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Robotics — Application of ISO 13482 —

Part 2: Application guidelines

Robotique — Application de l'ISO 13482 —

Partie 2: Lignes directrices sur l'application

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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.

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).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 299, *Robotics*.

A list of all parts in the ISO 23482 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

ISO 13482 is the first safety standard developed for the area of service robots. It allows close human-robot interaction, including human-robot contact. Although ISO 13482 follows well-established principles and practices from standards for industrial robots and machines in general, additional guidance can facilitate its rapid and successful adoption by manufacturers and other stakeholders.

This document clarifies which robots fall under the definition of personal care robots and what distinguishes personal care robots from robots in other areas, such as medical robots or industrial robots. This document also provides further guidance on the risk assessment and risk reduction process to be conducted for a personal care robot. It contains examples of risk assessments for different types of personal care robots that can serve as an example for the user of ISO 13482 for their own risk assessment.

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Robotics — Application of ISO 13482 —

Part 2: Application guidelines

1 Scope

This document provides guidance on the use of ISO 13482 and is intended to facilitate the design of personal care robots in conformity with ISO 13482. Additional guidance is provided for users with limited experience of risk assessment and risk reduction. This document provides clarification and guidance on new terms and safety requirements introduced to allow close human-robot interaction and human-robot contact in personal care robot applications, including mobile servant robots, physical assistant robots and person carrier robots. This document considers the application of ISO 13482 to all service robots and includes related examples.

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 8373:2012, *Robots and robotic devices — Vocabulary*

ISO 13482:2014, *Robots and robotic devices — Safety requirements for personal care robots*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 8373:2012 and ISO 13482:2014 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

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

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

3.1
service robot
robot that performs useful tasks for humans or equipment excluding industrial automation applications

[SOURCE: ISO 8373:2012, 2.10, modified — Notes to entry have been deleted.]

3.2
personal care robot
service robot (3.1) that performs actions contributing directly towards improvement in the quality of life of humans, excluding medical applications

[SOURCE: ISO 13482:2014, 3.13, modified — Notes to entry have been deleted.]

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3.3
industrial robot
automatically controlled, reprogrammable multipurpose manipulator, programmable in three or more axes, which can be either fixed in place or mobile for use in industrial automation applications

[SOURCE: ISO 10218-1:2011, 3.10, modified — Notes to entry have been deleted.]

3.4
mobile servant robot
personal care robot (3.2) that is capable of travelling to perform serving tasks in interaction with humans, such as handling objects or exchanging information

[SOURCE: ISO 13482:2014, 3.14]

3.5
physical assistant robot
personal care robot (3.2) that physically assists a user to perform required tasks by providing supplementation or augmentation of personal capabilities

[SOURCE: ISO 13482:2014, 3.15]

3.6
person carrier robot
personal care robot (3.2) with the purpose of transporting humans to an intended destination

[SOURCE: ISO 13482:2014, 3.16, modified — Notes to entry have been deleted.]

3.7
medical robot
robot intended to be used as MEE or MES

Note 1 to entry: MEE (medical electrical equipment) and MES (medical electrical system) are defined in IEC 60601-1.

[SOURCE: IEC/TR 60601-4-1:2017, 3.20, modified — Note to entry has been added.]

3.8
household robot
actuated mechanism with a degree of autonomy, operating within the household and similar environment, to perform intended tasks

Note 1 to entry: Operating includes travel and/or robot body movement.

[SOURCE: IEC 62849:2016, 3.1]

4 Guidance on the scope of ISO 13482 and gaps or overlaps with other standards

4.1 General

This clause clarifies what robot types and applications are covered by the scope of ISO 13482. It also covers gaps and overlaps with standards for similar products, such as industrial robots, medical robots and light electric vehicles.

4.2 Guidance on the definition of service robots

Service robots include various robot categories performing useful tasks for humans or equipment. Figure 1 illustrates robot categories that are included in the definition of service robot and how they relate to other relevant areas.

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