TECHNICAL REPORT

ISO/IEC TR 29110-1

Second edition
2016-06-15

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

Part 1: Overview

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

Partie 1: Aperçu général

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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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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 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

The committee responsible for this document is ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*.

This second edition cancels and replaces the first edition (ISO/IEC 29110-1:2011), which has been technically revised.

ISO/IEC 29110 has the following parts under the general title *Systems and software engineering — Lifecycle profiles for Very Small Entities (VSEs)*:

— *Part 1: Overview* [Technical Report]

— *Part 2-1: Framework and taxonomy*

— *Part 2-2: Guide for the development of domain-specific profiles* [Technical Report]

— *Part 3-1: Assessment guide* [Technical Report]

— *Part 3-3: Certification requirements for process capability*

— *Part 3-4: Autonomy-based improvement method* [Technical Report]

— *Part 4-1: Profile specifications: Generic profile group*

— *Part 5-1-1: Management and engineering guide: Generic profile group: Entry profile* [Technical Report]

— *Part 5-1-2: Management and engineering guide: Generic profile groiup: Basic profile* [Technical Report]

— *Part 5-2-1: Organisational management guidelines* [Technical Report]

— *Part 5-6-1: Systems engineering — Management and engineering guide: Generic profile group: Entry profile* [Technical Report]

— *Part 5-6-2: Systems engineering — Management and engineering guide: Generic profile group: Basic profile* [Technical Report]

The following parts are under preparation:

— *Part 3-2: Conformity audit guide*

— *Part 4-3: Service delivery profile group specification*

— *Part 5-3: Service delivery — Guide* [Technical Report]

— *Part 5-1-3: Software engineering — Management and engineering guide: Generic profile group — Intermediate profile* [Technical Report]

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 and software components used in systems, either as independent products or incorporated in larger systems, 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) constitute the dominant form of business organization in all countries worldwide, accounting for over 95 % and up to 99 % of the business population depending on country". The challenge facing governments and economies 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. Consequently, 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 excluded 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 effort required to apply 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 over-complex systems or software life cycle processes. To address some of these difficulties, a set of guides has been developed based on a set of VSE characteristics. The guides 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; 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.

The ISO/IEC 29110 series of International Standards and Technical Reports can be applied at any phase of system or software development within a life cycle. This series of International Standards and Technical Rerports 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 standards 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 lifecycle 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.

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 guides	VSEs and their customers.
ISO/IEC 29110-6	Management and engineering guides not tied to a specific profile	VSEs and their customers.

If a new profile is needed, ISO/IEC 29110-4 and ISO/IEC/TR 29110-5 can be developed with minimal impact to existing documents.

ISO/IEC 29110-2-1 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 that are based on subsets of appropriate standards elements.

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

The future ISO/IEC/TR 29110-6-x provides management and engineering guides not tied to a specific profile.

This part of ISO/IEC 29110 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 guides.

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 guide, management and engineering guide are available from ISO as freely available Technical Reports (TR). The Framework document, profile specifications and certification schemes are published as International Standards (IS).

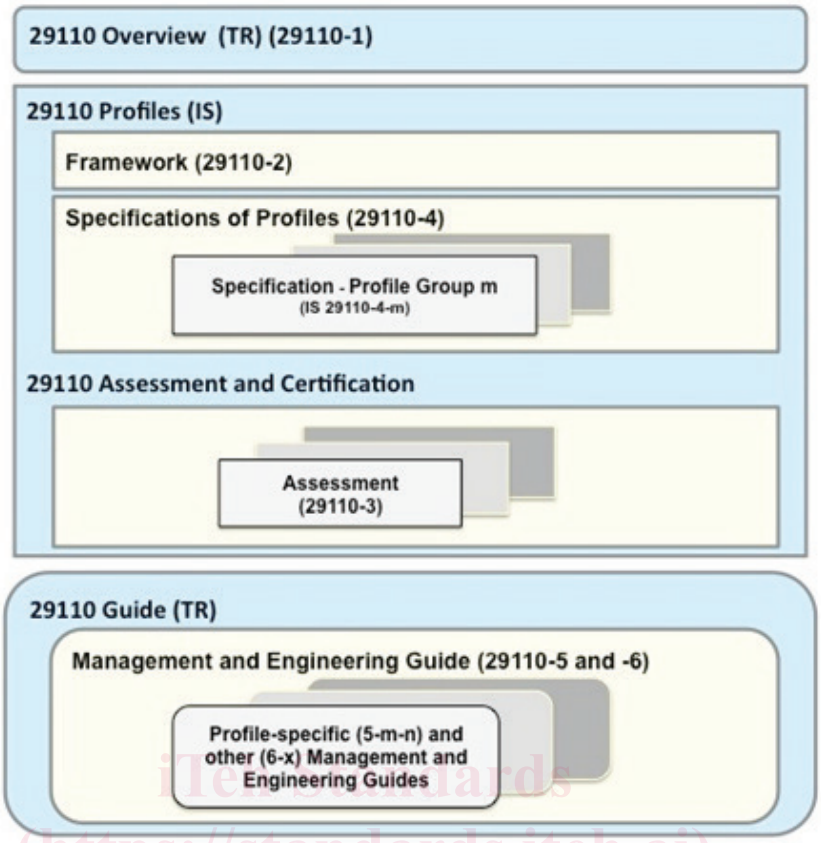

Figure 1 — ISO/IEC 29110 series

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

Part 1: Overview

1 Scope

1.1 Fields of application

This part of ISO/IEC 29110 introduces the major concepts required to understand and use the ISO/IEC 29110 series. It introduces the characteristics and requirements of a VSE and clarifies the rationale for VSE-specific profiles, documents, standards and guides.

This part of ISO/IEC 29110 also introduces process, lifecycle, standardization concepts and defines the organizational terms common to the VSE Profile Set of Documents.

This part of ISO/IEC 29110 is applicable to a VSE. A VSE is an entity (enterprise, organization, department or project) having up to 25 people. The lifecycle processes described in the ISO/IEC 29110 series, Standardized Profiles and Technical Reports are not intended to preclude nor discourage their use by an entity that is larger than a VSE.

1.2 Target audience

This part of ISO/IEC 29110 is targeted both at the general audience wishing to understand the series of documents and, more specifically, at users of the ISO/IEC 29110 series. It should be read first when initially exploring VSE Profile documents. While there is no specific prerequisite to read this part of ISO/IEC 29110, it will be helpful to the user in understanding the other parts.

The lifecycle processes defined in the set of Standardized Profiles and Technical Reports can be used by a VSE when developing, acquiring and using, as well as when creating and supplying systems having hardware and software elements and software. They can be applied at any level in a systems development, software system's structure and at any stage in the lifecycle. They are not intended to preclude or discourage the use of additional processes that a VSE finds useful.

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*

3 Terms and definitions

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