TECHNICAL REPORT

ISO/IEC TR 29110-5-2-1

First edition
2016-06-15

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

Part 5-2-1: Organizational management guidelines

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

Partie 5-2-1: Guide à la gestion organisationnelle

Reference number
ISO/IEC TR 29110-5-2-1:2016(E)

© ISO/IEC 2016



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2016, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

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

Contents

Page

Foreword ..... **v**

Introduction ..... **vi**

1 Scope **1**
1.1 Fields of application 1
1.2 Target audience 1

2 Normative references **1**

3 Terms and definitions **1**

4 Conventions and abbreviated terms **1**
4.1 Naming, diagramming and definition conventions 1
4.2 Abbreviated terms 3

5 Overview **3**

6 Organizational Management (OM) process **5**
6.1 OM purpose 5
6.2 OM objectives 5
6.3 OM input products 5
6.4 OM output products 5
6.5 OM internal products 6
6.6 OM roles involved 6
6.7 OM process description 6
6.7.1 OM diagram 6
6.7.2 OM activities 7
6.8 OM incorporation to the Organizational Repository 10

7 Resource Management (RM) process **10**
7.1 RM purpose 10
7.2 RM objectives 11
7.3 RM input products 11
7.4 RM output products 11
7.5 RM internal products 11
7.6 RM roles involved 12
7.7 RM diagram 12
7.8 RM activities 12
7.8.1 RM.1 Resource planning and preparation (RM.01) 13
7.8.2 RM.2 Obtain and provide resources (RM.02) 14
7.8.3 RM.3 Periodic evaluations, monitoring and control of resources (RM.03) 15
7.9 RM incorporation to the Organizational Repository 16

8 Process Management (PSM) process **17**
8.1 PSM purpose 17
8.2 PSM objectives 17
8.3 PSM input products 17
8.4 PSM output products 17
8.5 PSM internal products 18
8.6 PSM roles involved 18
8.7 PSM diagram 18
8.8 PSM activities 19
8.8.1 PSM.1 Process management planning and monitoring (PSM.01, PSM.05) 19
8.8.2 PSM.2 Process definition, deployment and improvement (PSM.01, PSM.02, PSM.04, PSM.05) 21
8.8.3 PSM.3 Process evaluation (PSM.01, PSM.03, PSM.05) 22
8.8.4 PSM.4 Results gathering, analysis and reporting (PSM.03, PSM.04, PSM.05) 23
8.9 PSM incorporation to the Organizational Repository 24

9 Project Portfolio Management (PPM) process **24**

© ISO/IEC 2016 – All rights reserved

9.1 PPM purpose ... 24
9.2 PPM objectives ... 25
9.3 PPM input products ... 25
9.4 PPM output products ... 25
9.5 PPM internal products ... 25
9.6 PPM roles involved ... 26
9.7 PPM diagram ... 26
9.8 PPM activities ... 27
9.8.1 PPM.1 Preparation and scheduling (PPM.01) ... 27
9.8.2 PPM.2 Generate and activate projects (PPM.01, PPM.02) ... 28
9.8.3 PPM.3 Evaluation and control of projects and customer accounts (PPM.01, PPM.03) ... 28
9.8.4 PPM.4 Project organization's closure (PPM.01, PPM.03) ... 29
9.9 PPM incorporation to the Organizational Repository ... 30

10 Roles ... 30

11 Product description ... 31

12 Software tools requirements ... 40
12.1 Resource Management process ... 40
12.2 Process Management process ... 41
12.3 Project Portfolio Management process ... 41
12.4 Organizational Management process ... 41

Annex A (informative) **Interactions between the Basic Profile and the Organizational Profile ... 42**

Annex B (informative) **Mapping between the objectives of this part of ISO/IEC 29110 and base standards ... 49**

Bibliography ... 55

 © ISO/IEC 2016 – All rights reserved

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 World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

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

The full list of parts of ISO/IEC 29110 is available here.

© ISO/IEC 2016 – All rights reserved

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 International 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 International 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 lifecycle 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; 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 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 International 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. In the context of ISO/IEC 29110, systems are 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).

© ISO/IEC 2016 – All rights reserved

Table 1 — ISO/IEC 29110 target audience

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

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, 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 (ISO/IEC 33020), conformity assessments (ISO/IEC 17021-1) 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 provides organizational management processes to VSEs which have already implemented the processes of the system engineering and/or the software engineering Basic profile.

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).

© ISO/IEC 2016 – All rights reserved

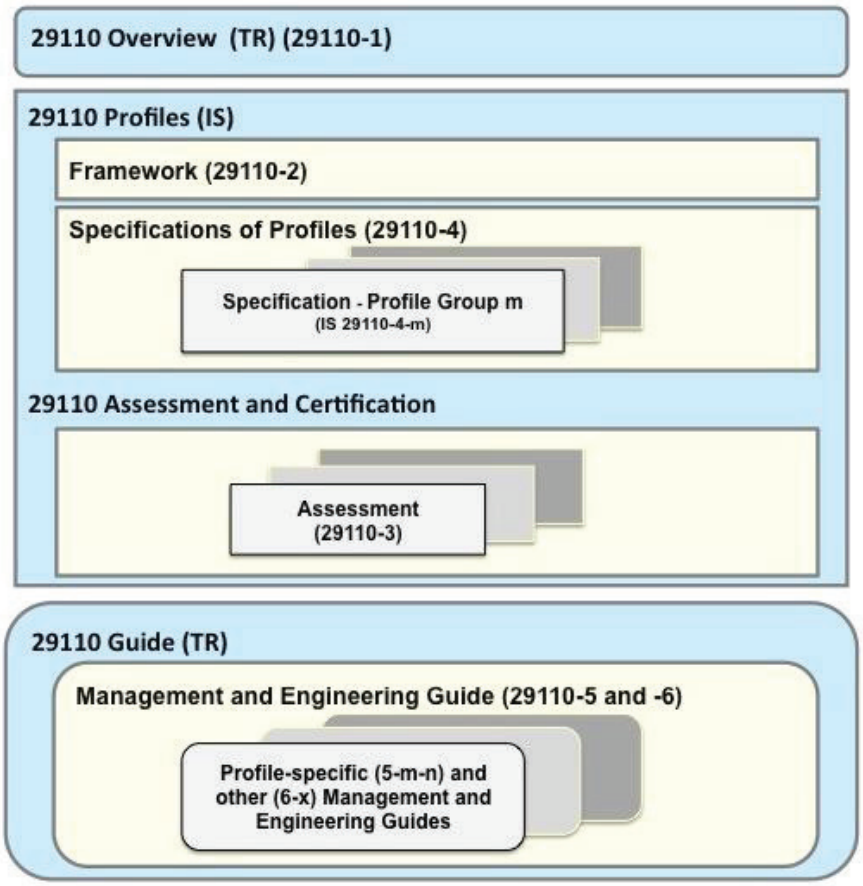


Figure 1 — ISO/IEC 29110 series

© ISO/IEC 2016 – All rights reserved

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

Part 5-2-1: Organizational management guidelines

1 Scope

1.1 Fields of application

This part of ISO/IEC 29110 is applicable to Very Small Entities (VSEs). VSEs are enterprises, organizations, departments or projects having up to 25 people. The lifecycle processes described in the ISO/IEC 29110 series are not intended to preclude or discourage their use by organizations bigger than VSEs.

This part of ISO/IEC 29110 is the Organizational management guidance for profiles described in ISO/IEC 29110-4-1 through Organizational Management, Project Portfolio Management, Resource Management and Process Management Processes. It is not intended for a VSE to use the standardized profile to implement this part of ISO/IEC 29110.

Using this part of ISO/IEC 29110, a VSE can obtain benefits in the following aspects:

— multiple project execution and supervision of its performance, making sure all processes are executed according to the organizational strategy;

— continuous monitoring of the customer satisfaction;

— deployment and improvement of the organizational standard processes in all projects;

— controlled provision of required resources.

1.2 Target audience

This part of ISO/IEC 29110 is targeted at VSEs which already use at least ISO/IEC TR 29110-5-6-2 and/or ISO/IEC TR 29110-5-1-2 for their software projects.

This part of ISO/IEC 29110 is intended to be used with any processes, techniques and methods that enhance the VSEs' customer satisfaction, quality and productivity.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

4 Conventions and abbreviated terms

4.1 Naming, diagramming and definition conventions

The following process structure description and notation are used to describe the processes.

© ISO/IEC 2016 – All rights reserved