FINAL DRAFT
International Standard

ISO/IEC
FDIS
29110-5-6-1

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

Part 5-6-1: System engineering guidelines for the generic Entry profile

ISO/IEC JTC **1**/SC **7**

Secretariat: **BIS**

Voting begins on:
2026-07-09

Voting terminates on:
2026-09-03

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

Reference number
ISO/IEC FDIS 29110-5-6-1:2026(en)

© ISO/IEC 2026



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2026

All rights reserved. Unless otherwise specified, or required in the context of its implementation, 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
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword ... **iv**
Introduction ... **v**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **1**
4 Conventions and abbreviated terms ... **4**
4.1 General ... 4
4.2 Naming, diagramming and definition conventions ... 4
4.3 Abbreviated terms ... 6
5 Systems thinking ... **6**
6 Overview ... **7**
6.1 General ... 7
6.2 Processes and activities of the systems engineering Entry profile ... 7
7 PM process ... **8**
7.1 PM process purpose ... 8
7.2 PM process outcomes ... 8
7.3 PM input work products ... 9
7.4 PM output products ... 9
7.5 PM internal work products ... 9
7.6 PM roles involved ... 9
7.7 PM process description ... 9
7.7.1 PM diagram ... 9
7.7.2 PM activities ... 10
7.7.3 PM incorporation to project repository ... 16
8 SR process ... **16**
8.1 SR process purpose ... 16
8.2 SR process outcomes ... 17
8.3 SR input work products ... 17
8.3.1 SR output work products ... 17
8.3.2 SR internal work product ... 17
8.4 SR roles involved ... 17
8.5 SR process description ... 18
8.5.1 Overview of the SR diagram ... 18
8.5.2 SR activities ... 18
8.5.3 SR incorporation to the project repository ... 30
9 Description of roles ... **31**
10 Description of work products ... **32**
11 System tools ... **42**
11.1 System tools overview ... 42
11.2 PM process ... 42
11.3 SR process ... 42
Annex A (Informative) **Systems engineering deployment packages** ... **44**
Annex B (informative) **Mapping between the outcomes of this document and the ISO/IEC/IEEE 15288** ... **45**
Bibliography ... **47**

© ISO/IEC 2026 – 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.

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 or www.iec.ch/members_experts/refdocs).

ISO and IEC draw attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO and IEC take no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO and IEC had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents and https://patents.iec.ch. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

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

For an explanation of 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 World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html. In the IEC, see www.iec.ch/understanding-standards.

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 ISO/IEC TR 29110-5-6-1:2015, 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 CUS; this notation replaces the ‘Optional’ notation [e.g. *(optional)] used in the TR that caused ambiguities.

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

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

© ISO/IEC 2026 – All rights reserved

Introduction

0.1 Introduction to theISO/IEC29110series

For the purpose of the ISO/IEC 29110 series, a very small entity (VSE) is an enterprise, an organization (e.g. government agency, non-profit organization), a department or a project having up to 25 people. Many VSEs develop and maintain either systems or software or both components used in those systems, either as independent products or incorporated into the larger system. Due to this a recognition of VSEs as suppliers (SUPs) 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, 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; processes, activities, tasks, and outcomes of ISO/IEC/IEEE 15288 for systems; and information products (documentation) of ISO/IEC/IEEE 15289 for systems and software.

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 or tailoring ISO/IEC/IEEE 12207 or ISO/IEC/IEEE 15288 to the needs of a specific project. VSEs that have expertise in adapting or 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 either system or software or both for service quality, and process performance. Figure 1 describes the ISO/IEC 29110 series and positions the parts within the framework of reference.

© ISO/IEC 2026 – All rights reserved

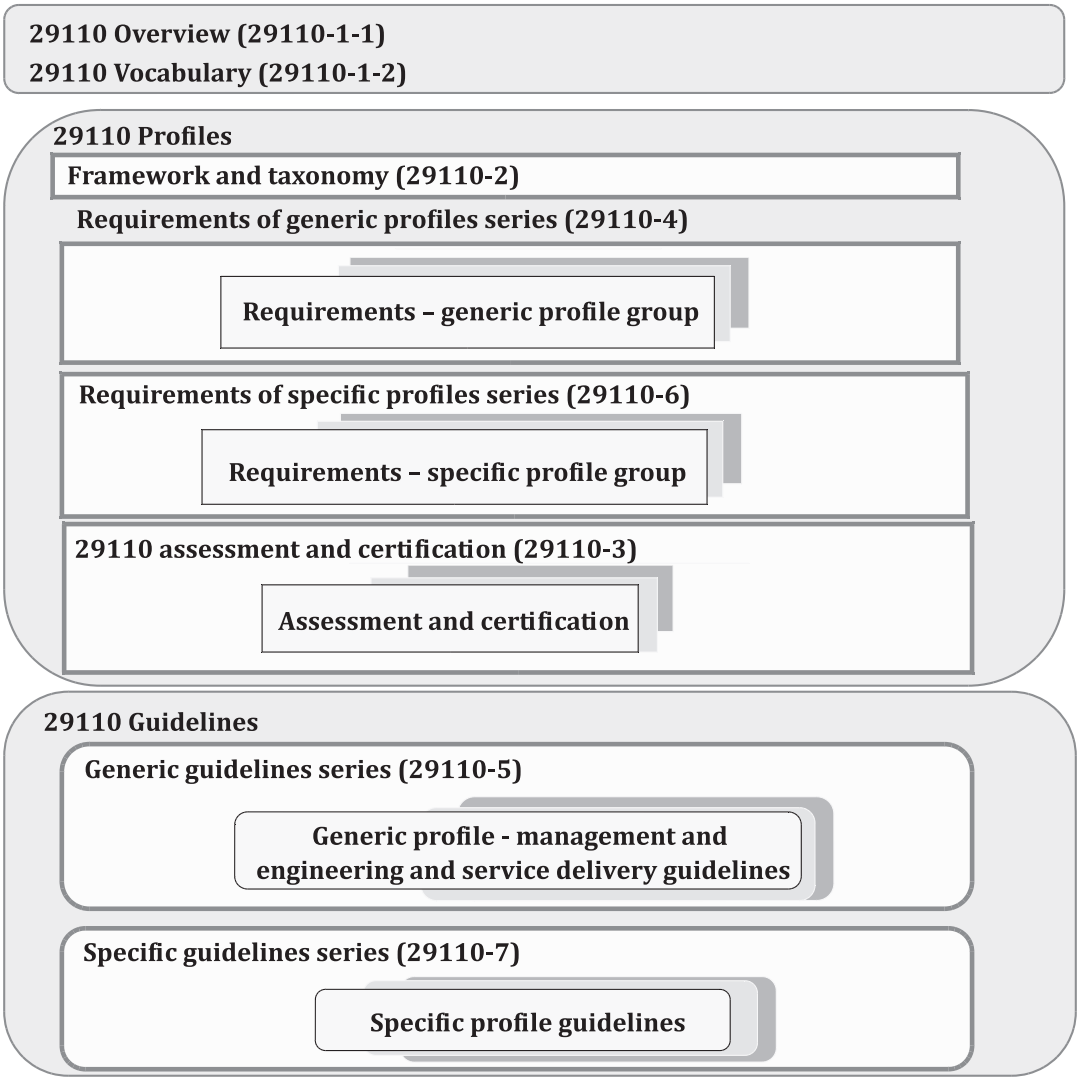


Figure 1 — The ISO/IEC 29110 series

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 (CUSs), 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, 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 29110-3 is targeted at VSEs and their CUSs, assessors, accreditation bodies.

© ISO/IEC 2026 – All rights reserved

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, CUSs, standards producers, tool vendors and methodology vendors.

ISO/IEC 29110-5 provides a management, engineering and service delivery guidelines for profiles of the Generic profile group. ISO/IEC 29110-5 is targeted at VSEs and their CUSs.

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, CUSs, 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 CUSs.

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

0.2 Introduction to this document

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

The Entry profile describes the development by VSEs who either started their operation less than 3 years or are a VSE working on small projects or both (e.g. project size of less than 6 person-months).

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

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

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

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

This document applies for the development of systems not considered safety critical systems.

The outcomes and tasks are guidance, not requirements, for purposes of process assessment.

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

— a documented project plan, that provides the structure and guidance for execution of the project;

— visibility and corrective actions of project problems and deviations, is performed;

— a documented set of project requirements (technical part of contract) for the expected product are agreed to by the acquirer;

— a foundation for rapid advancement to higher profiles in program management and systematic SR process in the systems engineering roadmap. for program management.

To use this document, the VSE should confirm the following entry conditions:

— project needs and expectations are realized and documented;

— feasibility of the project was performed;

— project team, including PJM and system engineer, is assigned;

— goods, services, and infrastructure to start the project are available.

© ISO/IEC 2026 – All rights reserved

VSEs developing software that is part of a system and for standalone software products and services are encouraged to use the management and engineering guidelines of the Entry profile (ISO/IEC 29110-5-1-1).

© ISO/IEC 2026 – All rights reserved

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

Part 5-6-1:
System engineering guidelines for the generic Entry profile

1 Scope

This document describes processes targeted at VSEs who are in start-up mode and are working on single projects consisting of less than 6 person-months.

This document provides management and engineering guidelines for the systems engineering Entry profile of the generic profile group.

This document is applicable to VSEs who do not develop critical systems and do not have experience with systems engineering (SE) process planning and implementation using the ISO/IEC/IEEE 15288.

2 Normative references

This document has no normative references.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

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

3.1
acquirer
stakeholder (3.17) that acquires or procures a product or service from a supplier

Note 1 to entry: Other terms commonly used for an acquirer are buyer, customer, owner, purchaser or_internal/ organizational sponsor.

[SOURCE: ISO/IEC/IEEE 15288:2023, 3.1, modified — the word “system” has been removed from the definition]

3.2
activity
set of cohesive *tasks* (3.19) of a *process* (3.15)

[SOURCE: ISO/IEC/IEEE 12207:2026, 3.1.3]

3.3
Advanced profile
profile (3.14) targeted at *VSEs* (3.23) who either want to sustain and grow as a competitive *system* (3.18) or want to sustain and grow as a competitive software development organization or both

[SOURCE: ISO/IEC 29110-1-2:2024, 3.3]

© ISO/IEC 2026 – All rights reserved

3.4
agreement
mutual acknowledgement of terms and conditions under which a working relationship is conducted

EXAMPLE Contract, memorandum of agreement.

[SOURCE: ISO/IEC/IEEE 15288:2023, 3.4]

3.5
Basic profile
profile (3.14) targeted at *VSEs* (3.23) developing a single product by a single WT

[SOURCE: ISO/IEC 29110-1-2:2024, 3.18]

3.6
conditional task
task (3.19) that can be mandatory under some specified condition(s), can be optional under other specified conditions, and can be out of scope or not applicable under other specified conditions

Note 1 to entry: These shall be observed if the specified condition(s) apply.

[SOURCE: ISO/IEC 29110-1-2:2024, 3.28]

3.7
safety critical system
system (3.18) whose failure or malfunction can result in one (or more) of the following outcomes: death or serious injury to people, loss or severe damage to equipment or property, or environmental harm

3.8
data model
list of data items provided to and developed by the *VSE* (3.23) in support of the product or service delivery

3.9
project repository
location where project data items are stored by the *VSE* (3.23)

Note 1 to entry: A systems approach considers the total system and the total life cycle of the system. This includes all aspects of the system throughout its life until the day *users* (3.22) depose of the system and the external enterprises complete the handling of the disposed system products.

3.11
Entry profile
profile (3.14) targeted at start-up *VSEs* (3.23) (i.e. VSEs who either started their operation fewer than three years ago) or are VSEs working on a single small project or both (e.g. project size of less than 6 person-months)

[SOURCE: ISO/IEC 29110-1-2:2024, 3.40]

3.12
Intermediate profile
profile (3.14) targeted at *VSEs* (3.23) involved in the development of more than one project in parallel with more than one WT

[SOURCE: ISO/IEC 29110-1-2:2024, 3.48]

3.13
operator
individual or organization that performs the operations of a *system* (3.18)

Note 1 to entry: The role of operator and the role of *user* (3.22) can be vested, simultaneously or sequentially, in the same individual or organization.

© ISO/IEC 2026 – All rights reserved

Note 2 to entry: An individual operator combined with knowledge, skills and procedures can be considered as an element of the system.

Note 3 to entry: An operator may perform operations on a system that is operated, or of a system that is operated, depending on whether the operating instructions are placed within the system boundary.

[SOURCE: ISO/IEC/IEEE 15288:2023, 3.24]

3.14
profile
subset of appropriate standards' *processes* (3.15) and their outcomes, *activities* (3.2) and *tasks* (3.19) combined to accomplish a particular function

Note 1 to entry: The base standards used to develop profiles for *VSEs* (3.23) are ISO/IEC/IEEE 12207, ISO/IEC/IEEE 15288 and ISO/IEC/IEEE 15289.

[SOURCE: ISO/IEC 29110-1-2:2024, 3.70]

3.15
process
set of interrelated or interacting *activities* (3.2) that transforms inputs into outputs

[SOURCE: ISO/IEC/IEEE 12207:2017, 3.1.33]

3.16
small and medium enterprise
SME
enterprise with less than 250 persons employed

[SOURCE: ISO/IEC 29110-1-2:2024, 3.92]

3.17
stakeholder
individual or organization having a right, share, claim, or interest in a *system* (3.18) or in its possession of characteristics that meet their needs and expectations

[SOURCE: ISO/IEC/IEEE 12207:2017, 3.1.59, modified — EXAMPLE and note 1 to entry have been removed.]

3.18
system
arrangement of parts or elements that together exhibit a stated behaviour or meaning that the individual constituents do not

Note 1 to entry: A system is sometimes considered as a product or as the services it provides.

Note 2 to entry: In practice, the interpretation of its meaning is frequently clarified by the use of an associative noun, e.g. aircraft system. Alternatively, the word "system" is substituted simply by a context-dependent synonym, e.g., aircraft, though this potentially obscures a system principles perspective.

Note 3 to entry: A complete system includes all of the associated equipment, facilities, material, computer programs, firmware, technical documentation, services and personnel required for operations and support to the degree necessary for self-sufficient use in its intended environment.

[SOURCE: ISO/IEC/IEEE 15288:2023, 3.46]

3.19
system structure
decomposition of a *system* (3.18) of interest into a set of interacting systems and system elements

Note 1 to entry: The system structure is described in a SBS.

© ISO/IEC 2026 – All rights reserved

3.20
task
required, recommended, or permissible action, intended to contribute to the achievement of one or more outcomes of a *process* (3.15)

[SOURCE: ISO/IEC/IEEE 12207:2017, 3.1.66]

3.21
trade-off
decision-making action that selects from various requirements and alternative solutions on the basis of net benefit to the *stakeholders* (3.17)

3.22
user
individual or group that interacts with a *system* (3.18) or benefits from a system during its utilization

Note 1 to entry: The role of user and the role of *operator* (3.13) are sometimes vested, simultaneously or sequentially, in the same individual or organization.

[SOURCE: ISO/IEC/IEEE 15288:2023, 3.53]

3.23
very small entity
VSE
enterprise, organization, department or project having up to 25 people

[SOURCE: ISO/IEC 29110-1-2:2024, 3.124]

3.25
work product
artefact produced by a *process* (3.15)

[SOURCE: ISO/IEC 15940:2013, 2.5, modified — Note 1 to entry has been removed.]

4 Conventions and abbreviated terms

4.1 General

Conventions for naming, diagramming, describing and defining profiles are defined in ISO/IEC 29110-2-1.

4.2 Naming, diagramming and definition conventions

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

Process name – process identifier, followed by its abbreviation in parentheses "( )".

Process purpose – the high-level objective and results expected of the effective implementation of the process. The implementation of the process should provide tangible benefits to the STKs.

Process outcomes **-** the process outcomes are identified by the abbreviation of the process name, followed by the letter "O" and a consecutive number, for example PM.O1, SR.O2.

Input work products – helpful work products to perform the process and its corresponding source, which can be another process or an external entity to the project, such as the acquirer. Input work products are identified by the abbreviation of the process name.

Output work products – work products generated by the process and its corresponding destination, which can be another process or an external entity to the project, such as an acquirer. Output work products are identified by the abbreviation of the process name:

© ISO/IEC 2026 – All rights reserved