



BSI Standards Publication

Information technology — Artificial intelligence — Beneficial AI systems

National foreword

This Published Document is the UK implementation of ISO/IEC TR 21221:2025.

The UK participation in its preparation was entrusted to Technical Committee ART/1, Artificial Intelligence.

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

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

This publication is not to be regarded as a British Standard.

© The British Standards Institution 2025
Published by BSI Standards Limited 2025

ISBN 978 0 539 26538 5

ICS 35.240.01

Compliance with a Published Document cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 30 September 2025.

Amendments/corrigenda issued since publication

Date	Text affected



Technical Report

ISO/IEC TR 21221

**Information technology — Artificial
intelligence — Beneficial AI systems**

**First edition
2025-09**

Reference number
ISO/IEC TR 21221:2025(en)

Full document details: PD ISO/IEC TR 21221:2025


© ISO/IEC 2025

Documents
Document Sharing Hub



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2025

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	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Conceptual framework of a beneficial AI system	3
4.1 General	3
4.2 AI system and its functions	3
4.3 The roles and perspectives of AI stakeholders	3
4.4 Trustworthiness	3
4.5 Timeliness of benefits evaluation	4
4.6 Purposeful and responsible application	4
4.7 Measuring value of AI systems	4
4.7.1 General	4
4.7.2 Benefit components of AI system value	4
4.7.3 AI systems and automation	5
4.7.4 Different stakeholder perspectives	5
4.8 Create positive impact	7
4.8.1 General	7
4.8.2 Positive vs. negative impacts	8
5 Applications of beneficial AI systems	8
Annex A (informative) Beneficial AI system use cases	11
Annex B (informative) Modelling customer value	18
Annex C (informative) AI external stakeholders and relevant interested parties	20
Annex D (informative) AI system value and United Nations Sustainable Development Goals	22
Bibliography	23

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*.

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

At present government, commercial and not-for-profit organizations are increasing their investment and adoption of artificial intelligence (AI) technology in systems and applications for business processes, products and services. As with other innovations, the adoption of AI comes with risks potentially resulting in negative impacts. In some cases, the legal requirements governing the use of the technology have already been imposed to mitigate these risks. To prevent unjustified negative societal attitude towards the AI, there is a need to clearly articulate the benefits of AI for all the stakeholders, comparing the benefits with relevant costs and risks. This can foster transparency and trustworthiness of AI, ensuring better governance, trust, understanding and appreciation of the value of the AI technology.

This document describes a conceptual framework for the articulation of benefits of AI as one of the non-functional characteristics of AI systems. This framework incorporates the make, use and impact perspectives of the stakeholders. It can help to initiate meaningful discussion among the stakeholders and to formulate appropriate business models and value propositions along the AI value chain.

This document also shows how the United Nations Sustainable Goals (UN SDGs) can be incorporated into the benefit components of AI system value ([Annex D](#)). Examples are provided to how an AI system with the proper benefit components in its value proposition can potentially contribute to and help accelerate the UN SDGs and lend support to the ISO's London Declaration^[1].

Information technology — Artificial intelligence — Beneficial AI systems

1 Scope

This document describes the delivery of functional, economic, environmental, social, societal, cultural, intellectual and personal benefits by AI systems as perceived by their stakeholders. The document includes illustrative use cases of AI systems.

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 5339:2024, *Information technology — Artificial intelligence — Guidance for AI applications*

ISO/IEC 22989:2022, *Information technology — Artificial intelligence — Artificial intelligence concepts and terminology*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 22989, ISO/IEC 5339 and the following 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

consumer

individual member of the general public purchasing or using goods, property or services for private purposes

[SOURCE: ISO 14025:2006, 3.16]

3.2

AI customer

organization or entity that uses an AI product or service either directly or by its provision to AI users

Note 1 to entry: In the context of this document, an AI customer has a business relationship with the AI provider that provides platforms, products or services that uses AI systems (see ISO/IEC 22989:2022, 5.19.2).

3.3

AI user

organization or entity that uses AI products or services

Note 1 to entry: An AI user can be an individual from the general public (consumer) or a member of the customer organization or entity. An AI user is not required to have a business relationship with the AI provider or AI customer.

3.4

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.

[SOURCE: ISO/IEC 22989:2022, 3.1.4, modified — Notes to entry deleted.]

3.5

community

group of people with an arrangement of responsibilities, activities and relationships

Note 1 to entry: In the context of this document, community members do not have to reside in the same geographical areas.

[SOURCE: ISO 37153:2024, 3.9, modified — Notes to entry replaced.]

3.6

value proposition

promise of measurable benefits resulting from the collaboration

[SOURCE: ISO 44001:2017, 3.30]

3.7

civil society

wide range of individuals, groups of people, networks, movements, associations and organizations that manifest and advocate for the interests of their members and others

Note 1 to entry: It can be based on philanthropic, cultural, religious, environmental or political values and convictions.

Note 2 to entry: This definition excludes for-profit companies and businesses, academia and all government-dependent entities.

Note 3 to entry: In the context of this document, society is used as a synonym to civil society.

[SOURCE: ISO/TR 22370:2020, 3.5, modified — Note 3 to entry added.]

3.8

relevant interested party

person or organization that can affect, be affected by or perceive itself to be affected by a decision or activity

Note 1 to entry: In the context of this document, relevant interested parties are those stakeholders that are not inside the context of an AI application.

3.9

cost-benefit analysis

decision aiding tool using a systematic evaluation of the positive effects (benefits) and negative effects (disbenefits) of undertaking an action, integrating technical, time-schedule, management, financial, societal, environmental issues

[SOURCE: ISO 18557:2017, 3.6]

3.10

sustainability

state of the global system, including environmental, social and economic aspects, in which the needs of the present are met without compromising the ability of future generations to meet their own needs

Note 1 to entry: The environmental, social and economic aspects interact, are interdependent and are often referred to as the three dimensions of sustainability.

[SOURCE: ISO Guide 82:2019, 3.1, modified— Note 2 to entry deleted.]

4 Conceptual framework of a beneficial AI system

4.1 General

The conceptual framework of a beneficial AI system is based on the following premise: an AI system is perceived as beneficial when it functions as designed per its requirements, is trustworthy and is purposefully and responsibly applied to create sustainable net positive value and impact for its stakeholders.

The attributes of this conceptual framework are defined in this clause. The benefits of using AI systems are discussed in [4.7.2](#). The role AI systems play in automation is discussed in [4.7.3](#). The different stakeholder perspectives are discussed in [4.7.4](#) with a more detailed model in [Annex C](#). The creation of AI system value is illustrated with multiple steps in [Figure 1](#). The step involving a cost-benefit analysis as performed by an AI customer is introduced in [4.7.4.5](#) together with a more detailed model with sample business models and value propositions in [Annex B](#). Taken together, these subclauses illustrate how the conceptual framework of a beneficial AI system can be used to generate meaningful discussion among the stakeholders and help formulate appropriate business models and value propositions along the AI value chain.

4.2 AI system and its functions

An AI system's capabilities depend on the configuration and construction of the AI model and the domain involved, e.g. computer vision, image recognition, natural language processing, machine translation, speech synthesis, data mining and planning (see ISO/IEC 5339:2024, 5.3.4.2). Ensuring the system functions as designed per its requirements is the necessary condition for the AI system to be considered by its stakeholders.

External customers and users of the AI system usually interact with the AI system via a deployed AI application (see ISO/IEC 5339).

4.3 The roles and perspectives of AI stakeholders

The AI stakeholders in an AI system environment (see ISO/IEC 22989:2022, 5.17 and ISO/IEC 5339) can be grouped by their roles and perspectives in the context of an AI application (see ISO/IEC 5339:2024, 6). The AI producers, AI developers, AI application providers and AI partners such as data providers typically have roles and perspectives based on "making" the AI system (i.e. make stakeholders). The AI customers and AI users typically have roles and perspectives based on "using" the AI system (i.e. use stakeholders). The community, advocates, regulators and policy makers typically have their roles and perspectives based on the "impact" of the AI system (i.e. impact stakeholders). The perspectives of each group of AI stakeholders can be different and they form their own opinions and expectations of the benefits of the AI system based on their own environment and value systems (see [4.7.4](#) and [Annex C](#)).

4.4 Trustworthiness

Trustworthiness of an AI system is an important factor that stakeholders use in determining the benefits of an AI system. If the AI system is perceived as not trustworthy, then the system will probably not be used or used in unintended ways resulting in suboptimal benefits.

There are many factors that contribute to the trustworthiness of an AI system (see ISO/IEC TR 24028), including explainability,^[3] robustness,^{[4][5][6]} transparency,^[7] ethical alignment^[8] and data quality considerations^{[9][10][11][12][13][14]}.

To derive benefits from the AI system, the make stakeholders intentionally seek to understand the value systems of the use and impact stakeholders to produce ethical and responsible AI systems that can be perceived as trustworthy. There are many vulnerability and risk factors associated with AI systems that can lead to the erosion of trust. These factors are discussed in ISO/IEC TR 24028 together with possible measures that the make stakeholders can take to mitigate these vulnerability and risk factors across the AI system's life cycle.