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BSI Standards Publication

Ergonomics of human-system interaction

Part 430: Recommendations for the design of non-touch gestural input for the reduction of biomechanical stress

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee PH/9, Applied ergonomics.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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English Version

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The text of ISO/TS 9241-430:2021 has been approved by CEN as CEN ISO/TS 9241-430:2023 without any modification.

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Foreword

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Introduction

Non-contacting hand and arm gestures (e.g. mid-air gestures) for interacting with computing devices are emerging as a useful form of input for both consumer and commercial applications.

Non-contacting gestures can be particularly well-suited for certain tasks, equipment and environments, such as with wearable technology (e.g. head-mounted displays, instrumented gloves), in dirty or sterile settings (e.g. kitchens or operating rooms) or for tasks where both hands are also used for other activities (e.g. sorting packages).

This document provides guidance on the design and selection of non-contacting hand and arm gestures and recommends methods for the usability and ergonomic evaluation of gestures in order to prevent fatigue and discomfort during prolonged gesturing.

ISO 9241-910 provides a common set of terms, definitions and descriptions of the various concepts central to designing and using tactile or haptic interactions. It also provides an overview of the range of tactile or haptic applications, objects, attributes and interactions.

ISO 9241-920 provides basic guidance (including references to related standards) in the design of tactile or haptic interactions.

ISO 9241-940 provides ways of evaluating tactile or haptic interaction for various aspects of interaction quality, such as haptic device attributes, logical space design and usability.

ISO 9241-960 provides guidance on gestures for tactile or haptic interaction. It explains how to describe their features and what factors to consider when defining gestures.

There are many factors to consider in the selection of non-contacting hand and arm gesture sets for human-computer interaction, including task, workstation, environment, natural language, recall, common existing contacting hand gesture sets, technology limitations on gesture recognition, usability, preference, arm and shoulder fatigue and other ergonomic factors. This document provides guidance primarily on usability, preference, arm and shoulder fatigue and biomechanical or kinesiology factors. This document recommends methods to assess these factors based on the reliability and validity of the methods.

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