



Technical Report

ISO/IEC TR 24030

Information technology — Artificial intelligence (AI) — Use cases

*Technologies de l'information — Intelligence artificielle (IA) —
Cas pratiques*

**Second edition
2024-04**



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2024

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

	Page
Foreword	vi
Introduction	vii
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Abbreviated terms	1
5 Applications	3
5.1 General.....	3
5.2 Application domains.....	3
5.3 Deployment models.....	4
5.4 Examples of AI applications.....	4
6 Use cases	8
6.1 General.....	8
6.2 Sources of use cases.....	8
6.3 Guidance for submitting use cases.....	8
6.4 Fields of the use case template.....	8
6.4.1 General.....	8
6.4.2 ID.....	9
6.4.3 Use case name.....	9
6.4.4 Application domain.....	9
6.4.5 Deployment model.....	9
6.4.6 Objective(s).....	9
6.4.7 Narrative.....	9
6.4.8 Stakeholders and stakeholder perspectives.....	9
6.4.9 Data characteristics.....	10
6.4.10 Key performance indicators (KPIs).....	10
6.4.11 Features of use case.....	10
6.4.12 Threats and vulnerabilities.....	11
6.4.13 Challenges and issues.....	11
6.4.14 Trustworthiness considerations.....	11
6.4.15 Use of standards; opportunities for future standardization.....	13
6.4.16 SDGs to be achieved.....	13
6.5 Basic statistics.....	13
6.5.1 Use cases by application domain.....	13
6.5.2 Use cases by task.....	14
6.5.3 Use cases by relevant SDGs.....	14
6.6 Societal concerns.....	15
7 Use cases summaries	15
7.1 General.....	15
7.2 Agriculture.....	21
7.2.1 Real-time segmentation and prediction of plant growth dynamics using low-power embedded systems equipped with AI (use case 126).....	21
7.2.2 Smart agriculture (use case 156).....	23
7.2.3 Forecasting of crop yield using decision support system (use case 173).....	24
7.3 Digital marketing.....	26
7.3.1 Improving conversion rates and return on investment (RoI) with AI technologies (use case 53).....	26
7.3.2 AI system for digital marketing in retail services (use case 185).....	27
7.4 e-commerce/e-business.....	29
7.4.1 Emotion-sensitive AI customer service (use case 42).....	29
7.4.2 Deep learning-based user intent recognition (use case 43).....	31
7.4.3 AI virtual assistant for customer support and service (use case 106).....	33

ISO/IEC TR 24030:2024(en)

7.4.4	Customer relation management (CRM) (use case 157)	34
7.5	Education	36
7.5.1	A recommendation system for industrial training (use case 23)	36
7.5.2	An intelligent marking system (use case 83)	38
7.5.3	Intelligent educational robot (use case 84)	40
7.5.4	AI system to intelligent campus (use case 85)	41
7.5.5	AI adaptive learning platform for personalized learning (use case 102)	43
7.5.6	AI adaptive learning mobile app (use case 124)	45
7.6	Energy	46
7.6.1	Smart energy grid (use case 166)	46
7.7	Fintech	48
7.7.1	Detection of fraud based on collusion (use case 20)	48
7.7.2	Virtual bank assistant (use case 57)	49
7.7.3	Forecasting prices of commodities (use case 91)	51
7.7.4	Financial advice and asset management with AI (use case 114)	52
7.7.5	Loan in 7 minutes (use case 119)	54
7.7.6	Predictive risk intelligence (use case 164)	55
7.8	Healthcare	57
7.8.1	AI system to predict post-operative visual acuity for LASIK surgeries (use case 24)	57
7.8.2	AI system to quality control of electronic medical record (EMR) in real time (use case 50)	59
7.8.3	Discharge summary classifier (use case 79)	60
7.8.4	Generation of clinical pathways (use case 80)	62
7.8.5	Hospital management tools (use case 81)	63
7.8.6	Predicting relapse of a dialysis patient during treatment (use case 87)	64
7.8.7	Instant triaging of wounds (use case 89)	66
7.8.8	Detection of fraudulent medical claims (use case 90)	68
7.8.9	AI platform for chest CT-scan analysis (early stage lung cancer detection) (use case 105)	69
7.8.10	Neural network formation of 3D-models orthopaedic insoles (use case 121)	71
7.8.11	Search of undiagnosed patients (use case 127)	72
7.8.12	A clinical decision support system (use case 131)	73
7.8.13	Symptom assessment (hypothetical) (use case 134)	76
7.8.14	Making using evidence-based medicine and AI (use case 167)	77
7.8.15	AI-service for blood cells and bone marrow scans analysis (use case 168)	79
7.8.16	AI-service for chest X-ray and chest CT (use case 169)	81
7.8.17	Intelligent video analytics system (use case 170)	83
7.8.18	Retrospective analysis (use case 172)	84
7.8.19	Robotization of the federal hotlines on COVID-19 issues (use case 174)	85
7.8.20	Use of computer vision innovative technologies for analysis of medical images and further application (use case 175)	87
7.9	Home and service robotics	89
7.9.1	Device control using AI consisting of cloud computing and embedded system (use case 132)	89
7.10	ICT	91
7.10.1	AI system to help mobile phones to have better picture effect (use case 32)	91
7.10.2	Product failure prediction for critical IT infrastructure (use case 86)	93
7.10.3	AI-based optimized field dispatch (use case 151)	94
7.10.4	Wireless network failure prediction (use case 152)	96
7.10.5	AI performance evaluation of AI-powered messaging bots (use case 176)	97
7.11	Insurance	100
7.11.1	AI services for health insurance companies (use case 161)	100
7.12	Knowledge management	102
7.12.1	Water crystal mapping (use case 77)	102
7.12.2	AI system with a digital knowledge centre for utilizing the knowledge in the organization (use case 187)	104
7.13	Legal	106
7.13.1	AI contract management (use case 120)	106

ISO/IEC TR 24030:2024(en)

7.14	Manufacturing.....	108
	7.14.1 Quality assurance solution based on AI, to detect defects on wind turbines blades (use case 4).....	108
	7.14.2 Generative design of mechanical parts (use case 15).....	110
	7.14.3 Powering remote drilling command centre (use case 36).....	111
	7.14.4 Quality improvement of adhesive products, based on AI (use case 37).....	113
	7.14.5 Empowering autonomous flow meter control- reducing time taken to “proving of meters” (use case 40).....	114
	7.14.6 Improvement of productivity of semiconductor manufacturing (use case 82).....	116
	7.14.7 AI decryption of magnetograms (use case 104).....	119
	7.14.8 Analysing and predicting acid treatment effectiveness of bottom hole zone (use case 110).....	120
	7.14.9 Automatic classification tool for full size core (use case 112).....	122
	7.14.10 Collaborative AI to assist workers with production and assembly in factories (use case 179).....	124
7.15	Media and entertainment.....	126
	7.15.1 Video on demand publishing intelligence platform (use case 58).....	126
	7.15.2 AI system for promoting DX in customer attraction services at a museum (use case 178).....	128
7.16	Public sector.....	129
	7.16.1 AI ideally matches children to daycare centres (use case 7).....	129
	7.16.2 Open spatial data set for developing AI algorithms based on remote sensing (satellite, drone, aerial imagery) data (use case 122).....	131
	7.16.3 Smart city (use case 165).....	133
	7.16.4 AI tool for species categorization for wildlife population monitoring (use case 177).....	135
7.17	Security.....	137
	7.17.1 Non-intrusive detection of malware (use case 93).....	137
	7.17.2 Detect pickpockets in a crowd - training with privacy-sensitive data (use case 181).....	138
7.18	Transportation.....	140
	7.18.1 Enhancing traffic management efficiency and infraction detection accuracy with AI technologies (use case 29).....	140
	7.18.2 AI system for traffic signal optimization based on multi-source data fusion (use case 49).....	142
	7.18.3 Dynamic routing software as a service (SaaS) based on artificial intelligence (use case 92).....	144
	7.18.4 Misbehaviour detection (MBD) for V2X (use case 182).....	145
	7.18.5 AI system to estimate or predict congestion length for traffic signal control (use case 183).....	147
	7.18.6 Traffic signal control using artificial intelligence (use case 184).....	148
	7.18.7 AI system for predicting rivers’ water levels during flooding (use case 186).....	149
7.19	Work and life.....	152
	7.19.1 Recommendation algorithm for improving member experience and discoverability of resorts in the booking portal of a hotel chain (use case 28).....	152
	7.19.2 Improving the quality of online interaction (use case 88).....	153
	7.19.3 Business use of IoT for surveillance (use case 162).....	155
	7.19.4 Video surveillance (use case 180).....	157
Annex A (informative) Use case template.....		159
Annex B (informative) Use cases list of ISO/IEC TR 24030:2021 and ISO/IEC TR 24030:—.....		162
Bibliography.....		168

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).

ISO and IEC draw attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO and IEC take no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO and IEC had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents and <https://patents.iec.ch>. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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. In the IEC, see www.iec.ch/understanding-standards.

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.

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.

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.