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BSI Standards Publication

Data quality

Part 63: Data quality management: Process measurement

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National foreword

This British Standard is the UK implementation of ISO 8000-63:2019.

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Data quality management: Process measurement

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Partie 63: Gestion de la qualité des données: Évaluation du processus

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO 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).

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.

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.

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Introduction

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

ISO 8000 defines characteristics of information and data that determine its quality, and provides methods to manage, measure and improve the quality of information and data.

When assessing the quality of information and data, it is useful to perform the assessment in accordance with documented methods. It is also important to document the tailoring of standardized methods with respect to the expectation and requirements pertinent to the business case at hand.

ISO 8000 includes parts applicable to all types of data and parts applicable to specific types of data.

ISO 8000 can be used independently or in conjunction with quality management systems.

There is a limit to data quality improvement when only the nonconformity in data is corrected, since the nonconformity can recur. However, when the root causes of the data nonconformity and their related data are traced and corrected through data quality processes, recurrence of the same type of data nonconformity can be prevented. Therefore, a framework for process-centric data quality management is required to improve data quality more effectively and efficiently. Furthermore, data quality can be improved through assessing processes and improving under-performing processes identified by the assessment.

This document specifies a process measurement approach that is appropriate for use when assessing process maturity. This approach can serve when an organization is looking to improve the maturity of data quality management.

This document can be used on its own or in conjunction with other parts of ISO 8000.

This document is intended for use by those actors that have a vested interest in information or data quality, have a focus on one or more information systems and have a concern for both inter- and intra-organization views, throughout all phases of the data life cycle.

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

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Data quality —

Part 63:
Data quality management: Process measurement

1 Scope

This document specifies a structure for process measurement stacks that organizations can instantiate to measure the characteristics of processes for data quality management. This structure consists of goal, sub goal, question, indicator and metric. The instantiated stack consists of content that is determined by a chosen model for assessing the maturity of the processes under consideration.

The following are within the scope of this document:

— the fundamentals of process measurement;

— the inspection plan and inspection order by which to perform measurement;

— the structure of the measurement stack;

— the role of the chosen maturity model in instantiating the stack.

The following are outside the scope of this document:

— methods for inspecting implemented processes;

— methods for generating measured values from the inspection of processes;

— how to choose a suitable maturity model.

This document can be used in conjunction with, or independently of, quality management systems standards.

NOTE ISO 8000-8 specifies concepts and methods for measuring information and data quality.

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*

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

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

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4 Abbreviated terms

CMMI Capability Maturity Model Integration

EFQM European Foundation for Quality Management

TPI Test Process Improvement

5 Fundamentals of process measurement

This document specifies an approach for measuring the characteristics of data quality management processes. These processes are specified by ISO 8000-61 (see Figure 1), which describes each process with a purpose, one or more outcomes and one or more activities.

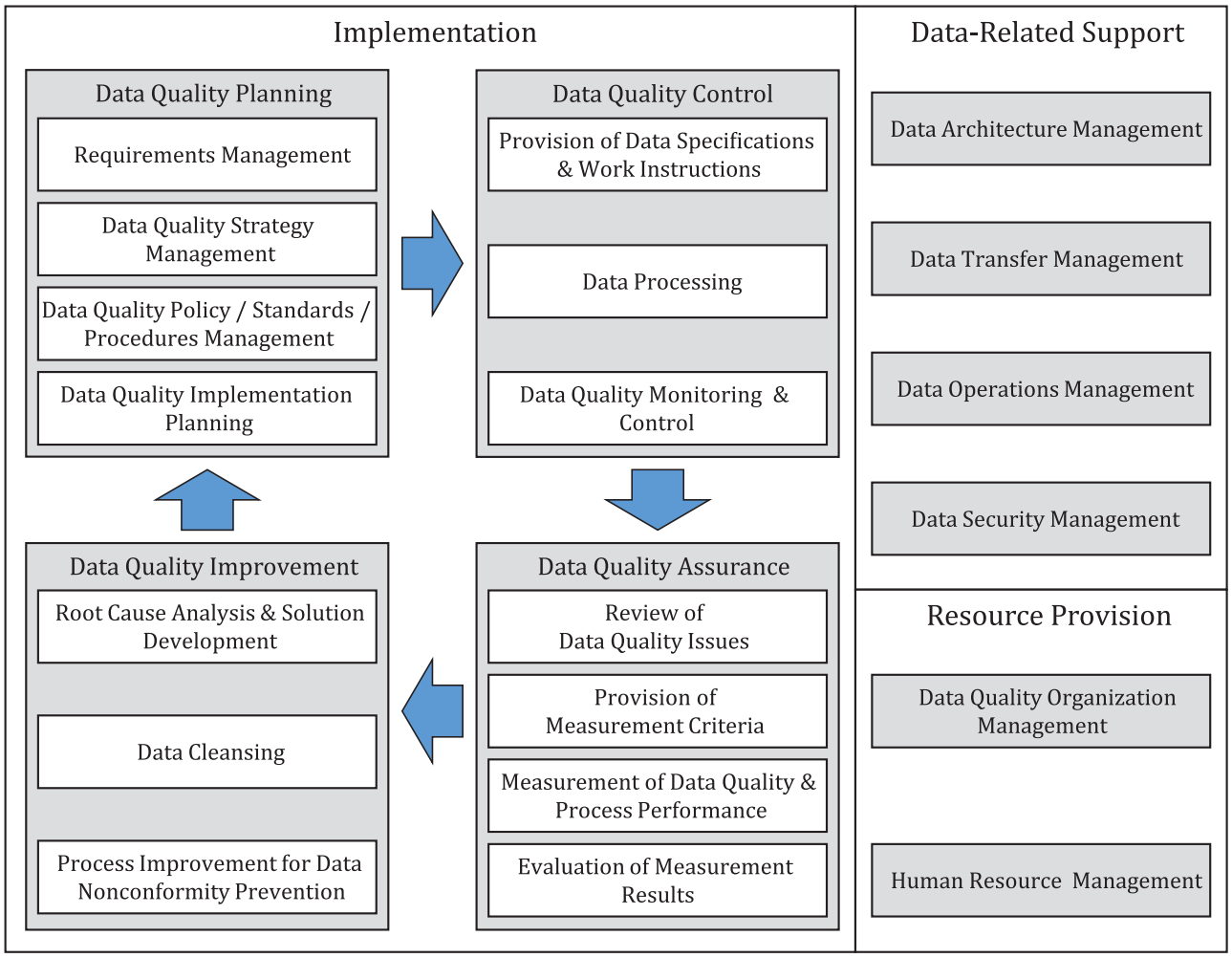

Figure 1 — Detailed structure of the data quality management processes in ISO 8000-61

This document specifies a structure that enables an organization to define a measurement stack based on the purpose, outcomes and activities of the process that the organization is intending to measure.

6 Process measurement and maturity models

The purpose of process measurement is to provide inputs to maturity assessment of an implemented process (the "target process"). This assessment is performed using a chosen maturity model (e.g. CMMI, TPI, EFQM). Such assessment involves analysing characteristics that are specified by the maturity

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model. These characteristics are represented by either qualitative or quantitative values. The model specifies how these values indicate the maturity of the target process.

This document specifies an approach that involves identifying how to generate appropriate measured values and then using rules to convert those values to the characteristics specified by the maturity model. This approach can be used with all types of maturity model.

In order to perform assessments, an organization requires an inspection plan that includes measurement stacks to identify the measured values that are appropriate for the characteristics specified by the chosen maturity model (see Figure 2).

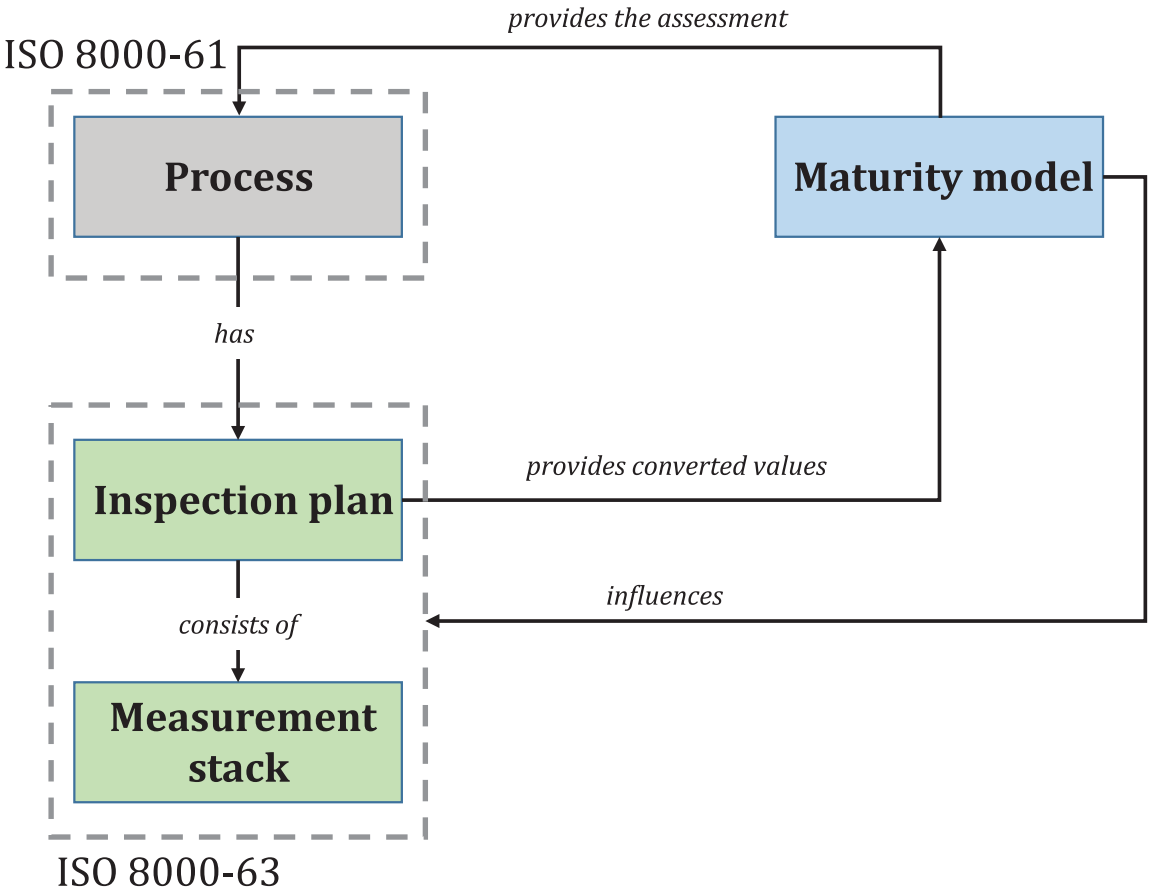

Figure 2 — Relationships between inspection plan, maturity model and process

Each inspection plan has a detailed internal structure (see Clause 7). This structure enables the plan to support assessment of the target process using the chosen maturity model (see Figure 3).

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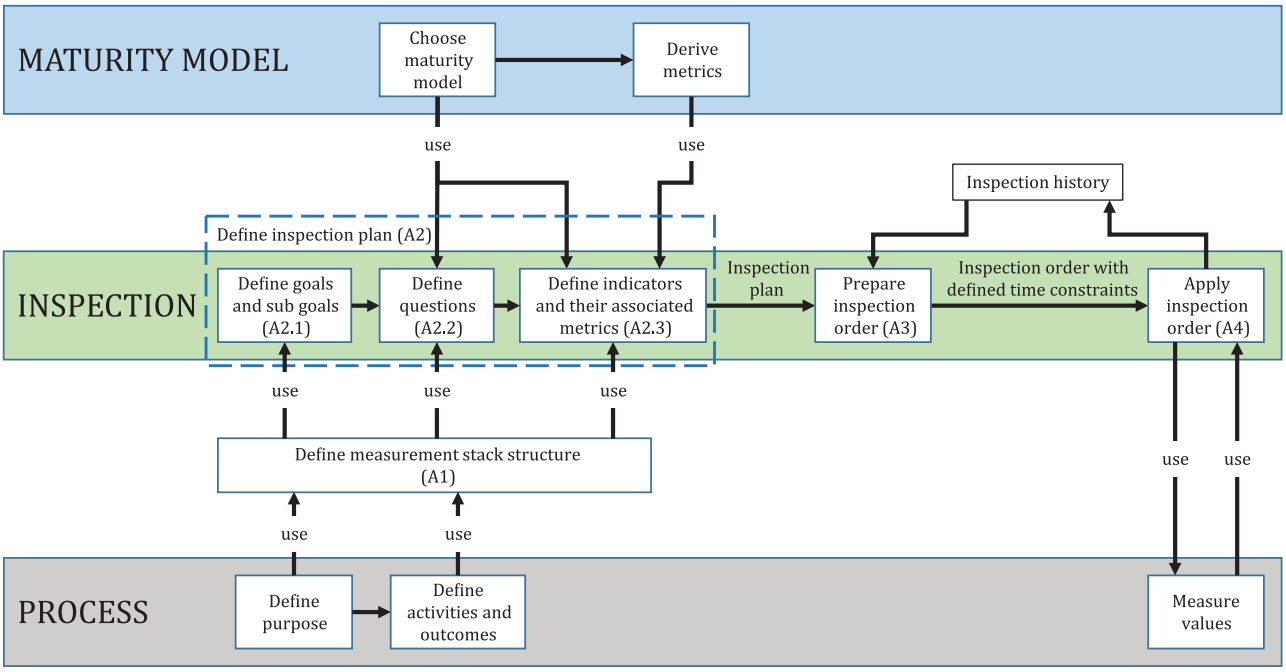

NOTE In this figure, the references A1 to A4 are to activities in the model represented by Figures 7 to 11.

Figure 3 — The relationships between inspection plan, maturity model and process

An inspection plan is specific to one or more identified processes. Each process provides a purpose, outcomes and activities that are the basis for the measurement stacks within the plan.

The plan identifies the measurements that are necessary to support the intended assessment of maturity.

When deciding to assess an implemented process, an organization creates an inspection order from the applicable inspection plan. This inspection order takes account of previous inspection history in identifying the timing and the resources necessary to perform the inspection. The order provides a checklist of the total set of measurements to support the overall assessment of the process maturity.

7 Inspection plans

7.1 Overview of inspection plans

An inspection plan consists of:

— one or more measurement stacks (see 7.2);

— the rules by which to convert measured indicator values into converted indicator values (see 7.9).

The chosen maturity model describes how to represent the converted indicator values. It establishes a common and comparable scale for the assessment of maturity.

7.2 The measurement stack structure

The measurement stack structure (see Figure 4) is applicable to any type of process and any type of maturity model.

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