TECHNICAL SPECIFICATION

ISO/IEC TS 15504-9

First edition
2011-08-01

Information technology — Process assessment —

Part 9:
Target process profiles

Technologies de l'information — Évaluation des procédés —

Partie 9: Profils de procédés cibles

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ISO/IEC TS 15504-9:2011
https://standards.iteh.ai/catalog/standards/sist/adcdc1fb-d6bb-4d5a-a406-
ea1facd87191/iso-iec-ts-15504-9-2011

Reference number
ISO/IEC TS 15504-9:2011(E)

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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. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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

In other circumstances, particularly when there is an urgent market requirement for such documents, the joint technical committee may decide to publish an ISO/IEC Technical Specification (ISO/IEC TS), which represents an agreement between the members of the joint technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/IEC 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order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/IEC 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again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

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ISO/IEC TS 15504-9 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*.

ISO/IEC 15504 consists of the following parts, under the general title *Information technology — Process assessment*:

⎯ *Part 1: Concepts and vocabulary*

⎯ *Part 2: Performing an assessment*

⎯ *Part 3: Guidance on performing an assessment*

⎯ *Part 4: Guidance on use for process improvement and process capability determination*

⎯ *Part 5: An exemplar Process Assessment Model*

⎯ *Part 6: An exemplar system life cycle process assessment model* [Technical Report]

⎯ *Part 7: Assessment of organizational maturity* [Technical Report]

⎯ *Part 9: Target process profiles* [Technical Specification]

⎯ *Part 10: Safety extension* [Technical Report]

The following part is under preparation:

⎯ *Part 8: An exemplar process assessment model for IT service management* [Technical Report]

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Introduction

ISO/IEC 15504 provides a framework for process assessment and sets out the minimum requirements for performing an assessment in order to ensure consistency and repeatability of assessment results. Process assessment is applicable in the following circumstances:

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

— by or on behalf of an organization with the objective of determining the capability of another organization's processes for a particular contract or class of contracts, or to determine the capability of its own processes for a particular requirement or class of requirements.

Process assessment has two dimensions, a process dimension and a capability dimension. ISO/IEC 15504-2 specifies the measurement framework within the capability dimension. The process dimension is provided by an external process reference model, which describes a set of processes, each characterized by defined process purpose and process outcomes. ISO/IEC 15504-4:2004 describes the need for a target capability using the capability dimension in ISO/IEC 15504-2 for each process, in a process reference model, appropriate to the specified requirements. This part of ISO/IEC 15504 provides guidance on how to create and utilize target process profiles to meet this need for a target capability.

This part of ISO/IEC 15504 is being developed as a Technical Specification to enable experience to be gained in the use of the approach to setting Target Process Profiles. In future revisions of ISO/IEC 15504, it is likely that the content of this part will be integrated with ISO/IEC 15504-4.

This part of ISO/IEC 15504 provides guidelines for creating and using a target process profile. These guidelines cover the following aspects:

a) the defined purpose of the target process profile as a process improvement initiative or for process capability determination;

b) the community of use, such as automotive, aerospace;

c) the business requirement;

d) the domain of application, such as systems, software, IT services management;

e) the characterization of the domain of application, such as safety critical systems;

f) applicable processes or process reference models (in whole or part), processes from one or more process reference models or defined process for the domain of application;

g) the data and information to be collected to ensure the profile is relevant to the community of use, business requirements, domain of application and characterization scheme;

h) the factors that, when analysed, transform the collected data or information into processes and process capability (process attributes and process attribute rating) to create a target process profile for a process at the defined characterization of domain of application of the business requirement for the community of use;

i) the expression of results, i.e. a target process profile for each required process, with data and notes that allow traceability and interpretation for assessment and improvement guidance purposes.

Information technology — Process assessment —

Part 9:
Target process profiles

1 Scope

This part of ISO/IEC 15504 documents guidelines for target process profiles for capability determination and improvement purposes. This part of ISO/IEC 15504 provides guidance for establishing target process profiles for the following purposes:

— by or on behalf of an organization with the objective of specifying a target process profile to meet specified needs;

— by or on behalf of an organization with the objective of specifying a target process profile against which to assess the actual ability of the organization to meet that target;

— by or on behalf of an organization with the objective of specifying a target process profile against which to assess the actual ability of another organization to meet that target;

— by or on behalf of an organization with the objective of determining the need for improvement based upon any capability gap between the actual capability and the target process profile.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendment) applies.

ISO/IEC 15504-1:2004, *Information technology — Process assessment — Part 1: Concepts and vocabulary*

ISO/IEC15504-2:2003, *Information technology — Process assessment — Part 2: Performing an assessment*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 15504-1 and the following apply.

3.1
target process profile
process attributes and process attribute ratings required for a process or process capability level and process capability level rating required for a process, with the rationale for the ratings

3.2
target capability
set of target process profiles, subject to an acceptable process related risk, which meet the specified requirement for process capability determination or the business goals for process improvement

NOTE   This definition is based upon ISO/IEC 15504-4:2004, 7.2.2.

4   Overview

4.1   Introduction

Within ISO/IEC 15504, process assessment can be utilized:

— by or on behalf of an organization with the objective of understanding its processes for process improvement purposes;

— by or on behalf of an organization with the objective of determining the capability of another organization's processes for a particular contract or class of contracts, or to determine the capability of its own processes for a particular requirement or class of requirements.

Within a process improvement context, process assessment provides a means of characterizing an organizational unit in terms of the capability of selected processes. Analysis of the output of a conformant process assessment against an organizational unit's *business goals* identifies *strengths*, *weaknesses* and *risks* related to the processes. This, in turn, can help determine whether the processes are effective in achieving business goals, and provide the drivers for making improvements.

Process capability determination is concerned with analysing the output of one or more conformant process assessments to identify the *strengths*, *weaknesses* and *risks* involved in undertaking a specific project using the selected processes within a given organisational unit. A Process Capability Determination can provide a fundamental input to supplier selection, in which case it is often termed a "supplier capability determination". Process Capability Determination requires a target profile.

A target process profile is derived from the defined business requirements, traceable to one or more process practice indicators and one or more process capability indicators that meet these requirements and can be used for process improvement or process capability determination.

4.2   Target process profiles sponsors and users

Target process profiles will usually be required and resourced by a target process profile sponsor for the purpose of process capability determination or process improvement – as described in ISO/IEC 15504-1:2004. The sponsor has the authority and responsibility to ensure that the target process profiles, the process assessment and any agreed actions are carried out effectively to meet the intended use, as described in ISO/IEC 15504-2:2003 (see note). For process capability determination, the Process Capability Determination sponsor should deploy a process capability determination process as outlined in ISO/IEC 15504-4:2004, 4.5. For process improvement, the Process Improvement sponsor should deploy a process improvement process as outlined in ISO/IEC 15504-4:2004, 4.4.

Defining target process profiles requires skill and experience of a nature similar to that required for an experienced lead assessor and assessment model developer. In order to correctly define a target process profile the sponsor, or sponsor appointed individual or team, should meet the following education and experience criteria:

— be a competent assessor (see ISO/IEC 15504-3);

— be able to demonstrate competence in using the selected documented process to create target process profiles under supervision of an experienced user of the documented process.

A well defined target process profile set should provide guidance so that users of the profiles should only require minimal training and experience in order to be effective. In order to correctly use a target process profile, the sponsor or sponsor appointed user:

— has successfully selected a set of target process profiles under supervision of an experienced sponsor. The selected set of target process profiles correctly covers the intended use.

— is conversant with using ISO/IEC 15504 for process improvement or capability determination purposes.

NOTE   The target process profiles sponsor may be independent of or may also be a process assessment sponsor.

4.3   Target process profiles purpose

The purpose of target process profiles is to identify the desired or required process capability for selected processes with respect to a particular intended use. Clause 5 of this part of ISO/IEC 15504 describes the detailed content of a set of target process profiles. As a result of successful establishment, a target process profile ensures the following criteria are met:

— the purpose is defined;

— the community of use is defined;

— the business requirement is defined;

— the intended domain of application is defined;

— the characterization required for the domain of application is documented;

— the applicable processes or process reference models for the domain of application are defined;

— the applicable process assessment model for the domain of application is defined;

— the data and information collected to create the target process profile is representative of all relevant aspects of the community of use for the defined characterization of the domain of application for the business requirement;

— the traceability from the input data to the resultant target process profile is documented;

— the process, process attributes and target rating for each process attribute, or process capability level rating, are derived from the identified indicators of process practice and process capability which are derived from the analyzed data and information;

— a defined expression of the target process profile result for each required process with data and notes that allow traceability and interpretation to be made by users;

— the usage criteria to assess the effectiveness of the target process profiles is documented. Usage criteria are covered in clause 6.3.1.

NOTE 1   The intended use is defined by the first five elements in the above list. The intended use becomes a defined requirement specifically based upon this set of elements. If any of these elements is changed the intended use changes and a target process profile should be checked to determine if it is still applicable or requires rework.

NOTE 2   A defined community of use could be at industry level, enterprise level, team or project level, or professional or technical level.

NOTE 3   A defined business requirement may be assurance that development of software for medical device systems meets safety standards; another may be assessing suppliers to ensure their deployment of security systems meet security standards.

NOTE 4   The domain of application may cover systems, software and services; either individually or in combination.

NOTE 5   The characterization for the domain of application defines how this is further specified, and can consist of one or more forms of characterization. This can allow a separate profile per characterization. For example, if the domain of application is defined as medical software, there may be several levels of safety criticality, ranging from human safety critical to software with minor or no safety criticality.

NOTE 6   The community of use for a Target Capability can be defined independently of a community of interest for any related Process Reference Model.

4.4   Deploying a documented process

Organisations should deploy a documented process to specify target process profiles that meet an intended use. Clause 6 of this part of ISO/IEC 15504 describes in detail the content and performance of such a documented process. The intent of the documented process is to provide a reproducible and traceable target process profile. Such a documented process should:

— take account of the guidance contained within this part of ISO/IEC 15504;

— take account of the guidance contained within ISO/IEC 15504-4:2004;

— include or reference an assessment process which satisfies the requirements set out within ISO/IEC 15504-2:2003 and accords with the guidance set out in ISO/IEC 15504-3:2004;

— describe how to define the intended use of the target process profiles;

— describe the type of data and information needed to create a profile applicable to the intended use;

— describe the techniques and activities to create and use target process profiles and provide guidance in their use;

— describe the appropriate roles;

— describe the qualifications, experience and skills of persons using the documented process.

NOTE   Training may be used to satisfy the need for qualifications and skills.

5   Target process profiles

5.1   General

The value of a target process profile is its ability to clearly address the process improvement and process capability determination needs described in clause 4. The set of target process profiles expresses the *target capability* which the sponsor judges to be adequate, subject to an acceptable *process related risk,* for meeting the defined business requirements (see note 1). A target process profile is derived from the defined business requirements, traceable to one or more process practice indicators and one or more process capability indicators that meet these requirements. These in turn enable the sponsor to select the appropriate process attributes and a required rating for each process attribute or select the appropriate process capability level and the required process capability level ratings.

In general, it is recommended that the sponsor selects one or more existing process reference models and uses the processes in the selected models as the basis for determining the process capability of each selected process within the models. Should additional processes need to be defined to meet business requirements, the sponsor has two options:

1)   Define the process to demonstrate conformance as required in ISO 15504-2:2003, 6.2.4 in order to have a conformant target process profile, or

2) Where the process does not meet ISO 15504-2:2003, 6.2.4 requirements, use the target process profile while noting it is nonconforming for process capability determination purposes.

As a result, a set of target process profiles will consist of a set of processes and process attribute ratings or a set of processes and process capability level ratings applicable to the intended use. A set of target process profiles cannot be generic (e.g. all processes to be capability level 2 or capability level 3) as this will not meet the specific application defined by its intended use. This form of generic profile will not address the specified business requirement, domain of application and characterization nor specifically determine the indicators of process performance and process capability that meet the intended use (see note 2).

NOTE 1   The sponsor may appoint persons or teams to perform the work in defining and using target process profiles.

NOTE 2   Software that needs to meet human safety critical business requirements (i.e. a specific domain of application) has different requirements to software used to create personal web sites. Within any domain of application, some of the selected processes will need to be at higher process capability levels in order to achieve acceptable process related risk, while the other selected processes that have less effect on the process related risk should be effective at lower process capability levels.

NOTE 3   A maturity level in an organizational maturity model may be composed from a set of target process profiles.

5.2   Defining a target process profile

5.2.1   Introduction

The ten steps associated with defining a target process profile are:

— Define the purpose

— Select the community of use

— Define the business requirement

— Define the domain of application

— Define characterization

— Define target process profile factors

— Define criteria for data and information collection

— Select processes

— Define target process profile output

— Define target capability

NOTE   The process of defining a target process profile should also be shown diagrammatically.

5.2.2   Define the purpose

The sponsor selects or defines the purpose for the target process profile.

— by or on behalf of an organization with the objective of specifying a target process profile to meet specified needs;

— by or on behalf of an organization with the objective of specifying a target process profile against which to assess the actual capability of the organization to meet that target;