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Interested committees:

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



DRAFT International Standard

ISO/IEC DIS 25059

Software engineering — Systems and software Quality Requirements and Evaluation (SQuaRE) — Quality models for AI systems

ICS: 35.080

ISO/IEC JTC 1/SC 42

Secretariat: **ANSI**

Voting begins on:
2025-12-18

Voting terminates on:
2026-03-12

This document is circulated as received from the committee secretariat.

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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 25059:2023), which has been technically revised.

The main changes are as follows:

- alignment with the revised version of ISO/IEC 25010:2023;
- alignment with the revised version of ISO/IEC 25019:2023;
- addition of an AI service quality model based on ISO/IEC TS 25011:2017;
- addition of “Environmental sustainability” as a sub-characteristic of “Performance efficiency” in the product quality model.

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

High-quality software products and computer systems are crucial to stakeholders. Quality models, quality requirements, quality measurement, and quality evaluation are standardized within the International Standards on SQuaRE, see [Annex A](#) for further information.

AI systems require additional properties and characteristics of systems to be considered, and stakeholders have varied needs. AI systems have different properties and characteristics. For example, AI systems can:

- replace human decision-making;
- be based on noisy, or incomplete data;
- be probabilistic;
- adapt during operation.

The concept of trustworthiness is addressed through a holistic ecosystem of standards. It is understood both as an ongoing organizational process, guided by standards like ISO/IEC 42001 and as a set of non-functional requirements specifying emergent properties of a system as described in ISO/IEC TR 24028. [2] These requirements — which are a set of inherent characteristics with their attributes — within the context of quality of use as indicated in ISO/IEC 25010 (product quality model), ISO/IEC 25019 (quality-in-use model) and ISO/IEC TS 25011 (service quality models).

A key consideration in the field is the applicability of standards developed for conventional software to AI systems. It is widely recognized that existing frameworks do not sufficiently address the data-driven and unpredictable nature of AI systems. While considering the existing body of work, experts have identified the need to develop new international standards for AI systems that can go beyond the characteristics and requirements of conventional software development.

A related discussion concerns different approaches to the testing and evaluation of AI systems. The prevailing view is that for the testing of an AI system, modified versions of existing software and hardware verification and validation techniques are needed. Due to several conceptual differences between many AI systems and conventional systems, it has been concluded that “the ability of the [AI] system to achieve the planned and desired result ... [cannot] always be measurable by conventional approaches to software testing”. Testing of AI systems is addressed in ISO/IEC 42119 series (42119-2 and DTS 42119-3).

This document outlines an application-specific AI system extension to the SQuaRE quality models specified in ISO/IEC 25010, ISO/IEC 25019 and ISO/IEC TS 25011.

The AI system quality is considered from two perspectives (quality models), product quality as described in [Clause 5](#) and quality-in-use in [Clause 6](#). The relevance of these terms is explained, and links to other standardization deliverables (e.g. the ISO/IEC 24029 series) are highlighted.

AI service quality is also part of this document as users and organizations need high-quality support for their AI systems. AI service quality is described in [Clause 7](#).

Cybersecurity is also an important aspect that is captured in these SQuaRE models. For example, security, confidentiality, compliance, authenticity, resistance and recoverability are characteristics or sub-characteristics described in this document.

ISO/IEC 25012 contains a model for data quality that is complementary to the model defined in this document. ISO/IEC 25012:2008 is being extended for AI systems by the ISO/IEC 5259 series.

Software engineering — Systems and software Quality Requirements and Evaluation (SQuaRE) — Quality models for AI systems

1 Scope

This document outlines quality models for AI systems and services and is an application specific extension to the standards on SQuaRE. The characteristics and sub-characteristics detailed in the models provide consistent terminology for specifying, measuring and evaluating AI system and service quality. The characteristics and sub-characteristics detailed in the models also provide a set of quality characteristics against which stated quality requirements can be compared for completeness.

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 25010:2023, *Systems and software engineering — Systems and software Quality Requirements and Evaluation (SQuaRE) — Product quality model*

ISO/IEC 25019:2023, *Systems and software engineering — Systems and software Quality Requirements and Evaluation (SQuaRE) — Quality-in-use model*

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

ISO/IEC 23053:2022, *Framework for Artificial Intelligence (AI) Systems Using Machine Learning (ML)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 22989:2022, ISO/IEC 23053:2022 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 General

3.1.1

measure, noun

variable to which a value is assigned as the result of measurement

Note 1 to entry: The term “measure” is used to refer collectively to base measures, derived measures, and indicators.

[SOURCE: ISO/IEC/IEEE 15939:2017, 3.15]