

TECHNICAL REPORT

ISO/IEC TR 24368

First edition
2022-08

Information technology — Artificial intelligence — Overview of ethical and societal concerns



Reference number
ISO/IEC TR 24368:2022(E)

© ISO/IEC 2022



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2022

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	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Overview	3
4.1 General	3
4.2 Fundamental sources	4
4.3 Ethical frameworks	6
4.3.1 General	6
4.3.2 Virtue ethics	6
4.3.3 Utilitarianism	6
4.3.4 Deontology	6
5 Human rights practices	7
5.1 General	7
6 Themes and principles	8
6.1 General	8
6.2 Description of key themes and associated principles	8
6.2.1 Accountability	8
6.2.2 Fairness and non-discrimination	9
6.2.3 Transparency and explainability	9
6.2.4 Professional responsibility	10
6.2.5 Promotion of human values	10
6.2.6 Privacy	11
6.2.7 Safety and security	11
6.2.8 Human control of technology	12
6.2.9 Community involvement and development	12
6.2.10 Human centred design	13
6.2.11 Respect for the rule of law	13
6.2.12 Respect for international norms of behaviour	13
6.2.13 Environmental sustainability	14
6.2.14 Labour practices	14
7 Examples of practices for building and using ethical and socially acceptable AI	15
7.1 Aligning internal process to AI principles	15
7.1.1 General	15
7.1.2 Defining ethical AI principles the organization can adopt	15
7.1.3 Defining applications the organization cannot pursue	15
7.1.4 Review process for new projects	15
7.1.5 Training in AI ethics	16
7.2 Considerations for ethical review framework	16
7.2.1 Identify an ethical issue	16
7.2.2 Get the facts	16
7.2.3 List and evaluate alternative actions	17
7.2.4 Make a decision and act on it	17
7.2.5 Act and reflect on the outcome	17
8 Considerations for building and using ethical and socially acceptable AI	17
8.1 General	17
8.2 Non-exhaustive list of ethical and societal considerations	17
8.2.1 General	17
8.2.2 International human rights	18
8.2.3 Accountability	18

8.2.4	Fairness and non-discrimination	18
8.2.5	Transparency and explainability	18
8.2.6	Professional responsibility	19
8.2.7	Promotion of human values	20
8.2.8	Privacy	20
8.2.9	Safety and security	20
8.2.10	Human control of technology	21
8.2.11	Community involvement and development	21
8.2.12	Human centred design	21
8.2.13	Respect for the rule of law	21
8.2.14	Respect for international norms of behaviour	22
8.2.15	Environmental sustainability	22
8.2.16	Labour practices	22
Annex A (informative) AI principles documents		23
Annex B (informative) Use case studies		33
Bibliography		42

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents) or the IEC list of patent declarations received (see <https://patents.iec.ch>).

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*.

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

Artificial intelligence (AI) has the potential to revolutionise the world and carry a plethora of benefits for societies, organizations and individuals. However, AI can introduce substantial risks and uncertainties. Professionals, researchers, regulators and individuals need to be aware of the ethical and societal concerns associated with AI systems and applications.

Potential ethical concerns in AI are wide ranging. Examples of ethical and societal concerns in AI include privacy and security breaches to discriminatory outcomes and impact on human autonomy. Sources of ethical and societal concerns include but are not limited to:

- unauthorized means or measures of collection, processing or disclosing personal data;
- the procurement and use of biased, inaccurate or otherwise non-representative training data;
- opaque machine learning (ML) decision-making or insufficient documentation, commonly referred to as lack of explainability;
- lack of traceability;
- insufficient understanding of the social impacts of technology post-deployment.

AI can operate unfairly particularly when trained on biased or inappropriate data or where the model or algorithm is not fit-for-purpose. The values embedded in algorithms, as well as the choice of problems AI systems and applications are used for to address, can be intentionally or inadvertently shaped by developers' and stakeholders' own worldviews and cognitive bias.

Future development of AI can expand existing systems and applications to grow into new fields and increase the level of automation which these systems have. Addressing ethical and societal concerns has not kept pace with the rapid evolution of AI. Consequently, AI designers, developers, deployers and users can benefit from flexible input on ethical frameworks, AI principles, tools and methods for risk mitigation, evaluation of ethical factors, best practices for testing, impact assessment and ethics reviews. This can be addressed through an inclusive, interdisciplinary, diverse and cross-sectoral approach, including all AI stakeholders, aided by International Standards that address issues arising from AI ethical and societal concerns, including work by Joint Technical Committee ISO/IEC JTC 1, SC 42.

Information technology — Artificial intelligence — Overview of ethical and societal concerns

1 Scope

This document provides a high-level overview of AI ethical and societal concerns.

In addition, this document:

- provides information in relation to principles, processes and methods in this area;
- is intended for technologists, regulators, interest groups, and society at large;
- is not intended to advocate for any specific set of values (value systems).

This document includes an overview of International Standards that address issues arising from AI ethical and societal concerns.

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/IEC 22989, *Information technology — Artificial intelligence — Artificial intelligence concepts and terminology*