

**ISO/IEC
29110-5-1-2**

**Systems and software
engineering — Life cycle profiles for
very small entities (VSEs) —**

Part 5-1-2:
**Software engineering guidelines for
the generic Basic profile**

**First edition
2025-02**



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

This first edition replaces the ISO/IEC TR 29110-5-1-2:2011, which has been technically revised.

The main changes are as follows:

- Many task statements have been reworded to facilitate their understanding.
- Conditional tasks have been added to develop optional work products (e.g. operation guide) that have been requested by a customer. This notation replaces the 'Optional' notation [e.g. *(optional)] used in the TR that caused ambiguities.
- Terms have been added to [Clause 3](#) such that this document is self-contained.
- A few terms have been modified to align this document with the updated version of standards such as the ISO/IEC/IEEE 12207 and the ISO/IEC/IEEE 15289.
- Texts have been added for giving additional information intended to assist the understanding or use of the text of the document.
- [Annex A](#) has been added to describe a process, which can be added to the software Basic profile, to enable VSEs to support the software product which they developed.
- [Annex B](#) has been added to describe a set of tasks which can be added to the software Basic profile for VSEs with the aim to better support software testing.
- [Annex C](#) has been added to describe a set of tasks, which can be added to the software Basic profile, to enable VSEs to add accessibility tasks to the software implementation process.
- [Annex D](#) has been added to describe a set of tasks which can be added to the Basic profile to integrate security related tasks.

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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.

0.1 Introduction to the ISO/IEC 29110 series

For the purpose of the ISO/IEC 29110 series, a very small entity VSE is an enterprise, organization (e.g. government agency, non-profit organization), department or project having up to 25 people. Many VSEs develop and/or maintain systems and the software components used in those systems, either as independent products or incorporated into the larger system. Due to this, a recognition of VSEs as suppliers of high-quality products is required.

VSEs around the world are creating valuable products and services. According to the World Bank, small and medium enterprises (SMEs) account for about 90 % of enterprises worldwide. According to the Organisation for Economic Co-operation and Development (OECD), SMEs represent 99 % of all businesses and generate about 60 % of employment. Almost one person out of three is employed in a micro firm with less than 10 employees. The European Union reports that micro firms, with fewer than 10 persons, account for 93,5 % of all enterprises and small firms, with 10 to 49 employees, account for 5,5 % of all enterprises. 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 conformity 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 guidelines has been developed based on 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.

The ISO/IEC 29110 series can be applied at any phase of system or software development within a life cycle. The ISO/IEC 29110 series 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 the ISO/IEC 29110 series.

The ISO/IEC 29110 series is intended to be used with any life cycle, such as waterfall, iterative, incremental, evolutionary or agile.

Systems, in the context of the ISO/IEC 29110 series, 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. Figure 1 describes the ISO/IEC 29110 series and positions the parts within the framework of reference.

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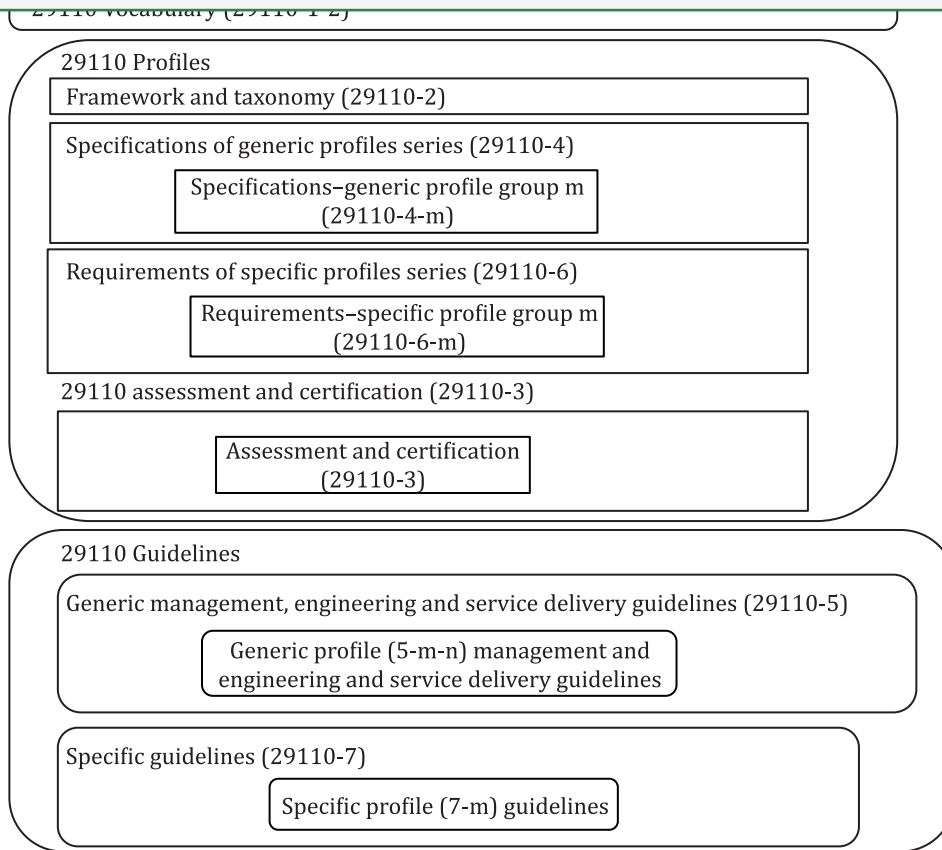


Figure 1 — The ISO/IEC 29110 series

ISO/IEC 29110-1-1 introduces processes, life cycle and standardization concepts, the taxonomy (catalogue) of ISO/IEC 29110 profiles and the ISO/IEC 29110 series. ISO/IEC 29110-1-1 also introduces the characteristics and needs of a VSE, and clarifies the rationale for specific profiles, documents, standards and guidelines. ISO/IEC 29110-1-2 defines the terms common to the ISO/IEC 29110 series. ISO/IEC 29110-1-1 and ISO/IEC 29110-1-2 are targeted at VSEs and their customers, assessors, standards producers, tool vendors and methodology vendors.

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, conformity, 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 29110-2 is targeted at profile producers, tool vendors and methodology vendors.

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, for example, 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 29110-3 is targeted at VSEs and their customers, assessors, accreditation bodies.

ISO/IEC 29110-4 provides the specifications for all generic profiles of the Generic profile group that are based on subsets of appropriate standards elements. ISO/IEC 29110-4 is targeted at VSEs, customers, standards producers, tool vendors and methodology vendors.

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ISO/IEC 29110-6 provides the specifications for Specific profiles that are based on subsets of appropriate standards elements. ISO/IEC 29110-6 is targeted at VSEs, customers, standards producers, tool vendors and methodology vendors.

ISO/IEC 29110-7 provides a guideline for each profile of the specific profile group. ISO/IEC 29110-7 is targeted at VSEs and their customers.

If a new profile is needed, ISO/IEC 29110-4, ISO/IEC 29110-6, ISO/IEC 29110-7 or ISO/IEC 29110-5, or all, can be developed with minimal impact to existing documents.

Since a VSE may be an enterprise, a project or a department of an organization, a customer of a VSE can be internal or external to the organization.

0.2 Introduction to this document

This document is the second software profile of a four-profile software engineering roadmap (i.e. Entry, Basic, Intermediate and Advanced).

This document is intended to be used by VSEs to support the software product which they developed.

This document is intended to be used by VSEs to add accessibility tasks to the software implementation process.

This document is intended to be used with any processes, techniques and methods that enhance the VSE's customer satisfaction and productivity.

The life cycle processes described in the ISO/IEC 29110 series are not intended to preclude or discourage their use by organizations larger than VSEs.

Using this document, a VSE can obtain the following benefits:

- an agreed set of project requirements and expected work products is delivered to the customer;
- a disciplined management process that provides project visibility and corrective actions of project problems and deviations is performed;
- a systematic software implementation process that satisfies customer needs and ensures quality work products is followed.

VSEs that develop systems that have software components are invited to use the systems engineering Basic profile guideline of the ISO/IEC 29110 series (i.e. ISO/IEC 29110-5-6-2).

In this document, [Annex A](#) describes a process, which can be added to the Basic profile, to enable a VSE to support the software product which they developed. [Annex B](#) adds a set of tasks, one role and several work products to the software Basic profile for a VSE with the aim to better support software testing. [Annex C](#) describes a set of additional tasks for a VSE that should add accessibility to a software product. [Annex D](#) integrates security-related tasks and work products in the Basic profile for software engineering. [Annex E](#) describes the deployment packages for the software Basic profile.

Conformity requirements for implementations of this document can be found in ISO/IEC 29110-4-1.