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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

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 document 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 or www.iec.ch/members_experts/refdocs).

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 42, *Artificial intelligence*.

This second edition cancels and replaces the first edition (ISO/IEC TR 24030:2021), which has been technically revised.

The main changes are as follows:

— selection of 51 “in operation” use cases from Annex A (informative), Collected use cases of ISO/IEC TR 24030:2021;

— collection and selection of 30 additional use cases;

— enhanced the use case submission form and the structure of use case description in Clause 7 to describe the desirable information of use cases;

— updated the statistics in 6.5 to reflect the use cases in this document;

— removed the subclauses that are no longer suitable for the use cases in this document (e.g. 6.6.3, Annex A and Annex C in the first edition);

— removed most of the terms from Clause 3 to leave two definitions in this document.

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 and www.iec.ch/national-committees.

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Introduction

This document provides a collection of artificial intelligence (AI) use cases in a variety of domains.

In total, 187 AI use cases were submitted by experts between July 2018 and the end of June 2022. In this document, the term “use cases” means “use cases selected from those submitted”. This document selected 81 in-operation use cases from all submissions.

The rationale for this document is as follows:

— illustrating the applicability of the AI standardization work across a variety of application domains;

— input to and reference for AI standardization work;

— sharing the collected use cases in support of AI standardization work with external organizations and internal entities to foster collaboration;

— reach out to new stakeholders interested in AI applicability;

— liaising with organizations to collect requirements for AI through use cases;

— by investigating use cases, it is possible to find new technical requirements (standardized demands) in the market, which can accelerate the pace of transformation of scientific and technological achievements.

While a bottom-up approach was used to collect use cases, a top-down approach is used in this document to identify AI applications, their deployment models and their application domains, as shown in 5.2

The first step taken to collect use cases was to identify application domains of AI systems (described in Clause 5) and to provide a use case template (described in 6.4 and Annex A). Contributors were requested to submit use cases using the provided template.

To improve the quality of use cases, guidance has been provided to contributors. This guidance includes acceptable sources (described in 6.3) and the characteristics of the AI systems (described in 6.4) that are used to develop use cases.

In this document, 6.5 includes basic statistics of use cases. Subclause 6.6 introduces societal concerns that affect many use cases.

The use cases were grouped and categorized according to the identified application domains. In this document, use cases are grouped, categorized and summarized according to the identified application domains in Clause 7. Use cases of specific application domains and their original submissions can be found at https://standards.iso.org/iso-iec/tr/24030/ed-2/en.

The perspectives of security and privacy in the AI use cases can be found in ISO/IEC TR 27563[6]. ISO/IEC TR 27563[6] includes a security and privacy analysis of the use cases in ISO/IEC TR 24030:2021. It is mentioned that the analysis was carried out independently from the use cases in ISO/IEC TR 24030:2021 contributors and therefore that it does not necessarily reflect their views.

AI is an emerging field with use cases and solutions with a wide range of maturity and success. The descriptions are given for the convenience of users of this document and does not constitute an endorsement by ISO.

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Information technology — Artificial intelligence (AI) — Use cases

1 Scope

This document provides a collection of representative use cases of AI applications in a variety of domains.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

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

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

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

3.1
artificial intelligence
AI
<discipline> research and development of mechanisms and applications of *AI systems* (3.2)

Note 1 to entry: Research and development can take place across any number of fields such as computer science, data science, natural sciences, humanities, mathematics and natural sciences.

[SOURCE: ISO/IEC 22989:2022, 3.1.3]

3.2
artificial intelligence system
AI system
engineered system that generates outputs such as content, forecasts, recommendations or decisions for a given set of human-defined objectives

Note 1 to entry: The engineered system can use various techniques and approaches related to artificial intelligence to develop a model to represent data, knowledge, processes, etc. which can be used to conduct tasks.

Note 2 to entry: AI systems are designed to operate with varying levels of automation.

[SOURCE: ISO/IEC 22989:2022, 3.1.4]

4 Abbreviated terms

For the purposes of this document, the following abbreviated terms apply. The abbreviated terms are extracted from use cases.

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