be used by auditory interface designers.

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TECHNICAL SPECIFICATION **ISO/TS 9241-126:2019(E)**

Ergonomics of human-system interaction —

Part 126: Guidance on the presentation of auditory information

1 Scope

This document provides guidance for the auditory presentation of information controlled by software, irrespective of the device. It includes specific properties such as the syntactic or semantic aspects of information, e.g. coding techniques, and gives provisions for the organization of information taking account of human perception and memory capabilities.

This document does not address the hardware issues of the transmission and the production of auditory information.

NOTE 1 Volume is dependent on hardware and thus cannot always be absolutely controlled by software. Environmental conditions can also affect the ability for sounds to be perceived, which can be beyond the ability of the software to take into account.

This document does not apply to auditory alarms, warnings or other safety-related uses of auditory information.

NOTE 2 Safety-related uses of auditory presentation of information are covered in various domain specific standards, such as ISO 7731:2003 which deals with auditory danger signals for public and work areas, and IEC 60601-1-8:2006 which provides very specific requirements for auditory alarms for medical devices.

While this document applies to the presentation of all non-safety-related information, it does not include application domain specific guidance (e.g., audio instructions for consumer products).

This document can be utilized throughout the design process (e.g. as specification and guidance for designers during design or as a basis for heuristic evaluation). Its provisions for the presentation of information depend on the auditory design approach, the task, the user, the environment and the single or multiple technologies that can be used for presenting the information. Consequently, this document cannot be applied without knowledge of the context of use. It is not intended to be used as a prescriptive set of rules to be applied in its entirety but rather assumes that the designer has proper information available concerning task and user requirements and understands the use of available technology.

This document does not address visual or tactile/haptic presentation of information or modality shifting for the presentation of auditory information in other modalities.

NOTE 3 ISO 9241-112 provides high-level ergonomic guidance that applies to all modalities.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 9241-171, *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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