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Systems and software engineering — Lifecycle profiles for Very Small Entities (VSEs) —

Part 3-2: Conformity certification scheme

Ingénierie des systèmes et du logiciel — Profils de cycle de vie pour très petits organismes (TPO) —

Partie 3-2: Programme de certification de la conformité

Reference number
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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.

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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on 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 WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information.

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

A list of all parts in the ISO/IEC 29110 series can be found on the ISO website.

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Introduction

Very Small Entities (VSEs) around the world are creating valuable products and services. For the purpose of ISO/IEC 29110, a Very Small Entity (VSE) is an enterprise, an organization, a department or a project having up to 25 people. Since many VSEs develop and/or maintain system elements and software components used in systems, or sold to be used by others, a recognition of VSEs as suppliers of high quality products is required.

According to the Organization for Economic Co-operation and Development (OECD) SME and Entrepreneurship Outlook report (2005) 'Small and Medium Enterprises (SMEs), i.e. Enterprises which employ fewer than 250 persons, constitute the dominant form of business organization in all countries world-wide, accounting for over 95 % and up to 99 % of the business population depending on country'. The challenge facing OECD governments is to provide a business environment that supports the competitiveness of this large heterogeneous business population and that promotes a vibrant entrepreneurial culture.

From studies and surveys conducted, it is clear that the majority of International Standards do not address the needs of VSEs. Implementation of and conformance with these standards is difficult, if not impossible. Subsequently VSEs have no, or very limited, ways to be recognized as entities that produce quality systems/system elements including software in their domain. Therefore, VSEs are often cut off from some economic activities.

It has been found that VSEs find it difficult to relate International Standards to their business needs and to justify the application of standards to their business practices. Most VSEs can neither afford the resources, in terms of number of employees, expertise, budget and time, nor do they see a net benefit in establishing systems or software lifecycle processes. To rectify some of these difficulties, a set of guidelines has been developed according to a set of VSE characteristics. The guidelines are based on subsets of appropriate standards processes, activities, tasks, and outcomes, referred to as Profiles. The purpose of a profile is to define a subset of International Standards relevant to the VSEs' context; for example, processes, activities, tasks, and outcomes of ISO/IEC/IEEE 12207 for software; and processes, activities, tasks, and outcomes of ISO/IEC/IEEE 15288 for systems; and information products (documentation) of ISO/IEC/IEEE 15289 for software and systems.

VSEs can achieve recognition through implementing a profile and by being audited against ISO/IEC 29110 specifications.

ISO/IEC 29110 series of standards and technical reports can be applied at any phase of system or software development within a lifecycle. This series of standards and technical reports is intended to be used by VSEs that do not have experience or expertise in adapting/tailoring ISO/IEC/IEEE 12207 or ISO/IEC/IEEE 15288 to the needs of a specific project. VSEs that have expertise in adapting/tailoring ISO/IEC/IEEE 12207 or ISO/IEC/IEEE 15288 are encouraged to use those standards instead of ISO/IEC 29110.

ISO/IEC 29110 is intended to be used with any lifecycles such as: waterfall, iterative, incremental, evolutionary or agile.

Systems, in the context of ISO/IEC 29110, are typically composed of hardware and software components.

The ISO/IEC 29110 series, targeted by audience, has been developed to improve system or software and/or service quality, and process performance. See Table 1.

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Table 1 — ISO/IEC 29110 target audience

ISO/IEC 29110	Title	Target audience
ISO/IEC 29110-1	Overview	VSEs and their customers, assessors, standards producers, tool vendors and methodology vendors.
ISO/IEC 29110-2	Framework for profile preparation	Profile producers, tool vendors and methodology vendors. Not intended for VSEs.
ISO/IEC 29110-3	Certification and assessment guidance	VSEs and their customers, assessors, accreditation bodies.
ISO/IEC 29110-4	Profile specifications	VSEs, customers, standards producers, tool vendors and methodology vendors.
ISO/IEC 29110-5	Management, engineering and service delivery guidelines	VSEs and their customers.

If a new profile is needed, ISO/IEC 29110-4 and ISO/IEC/TR 29110-5 can be developed without impacting existing documents.

ISO/IEC TR 29110-1[5] defines the terms common to the ISO/IEC 29110 series. It introduces processes, lifecycle and standardization concepts, the taxonomy (catalogue) of ISO/IEC 29110 profiles and the ISO/IEC 29110 series. It also introduces the characteristics and needs of a VSE and clarifies the rationale for specific profiles, documents, standards and guidelines.

ISO/IEC 29110-2 introduces the concepts for systems and software engineering profiles for VSEs. It establishes the logic behind the definition and application of profiles. For standardized profiles, it specifies the elements common to all profiles (structure, requirements, conformance, and assessment). For domain-specific profiles (profiles that are not standardized and developed outside of the ISO process), it provides general guidance adapted from the definition of standardized profiles.

ISO/IEC 29110-3 defines certification schemes, assessment guidelines and compliance requirements for process capability assessment, conformity assessments, and self-assessments for process improvements. ISO/IEC 29110-3 also contains information that can be useful to developers of certification and assessment methods and developers of certification and assessment tools. ISO/IEC 29110-3 is addressed to people who have direct involvement with the assessment process, e.g. the auditor, certification and accreditation bodies and the sponsor of the audit, who need guidance on ensuring that the requirements for performing an audit have been met.

ISO/IEC 29110-4-m provides the specification for all profiles in one profile group (a profile group may contain a single profile or multiple profiles). A profile is specified in terms of requirements imported from appropriate base standards.

ISO/IEC TR 29110-5-m provides management, engineering and service delivery guidelines for the profiles in a profile group.

This document defines the process certification scheme, assessment guidelines and compliance requirements needed to meet the purpose of the defined Profiles.

Figure 1 describes the ISO/IEC 29110 International Standards (IS) and Technical Reports (TR) and positions the parts within the framework of reference. Overview, assessment guidelines, management and engineering guidelines are available from ISO as freely available Technical Reports (TR). The Framework document, profile specifications and certification schemes are published as International Standards (IS).

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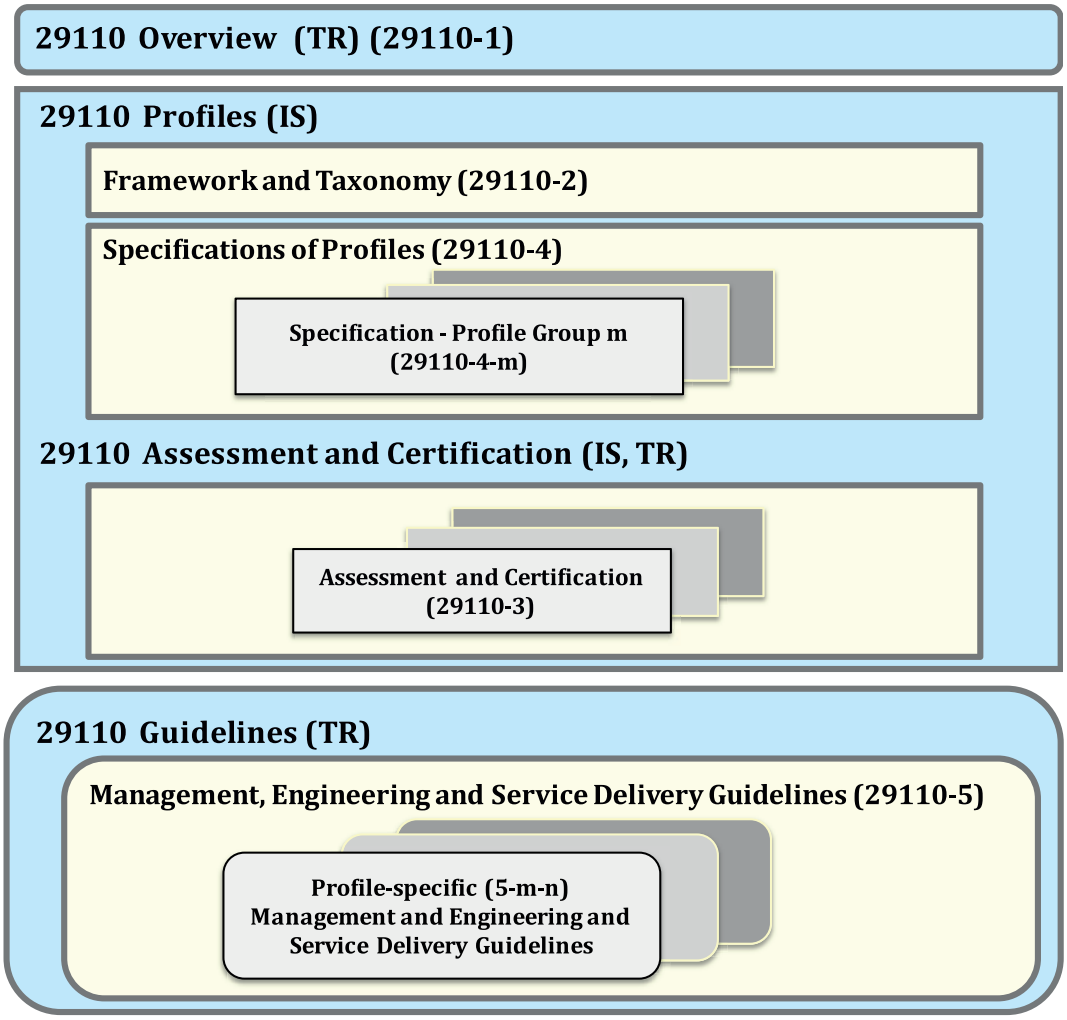


Figure 1 — ISO/IEC 29110 series

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Systems and software engineering — Lifecycle profiles for Very Small Entities (VSEs) —

Part 3-2: Conformity certification scheme

1 Scope

This document:

— defines the rules applicable for certification of the implementation of systems engineering, software engineering and service delivery processes complying with the requirements given in ISO/IEC 29110-4-m, Profile specifications; and

— provides the necessary information and confidence to customers about the way certification of their suppliers has been granted.

Certification of the implementation of systems and software engineering processes (named "certification" in this document) is a third-party conformity assessment activity (see ISO/IEC 17000:2004, 5.5). Bodies performing this activity are therefore third-party conformity assessment bodies (named "certification body/bodies" in this document).

NOTE This document is primarily intended to be used as a criteria document for the accreditation or peer assessment of certification bodies which seek to be recognized as being competent to certify that a Very Small Entity (VSE) complies with ISO/IEC 29110-4-m, Profile Specifications. Some of its requirements could also be found useful by any other parties involved in the conformity assessment of such certification bodies.

Systems and software engineering processes certification does not attest the fitness of the systems and or software products offered by a VSE.

It is important to note that certification of the implementation of systems and software engineering processes according to ISO/IEC 29110-4-m, Profile Specifications, is a process certification and not a management systems certification neither a product certification.

Certification of the implementation of systems and software engineering processes (SEP) of a very small entity (VSE) is one means of providing assurance that the VSE has implemented systems and software engineering processes to the development or maintenance of systems and or software.

Requirements for the implementation of SEP can originate from a number of sources, and this International Standard has been developed to assist in the certification of SEP that fulfil the requirements of ISO/IEC 29110-4-m, Profile Specifications. The contents of this document can also be used to support certification of SEP that are based on other sets of specified SEP requirements.

This document is intended for use by bodies that carry out audit and certification of SEP for VSEs. It gives generic requirements for such certification bodies performing audit and certification in the field of SEP for VSEs. Such bodies are referred to as certification bodies. This wording is not intended to be an obstacle to the use of this document by bodies with other designations that undertake activities covered by the scope of this document. Indeed, this document is intended to be usable by anyone involved in the assessment of SEP for VSEs.

Certification activities involve the audit of a VSE's SEP. The form of attestation of conformity of a VSE's SEP to a specific lifecycle profile standard setting the applicable SEP (for example ISO/IEC 29110-4-1 or ISO/IEC 29110-4-3) or other specified requirements are normally a certification document or a certificate.

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This certification is outside the scope of ISO/IEC 29169 to the assessment to process quality characteristics and organizational maturity, and does not cover the results of process assessment. ISO/IEC 29110-3-3 describes such a scheme.

It is for the VSE being certified to develop its own processes (including ISO/IEC 29110-4-m SEP), other sets of specified SEP requirements, other processes and it is for the VSE to decide how the various components of these will be arranged. It is therefore for certification bodies that operate in accordance with this document to take into account the culture and practices of their clients with respect to the implementation of SEP, including, if applicable, within the wider organization.

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 29110-2-1, *Software engineering — Lifecycle profiles for Very Small Entities (VSEs) — Part 2-1: Framework and taxonomy*

ISO/IEC 17000, *Conformity assessment — Vocabulary and general principles*

ISO/IEC 17065:2012, *Conformity assessment — Requirements for bodies certifying products, processes and services*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 29110-2-1, ISO/IEC 17000, ISO/IEC 17065:2012 and the following apply.

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

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

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

3.1
certification body
third-party conformity assessment body operating certification schemes

Note 1 to entry: A certification body can be non-governmental or governmental (with or without regulatory authority).

[SOURCE: ISO/IEC 17065:2012]

3.2
client
<for certification> organization that is responsible to a certification body for ensuring certification requirements, including product requirements are fulfilled

[SOURCE: ISO/IEC 17065:2012, modified — Definition editorially revised and Note 1 to entry removed.]

4 Symbols and abbreviated terms

4.1 Abbreviated Terms

The following abbreviations are used in this document:

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