INTERNATIONAL STANDARD

ISO/IEC 33020

Second edition
2019-11

Information technology — Process assessment — Process measurement framework for assessment of process capability

Technologies de l'information — Évaluation du processus — Cadre de mesure du processus pour évaluer la capacité du processus

Reference number
ISO/IEC 33020:2019(E)

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Published in Switzerland

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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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC 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) or the IEC list of patent declarations received (see http://patents.iec.ch).

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 Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*.

This second edition cancels and replaces the first edition (ISO/IEC 33020:2015), which has been technically revised.

The main changes compared to the previous edition are as follows:

— the definitions of process capability levels and process attributes in 5.2, to improve consistency with ISO 9001:2015;

— two additional annexes are included, following Annex A; these are numbered as Annex B (Indicators of process capability) and Annex C (Guidance on the process assessment framework);

— the original Annex B has been relocated as Annex D (Example of a process performance 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.

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Introduction

This document defines a process measurement framework for the process quality characteristic of process capability. The process measurement framework in this document conforms to the requirements of ISO/IEC 33003 and is applicable to any domain. The process measurement framework can be included in any process assessment model for the assessment of process capability, as specified in ISO/IEC 33004.

This document is primarily addressed to developers of process assessment models for the process quality characteristic of process capability. It is also addressed to the lead assessor and other stakeholders, such as the sponsor of the assessment, who need to be assured that the requirements of this process measurement framework have been met.

This document is part of a set of International Standards designed to provide a consistent and coherent framework for the assessment of process quality characteristics, based on objective evidence resulting from implementation of the processes. The set of International Standards, as a whole, addresses process quality characteristics of any type. Results of assessment can be applied for improving process performance, benchmarking, or for identifying and addressing risks associated with application of processes.

The set of International Standards ISO/IEC 33001 to ISO/IEC 33099, termed the ISO/IEC 330xx family, defines the requirements and resources needed for process assessment. The overall architecture and content of the series is described in ISO/IEC 33001. General issues relating to the application of conformity assessment to the assessment of process quality characteristics and organizational process maturity are addressed in ISO/IEC 29169.

Several standards in the ISO/IEC 330xx family for process assessment are intended to replace and extend parts of the ISO/IEC 15504 series. This document is intended to replace ISO/IEC 15504-2:2003, Clause 5. ISO/IEC 33001:2015, Annex A provides a detailed record of the relationship between the ISO/IEC 330xx family and the ISO/IEC 15504 series.

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Information technology — Process assessment — Process measurement framework for assessment of process capability

1 Scope

This document defines a process measurement framework that supports the assessment of process capability, in accordance with the requirements of ISO/IEC 33003. The process measurement framework provides a schema that can be used to construct a process assessment model conformant with ISO/IEC 33004 which can be used in the performance of assessment of process capability according to the requirements of ISO/IEC 33002. In the context of this document and related standards, process capability is a process quality characteristic related to the ability of a process to consistently meet current or projected business goals.

The process measurement framework defined in this document forms a structure which

a) facilitates self-assessment,

b) provides a basis for use in process improvement and process quality determination,

c) is applicable across all application domains and sizes of organization,

d) produces a set of process (capability) attribute ratings (process profile), and

e) derives a process capability level.

This document also includes as informative annexes a set of assessment indicators of process capability that can be used in the construction of a process assessment model using this process measurement framework, and guidance on the meaning of the process capability levels and the achievement of the process attributes.

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 33001, *Information technology — Process assessment — Concepts and terminology*

ISO/IEC 33003, *Information technology — Process assessment — Requirements for process measurement frameworks*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 33001 and the following 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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3.1
conformity
fulfilment of a requirement

Note 1 to entry: In English the word "conformance" is synonymous but deprecated. In French the word "compliance" is synonymous but deprecated.

[SOURCE: ISO 9000:2015, 3.6.11, modified — Note 2 to entry has been removed.]

3.2
documented information
information required to be controlled and maintained by an organization and the medium on which it is contained

Note 1 to entry: Documented information can be in any format and media and from any source.

Note 2 to entry: Documented information can refer to:

— the management system, including related processes;

— information created in order for the organization to operate (documentation);

— evidence of results achieved (records).

Note 3 to entry: This constitutes one of the common terms and core definitions for ISO management system standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives, Part 1.

[SOURCE: ISO 9000:2015, 3.8.6]

3.3
nonconformity
non-conformity
non-fulfillment of a requirement

[SOURCE: ISO/IEC/IEEE 24765:2017, 3.2615, modified — The admitted term "non-conformity" has been added.]

3.4
process capability
characterization of the ability of a process to meet current or projected business goals

3.5
process capability level
characterisation of a process on an ordinal measurement scale of *process capability* (3.4)

4 Overview

The process measurement framework for assessment of process capability described in this document is expressed in terms of a set of process attributes. Each process attribute is defined in terms of a set of process attribute outcomes which can be evaluated to indicate the extent of achievement of the process attribute. The process attributes are organised into process capability levels, ranging from Incomplete (in which the process does not achieve its defined process outcomes) to Innovating (in which the process is continually improved to respond to organizational change). The process measurement framework for assessment of process capability shall be conformant with the requirements for process measurement frameworks in ISO/IEC 33003. Annex A documents the conformance of the measurement framework.

In addition to the definitions of process capability levels and process attributes, this document contains in Annex B, a set of assessment indicators of process capability comprising generic practices for each process attribute. The document also includes, in Annex C, detailed guidance on the use and application of the measurement framework, and in Annex D, an example of a process performance model.

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