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Foreword

ISO (the International Organization for Standardization) is a and IEC (the International Electrotechnical Commission) form the specialized system for worldwide federation of national standardsstandardization. National bodies (that are members of ISO member bodies). The workor IEC participate in the development 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. Internationalby 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are 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 given inof the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of normative document:

— an ISO/IEC Publicly Available Specification (ISO/IEC PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;

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An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, (see www.iso.org/directives or www.iec.ch/members_experts/refdocswithdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.).

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 https://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/. In the IEC, see www.iec.ch/understanding-standards TS 33010.

This document was prepared by Joint Technical Committee ISO/IEC ~~/TC~~ JTC1, *Information technology*, Subcommittee SC 7, ~~*Systems and*~~ *Software* ~~*Engineering*~~*and systems engineering*.

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~~This first edition cancels and replaces the guidance provided in ISO/IEC TR 15504-4: 2004.~~

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Introduction

Process assessment is a disciplined evaluation of an organizational unit's processes against a process assessment model. It is initiated as a result of a desire to determine and/or improve the performance of these processes. ~~This document provides an overview of process assessment and interprets the requirements of ISO/IEC 33002 and ISO/IEC 33004 through the provision of guidance on the selection and use of process assessment models, documented assessment processes, and instruments or tools for assessment.~~

~~The guidance in this document is primarily aimed at the lead assessor who has the responsibility for the selection and use of models, documented assessment process and tools for the assessment.~~

The guidance in this document is primarily aimed at the lead assessor who has the responsibility for conducting the assessment, selection and use of models, documented assessment process and tools for the assessment.

The guidance may also be of use to the developers of assessment models, documented assessment processes and tools as an aid to understanding the requirements.

The assessors and other participants in an assessment may use the guidance to gain an understanding of process assessment.

Information technology — Process assessment — Guidance for performing process assessments

1 Scope

This document provides an overview of process assessment and interprets the requirements of ISO/IEC 33002 and ISO/IEC 33004 through the provision of guidance on the selection and use of assessment models, documented assessment processes, and instruments or tools for assessment.

Process assessment is applicable in the following circumstances:

a) by or on behalf of an organization with the objective of understanding the state of its own processes for process improvement;

b) by or on behalf of an organization with the objective of determining the suitability of its own processes for a particular requirement or class of requirements;

c) by or on behalf of one organization with the objective of determining the suitability of another organization's processes for a particular contract or class of contracts.

2 Normative reference

The following referenced documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 33002~~:—;~~:2015, *Information Technology — Process Assessment — Requirements for performing process assessment*

ISO/IEC 33004~~:—;~~:2015, *Information technology — Process assessment — Requirements for process reference, process assessment and maturity models*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 33001 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/

4 Overview of process assessment

4.1 Process assessment

Process assessment is undertaken to understand the process quality characteristic of an organizational unit's current processes.

Process assessment deals with the processes (e.g. management, development, maintenance, support) used by an organization. This is accomplished by assessing the organizational unit's processes against a process assessment model conformant with the requirements for ~~process s~~processes described in ISO/IEC 33004.

A process reference model defines the set of processes that are fundamental to good business practices in a selected domain. Building upon the foundation of a process reference mode, a process assessment model includes a set of process attributes, applicable to any ~~process~~processes, that characterize the selected process quality characteristic of a measurement framework.

Processes in a process reference model are grouped according to the type of activity they address. Each process has a defined purpose describing the high-level objectives that the process should achieve. The purpose statements describe what to do, but do not prescribe how the process should achieve its objectives.

Each process attribute in a measurement framework, as described in ISO/IEC 33003, enables the process quality characteristic to effectively achieve its purpose and contribute to meeting the business goals of the organizational unit.

Although a process reference model selected according to the requirements in ISO/IEC 33004 may cover a range of processes, in many cases a subset of these processes may be selected for assessment. For instance, the sponsor may wish to focus attention on one or more critical processes or on processes which are candidates for improvement actions.

The sophistication and complexity of the implemented process ~~will~~ depend upon the context of that process within the organizational unit. For instance, the planning required for a five-person project team is likely to be much less than for a fifty-person team. This process context, recorded in the assessment input, influences how a lead assessor should judge and rate the process attributes for an implemented process. The process context also influences the degree of comparability between process attribute and/or process quality level ratings.

In some circumstances, it may be desirable to compare the outputs of the assessment of two or more organizational units, or for the same organizational unit at different times. A number of factors should be taken into account when comparing assessment results. These include but are not limited to:

— the sample size used to generate the ratings which ~~will influence~~influences the precision with which results may be compared;

— the purposes of the assessments that generated the assessment outputs - it may not be meaningful, for example, to compare an assessment whose purpose was to identify best (or worst) practice with one whose purpose was to identify representative practice;

— the documented assessment process or model(s) used;

— the competency of the assessors;

— the candour of the participants;

— the time spent on the assessment;

— the motivation of the assessor (i.e., internal assessor with incentives based on the assessment results or a consultant with a long-term relationship with the organization);

— the motivation of the assessment participants to be frank and forthcoming.

4.2 Process attribute rating scheme

A process assessment measurement framework is based on assessing processes. The guidance in Clause 6 on information collection ~~will help~~helps to increase the level of repeatability by different assessors.

Each process has a set of process attribute ratings that constitute the process profile.

~~NOTE 1~~ For the assessment of process capability, process attribute ratings may be expressed using a process attribute rating scale as defined in ISO/IEC 33020.

NOTE ~~2~~ The process capability level model defined in ISO/IEC 33020 defines a six-point ordinal scale of increasing process capability ranging from a process which is not capable of achieving its purpose (process capability level zero) to a process which optimizes its performance (process capability level 5). The process capability level model is described in terms of the process attribute ratings that must be achieved in order to achieve a particular level.

When more than one instance of a process is assessed, the assessor should use the recorded assessment information collected on all of the instances to make a judgment on the rating of each of the process attributes assessed for that process.

If there is a need for aggregation of ratings, the approach to the aggregation of ratings should be specified.

4.3 Process assessment classes

Three classes of assessment are identified, resulting in different level of confidence in the ratings of the selected organizational process quality characteristic. Specific requirements relating to each class are described in ISO/IEC 33002 ~~Clause~~:2015, 4.6.

The classes of assessment are:

— Class 1 assessment: The goal of this class is ~~to~~ to provide a level of confidence in the results of the assessment such that the results are suited for comparisons across different organizations.

— Class 2 assessment: The goal of this class is to provide a level of confidence in the assessment results that may indicate the overall level of performance of the key processes in the organization unit, which are suitable for comparisons of the results of an assessment across an organizational or product line scope.

— Class 3 assessment: The goal of this class is to generate results that may indicate critical opportunities for improvement and key areas of process related risk.

4.4 Process assessment approaches

As described in ISO/IEC 33002:2015, Annex A, the degree of independence of different types of bodies and the make-up of the assessment team performing an assessment can be categorised as follows~~:~~.

— Category A: This ~~might~~ typically ~~be~~represents an organization providing fully independent 3rd party services.

— Category B: This ~~might~~ typically ~~be~~represents an organization providing 2nd or 3rd party services where the assessment team is led by a lead assessor from the independent organization and where the other assessment team members may be from the organization being assessed. Such an approach may be used where data is collected by internal team members and then verified by the lead assessor.

— Category C: This ~~might~~ typically ~~be~~represents an internal but independent process group or quality assurance group within the organization being assessed but where there is a separate reporting line. This approach may be used in a large organization that has a separate functional group responsible for performing assessments.

— Category D: This ~~might~~ typically ~~be~~represents an internal consultant that is assisting an organization in implementing process improvement which then assesses their capabilities. Many small organizations may follow such an approach where there is no customer pressure for an independent assessment to be performed. This ~~might~~may also be a team internal to the organization conducting a self-assessment to identify opportunities for improvement. There is no pressure to provide the result to any group outside the organization.

4.5 Assessment process

Irrespective of the type of assessment or the approach adopted, an assessment should be conducted according to a documented process. Some of the key elements of a documented assessment process are briefly described below. Note, however, that the guidance provided does not constitute a complete, documented process. Its role is to provide help in interpreting the requirements in ISO/IEC 33002 and ISO/IEC 33004, and to provide a starting point for selecting or creating a documented process.

NOTE An exemplar document assessment process is described in ISO/IEC TS 33030.

Depending upon the approach, a documented assessment process provides guidance on the following topics:

~~Assessment~~ — assessment activities, including:

- assessment planning;
- data collection;
- data validation;
- determination of results;
- assessment reporting;

— roles, responsibilities and competence;

— tools and instruments;

— aggregation approach;

— assessment inputs;

— assessment record.

4.6 Process assessment model

A process assessment model is one that meets the requirements specified in ISO/IEC 33004. In summary, a process assessment model is one:

— that is suitable for the purpose of process assessment;

— whose fundamental elements can be mapped to a process reference model;

