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Zahteve in smernice za vodenje kakovosti podatkov (ISO/IEC 5259-3:2024)**

Artificial intelligence - Data quality for analytics and machine learning (ML) - Part 3: Data quality management requirements and guidelines (ISO/IEC 5259-3:2024)

Künstliche Intelligenz - Datenqualität für Analytik und maschinelles Lernen (ML) - Teil 3: Anforderungen und Leitlinien für das Datenqualitätsmanagement (ISO/IEC 5259-3:2024)

Intelligence artificielle - Qualité des données pour les analyses de données et l'apprentissage automatique - Partie 3: Exigences et lignes directrices pour la gestion de la qualité des données (ISO/IEC 5259-3:2024)

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**International
Standard**

ISO/IEC 5259-3

**Artificial intelligence — Data
quality for analytics and machine
learning (ML) —**

**Part 3:
Data quality management
requirements and guidelines**

*Intelligence artificielle — Qualité des données pour les analyses
de données et l'apprentissage automatique —*

*Partie 3: Exigences et lignes directrices pour la gestion de la
qualité des données*

**First edition
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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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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*.

A list of all parts in the ISO/IEC 5259 series can be found on the ISO and IEC websites.

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

The quality of analytics and machine learning (ML) based products and services depends on the quality of data used to train ML models. Hence, data quality management is essential as it often helps to ensure the success of analytics and ML technology.

The adoption of a data quality management system facilitates managing the quality of products and services that employ analytics and ML technologies. This document defines vocabulary, requirements and guidelines for communication, alignment and agreement for managing data quality. The data quality management system provides transparency and auditability, either through self-assessment or third party assessment. It facilitates achieving relevant stakeholder satisfaction and managing quality, performance and self-declaration requirements. Specifically, this document defines requirements for a data quality management system with references to data quality measures that are relevant for the most commonly used analytics and ML technologies.

As data quality requirements vary with context and application domain, this document provides a generic set of requirements and recommendations relating to common data life cycle stages. A data life cycle is typically tightly integrated with the accompanying AI system life cycle and therefore has several dependencies. This document does not prescribe what AI system life cycle to use. Instead, it provides generic interfaces that allow users of this document the flexibility to interface with several life cycle models as long as the life cycle processes can be mapped.

ISO/IEC 5259-1 describes the data quality terminology and concepts used in this document.

ISO/IEC 5259-2¹⁾ describes the data quality model and data quality measures used in this document.

ISO/IEC 5259-4 describes the data quality process framework used in this document.

ISO/IEC 5259-5²⁾ provides a data quality governance framework as guidance for governing bodies.

ISO/IEC TR 5259-6³⁾ describes a visualization framework for data quality in analytics and ML.

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Artificial intelligence — Data quality for analytics and machine learning (ML) —

Part 3: Data quality management requirements and guidelines

1 Scope

This document specifies requirements and provides guidance for establishing, implementing, maintaining and continually improving the quality of data used in the areas of analytics and machine learning.

This document does not define a detailed process, methods or metrics. Rather it defines the requirements and guidance for a quality management process along with a reference process and methods that can be tailored to meet the requirements in this document.

The requirements and recommendations set out in this document are generic and are intended to be applicable to all organizations, regardless of type, size or nature.

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 5259-1:2024, *Artificial intelligence — Data quality for analytics and machine learning (ML) — Part 1: Overview, terminology, and examples*

<https://www.iso.org/standard/78141.html>, *Artificial Intelligence — Data quality for analytics and machine learning (ML) — Part 2: Data quality measures*

ISO/IEC 22989, *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 5259-1 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

data quality claim

statement to what degree data satisfy a data quality requirement

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3.2

data quality plan

specification of practices, processes and allocation of resources to achieve data quality objectives as the outcome of data quality planning

3.3

data quality planning

part of data quality management focused on setting data quality objectives and specifying necessary operational processes and related resources to achieve the quality objectives

[SOURCE: ISO 8000-2:2022, modified — example removed]

3.4

development interface agreement

DIA

agreement between customer and supplier in which the responsibilities for activities to be performed, evidence to be reviewed, or work products to be exchanged by each party related to the development of items or elements are specified

Note 1 to entry: While DIA applies to the development phase, supply agreement applies to production.

[SOURCE: ISO 26262-1:2018]

4 Symbols and abbreviated terms

DQMLC data quality management life cycle

5 Intended usage

This document may be used in one or more of the following modes:

- by an organization to establish and tailor a data quality management process for the use of data in analytics and ML, and continually improve processes;
- by an ML project to define, trace and evaluate data quality requirements;
- by a data user and data holder to establish a common understanding of data quality characteristics, and to ensure that agreed requirements have been met, facilitating an agreement for transacting data.

NOTE The organization can request assurances of confidentiality and proper use for supporting evidence.

6 Overall data quality management

6.1 Objective

The objective of a data quality management process is to establish appropriate (i.e. repeatable and auditable) processes to manage the quality of data and reliably meet a given set of requirements set by the organization.

6.2 General

Data quality impacts outcomes of analytics and ML algorithms. Data quality has an inherent constituent and a system-dependent constituent. Data can be suitable for one application but not suitable for another. This document helps to establish and maintain data quality for each analytics and ML application.

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6.3 Requirements and recommendations

6.3.1 General

The following requirements and recommendations apply to the whole organization.

6.3.2 Data quality culture

The organization should sustain a data quality culture.

The organization shall:

- a) have rules and processes to achieve quality (according to this document) taking into account the data quality model as applied to the applicable products and services;
- b) define and implement data quality management processes, and perform related data quality activities;
- c) integrate the data quality management processes and activities, to the extent appropriate, into other management processes and activities, such as general quality management and risk management;
- d) document the performed activities;
- e) provide resources sufficient to perform data quality management;
- f) monitor, and to the extent necessary, review and improve the data quality management processes;
- g) provide the required authority to involved personnel;
- h) communicate data quality policies within the organization.

6.3.3 Management of data quality issues

The organization shall meet data quality requirements by:

- a) having processes for communicating, analysing, evaluating, resolving and closing data quality issues;
- b) documenting closed issues;
- c) escalating or delegating issues that cannot be closed.

NOTE 1 Resolving and closing issues of data quality can include limiting or adjusting the scope of the ML project.

NOTE 2 A data quality issue can be closed by implementing a resolution or determining a resolution based on defined acceptance criteria.

6.3.4 Competence management

The organization shall manage competence by:

- a) documenting required skills and tools to process the data;
- b) ensuring that involved personnel have sufficient skills to perform their activities and duties;
- c) maintaining records of persons and their proficiency on the required skills and tools;
- d) keeping appropriate records of training and experience that substantiate claims of appropriate skills.

The organization can use external sources of competencies.