TECHNICAL SPECIFICATION

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Data quality —

Part 65: Data quality management: Process measurement questionnaire

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Contents

Page

Foreword

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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 ISO documents 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).

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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.

This document was prepared by Technical Committee ISO/TC 184, *Automation systems and integration*, Subcommittee SC 4, *Industrial data*.

A list of all parts in the ISO 8000 series can be found on the ISO website.

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.

Introduction

The ability to create, collect, store, maintain, transfer, process and present data to support business processes in a timely and cost effective manner requires both an understanding of the characteristics of the data that determine its quality, and an ability to measure, manage and report on data quality.

ISO 8000 defines characteristics that can be tested by any organization in the data supply chain to objectively determine conformance of the data to ISO 8000.

ISO 8000 provides frameworks for improving data quality for specific kinds of data. The frameworks can be used independently or in conjunction with quality management systems.

ISO 8000 covers industrial data quality characteristics throughout the product life cycle from conception to disposal. ISO 8000 addresses specific kinds of data including, but not limited to, master data, transaction data, and product data.

This document establishes a simple measurement method, based on the high-level reference processes of ISO 8000-61. Evaluating the data quality management implementation of an organization. Each question has been derived from the outcomes of every process in ISO 8000-61.

Annex A contains an identifier that unambiguously identifies this document in an open information system.

Data quality —

Part 65:
Data quality management: Process measurement questionnaire

1 Scope

This document specifies a questionnaire to audit the performance of the processes specified by the process reference model in ISO 8000-61.

NOTE 1 This questionnaire is applicable to all types of business process, technology, information system, data and data processing. This questionnaire can be used as part of a continuous improvement process.

The following are within the scope of this document:

— guiding principles for generating questions from the process outcomes specified by ISO 8000-61;

— one or more questions for each outcome of every process in ISO 8000-61;

— a measurement method based on a simple indicator and measurement scale for each question;

— guidance on how to present the results generated by the questionnaire.

NOTE 2 The questions and corresponding indicators in this document conform to the requirements of ISO 8000-63.

The following is outside the scope of this document:

— defining how the questions relate to models of organizational process maturity.

NOTE 3 Such models define an overall scale by which to understand the degree to which an organization is performing effectively and efficiently.

EXAMPLE ISO 8000-62 and ISO 8000-64 [1)]specify how to use maturity models with ISO 8000-61.

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 8000-2, *Data quality — Part 2: Vocabulary*

ISO 8000-61, *Data quality — Part 61: Data quality management: Process reference model*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 8000-2 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

1) Under preparation.

— IEC Electropedia: available at http://www.electropedia.org/

4 Data quality management

The processes for data quality management specified by ISO 8000-61 shall be followed. This document specifies a process measurement questionnaire based on those processes (see Figure 1).

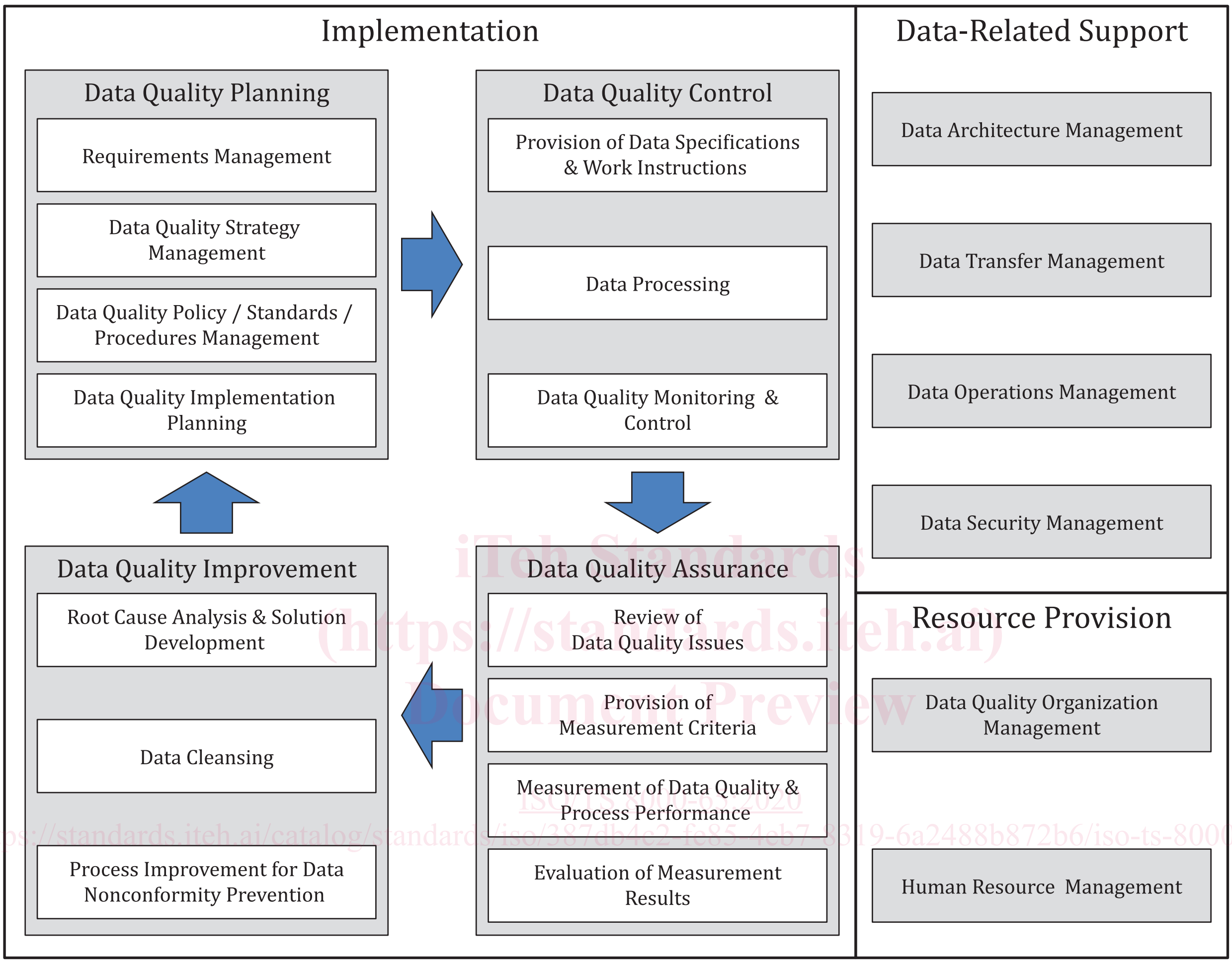

Figure 1 — Data quality management as specified by ISO 8000-61

5 Process measurement questionnaire

5.1 Questionnaire overview

5.1.1 Questionnaire structure

For each of the ISO 8000-61 processes and associated outcomes, the questionnaire provides a set of questions. These questions enable an initial high-level assessment of the maturity of the data quality management processes that have been implemented by an organization.

Each question addresses a particular organizational capability (see Table 1). These capabilities deliver the totality of the operational effect of the organization.

When the organization analyses the results from using the questionnaire, the organizational capabilities are a useful way in which to present the results and provide evidence as to which capabilities are most in need of improvement.

Table 1 — Organizational capabilities

Organizational capability	Description
Data exchange	Moving data between different systems, either internally or with an external organization.
Data exploitation	Delivering value to the organization from data.
Good practice deployment	Adopting processes and supporting elements that have been proven by other organizations to be effective and efficient.
Human resource management	Appointing and supporting the right people to meet the needs of the organization.
Health and safety executive and risk management	Ensuring the organization mitigates threats and exploits opportunities in respect of health, safety and the environment.
Knowledge and skills	Exploiting opportunities to improve the capability of people to perform the responsibilities of their allocated roles.
Legal management	Managing the implications of legislation on the activities of the organization.
Partner and contract management	Establishing and monitoring effective relationships with other organizations.
Performance improvement	Monitoring performance and identifying opportunities to become more effective or more efficient.
Standardization and computerization	Implementing consistent processes that include appropriate automation to remove repetitive activities for human operators.
Leadership and strategy set-up	Establishing the overall framework within which the organization understands the direction and targets for achieving collective success.

5.1.2 Guiding principles for generating questions

The ISO 8000-61 outcomes are used to generate questions for the questionnaire.

5.1.3 Indicators and measurement scale

The measurement scale for each question is “Yes” or “No”.

When the answer to a question is “Yes”, proof of the answer is necessary.

When the proof is provided by referencing an existing document, the following supporting data is necessary:

— document number;

— document title;

— document version.

This data provides a baseline for future assessments.

5.1.4 Questionnaire content

The questionnaire addresses each of the following higher-level processes from ISO 8000-61:

— data quality planning (see 5.2);

— data quality control (see 5.3);

— data quality assurance (see 5.4);

— data quality improvement (see 5.5);

— data-related support (see 5.6);

— resource provision (see 5.7).

5.2 Data quality planning

5.2.1 Requirements management

The purpose of requirements management is to establish the basis for creating or for refining a data quality strategy that aligns with the needs and expectations of stakeholders.

The outcomes of requirements management are as follows and are the basis for the questions about requirements management (see Table 2).

— The needs and expectations of stakeholders with respect to data are collected.

— The needs and expectations are refined into data requirements.

NOTE This refinement can include structuring and classifying requirements to improve understanding of the interdependencies of those requirements.

— Requirements are analysed to determine their feasibility in terms of technology, cost, manpower, and schedule.

— Requirements are prioritized and approved.

— The needs of different parts of the organization are balanced and an agreed common set of requirements is achieved.

Table 2 — Questions about requirements management

Organizational capability	Question	Example of proof
Data exchange	Do you collect and classify data requirements from stakeholders or business partners?	Existence of a data requirements report
Data exploitation	Do you prioritize and validate data requirements with stakeholders?	Existence of a document signed by the stakeholders

NOTE Annex B collates all the questions of the questionnaire in a single table.

5.2.2 Data quality strategy management

The purpose of data quality strategy management is to establish the long-term goals for data quality across the organization, and short-term objectives to achieve those goals.

The outcomes of data quality strategy management are as follows and are the basis for the questions about data quality strategy management (see Table 3).

— Top management is committed to the improvement of data quality to agreed levels at the organizational level.

— A data quality strategy is created, describing the vision, long-term goals, an implementation roadmap and short-term objectives, which are defined in terms of quantitative outcomes.

— A framework is created for establishing and reviewing the data quality strategy.

— Results are evaluated to determine the performance of the data quality strategy, leading to the strategy being updated as necessary.

— The data quality strategy is communicated throughout the organization.

Table 3 — Questions about data quality strategy management

Organizational capability	Question	Example of proof
Leadership and strategy set-up	Do you commit top management to the continual improvement of data quality?	Existence of a data quality chapter in the quality manual or Existence of committees with top management on data quality or Existence of a Chief Data Officer and/or a data quality sponsor in top management
Leadership and strategy set-up	Did you create a data quality strategy, describing the vision, long-term goals, an implementation roadmap and short-term objectives, which are defined in terms of quantitative outcomes? Do you communicate the data quality strategy throughout the organization?	Document distributed and applied with respect to data quality strategy
Good practice deployment	Are you using a framework for establishing and reviewing the data quality strategy?	Existence of a framework
Leadership and strategy set-up	Do you evaluate results to determine the performance of the data quality strategy?	Existence of a process performance report
Leadership and strategy set-up	Do you update the strategy according to those results through consultation with stakeholders?	Existence of process performance method and an improvement cycle
Data exploitation	In the organization, are there indicators that can be used to measure the impact of data quality on delivering the mission of the organization?	Existence of impact measurement indicators for data quality management

5.2.3 Data quality policy/standards/procedures management

The purpose of data quality policy/standards/procedures management is to capture rules that apply to performing the processes data quality control, data quality assurance, data quality improvement, data-related support and resource provision consistently across the organization.

The outcomes of data quality policy/standards/procedures management are as follows and are the basis for the questions about data quality policy/standards/procedures management (see Table 4).

— Policies are defined in terms of fundamental intentions and rules that guide the organization as to which actions are appropriate and which are inappropriate in performing data quality management.

— Standards are defined to support data quality management.

NOTE These standards include those covering formats for expressing data requirements, measurement methods, how to sustain data quality when changing supporting technology, and the infrastructure of computer hardware and software systems.

— Procedures are defined to specify in detail how the organization performs data quality management.

— Policies, standards and procedures are communicated throughout the organization, covering the consistent application to data quality management.

Table 4 — Questions about data quality policy/standards/procedures management

Organizational capability	Question	Example of proof
Standardization and computerization	Are appropriate policies for data quality specified, published, known and applied? Are these policies coherent with the data quality strategy?	Existence of a document with fundamental intentions and rules for data quality management in the organization
Standardization and computerization	Are applicable standards specified, known and applied?	Existence of a list of standards with which to conform
Standardization and computerization	Are procedures related to data quality specified, published, known and applied?	Existence of business process model for data quality management

5.2.4 Data quality implementation planning

The purpose of data quality implementation planning is to identify the resources and sequencing by which to perform the processes data quality control, data quality assurance, data quality improvement, data-related support and resource provision across the organization.

The outcomes of data quality implementation planning are as follows and are the basis for the questions about data quality implementation planning (see Table 5).

— A scope and target are defined for data quality in accordance with the data quality objectives.

— Implementation plans are established in detail.

— Manpower, financial and technology resources are allocated and managed to ensure successful execution of the implementation plans.

— Roles, responsibilities and authorities are allocated and controlled to cover all aspects of data quality management.

NOTE ISO 8000-150[2)] provides detail on roles and responsibilities that contribute to effective and efficient data quality management.

— Progress is monitored against implementation plans to achieve improved data quality.

— Performance results are evaluated to report to top management on the effectiveness of the implementation plans, with those plans being updated as necessary based on the results.

Table 5 — Questions about data quality implementation planning

Organizational capability	Question	Example of proof
Good practice deployment	Do you have an implementation roadmap of your data quality processes?	Existence of implementation roadmap as a Gantt chart
Leadership and strategy set-up	Do you monitor and update your progress against implementations plans?	Improvement measures using the initial roadmap
Leadership and strategy set-up	Do you have a master data integration strategy for the organization?	Existence of a strategy document on data integration

2) Under preparation.