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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

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Submission of Comments

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



DRAFT International Standard

ISO/IEC DIS 29110-5-5

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

Part 5-5: Agile/DevOps guidelines

ICS: 35.080

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2025-12-12

This document has not been edited by the ISO Central Secretariat.

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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.

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 required 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).

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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*.

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

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.

Introduction

0.1 Introduction to the ISO/IEC 29110 series

For the purpose of the ISO/IEC 29110 [ISO/IEC TR 29110-5-6-2:2014] 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. Since many VSEs develop and/or maintain systems and the software components used in those systems, either as independent products or incorporated in a larger system, 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-sized 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. With such a large proportion of business activity carried out by VSEs, their participation in the economy is key to United Nations Sustainable Development Goal 8 – to promote inclusive and sustainable economic growth and decent work for all. The challenge facing 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 find it helpful to have detailed, specified, procedures when beginning agile projects, rather than attempting to interpret and tailor the more flexible, high-level process requirements of ISO/IEC/IEEE. To address some of these difficulties, a set of guidelines have been developed based on a set of VSEs 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 systems; 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 audiences, 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.

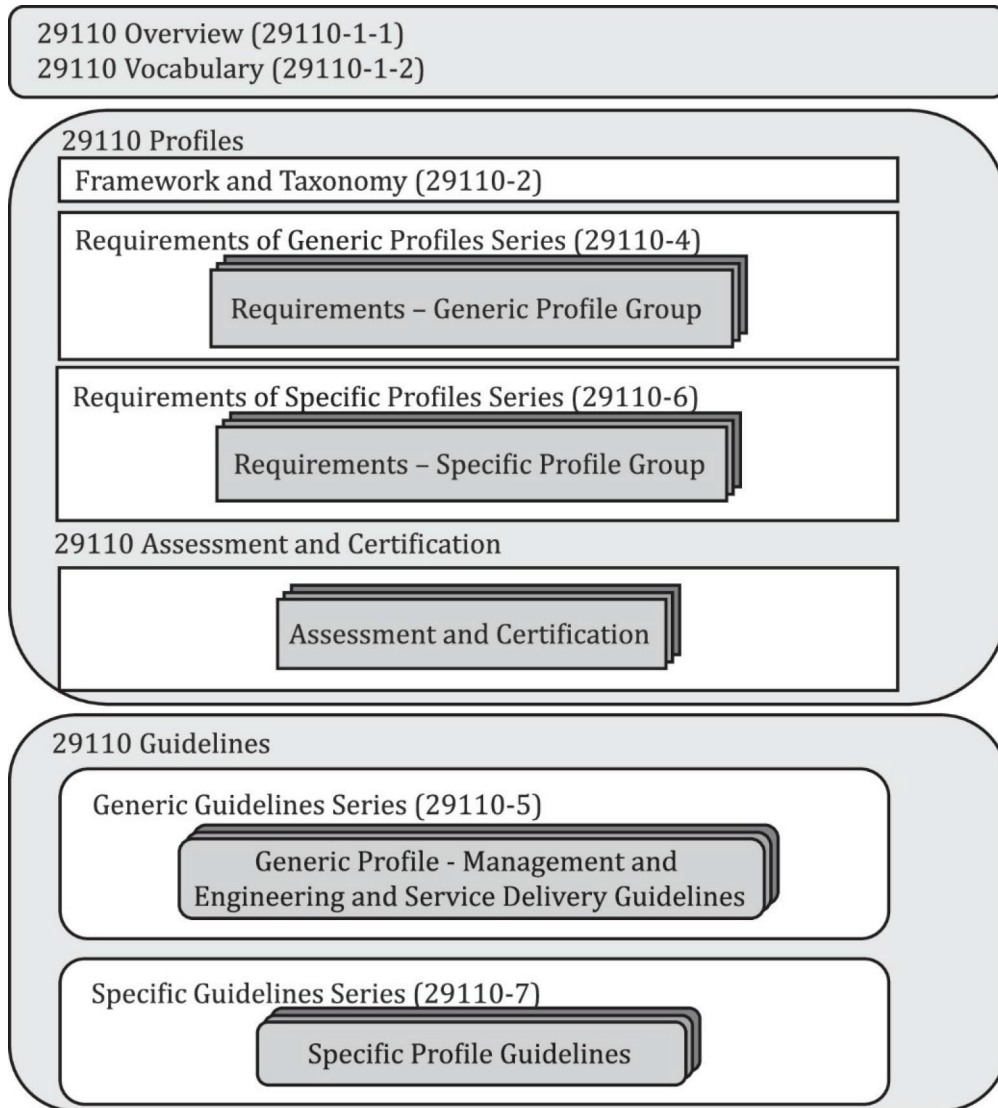


Figure 1 — ISO/IEC 29110 series

ISO/IEC 29110-1-1 introduces processes, life cycle and standardization concepts, the taxonomy (catalog) 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 (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 customers, assessors and 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.

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

ISO/IEC 29110-6 provides the specifications for specific profiles 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 guidelines 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 or ISO/IEC 29110-6, 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 aims to help VSEs that want to reinforce their agile/DevOps environment to develop and support software products or add a DevOps approach to their agile approach with practices of the ISO/IEC 29110 series.

A combined agile and DevOps approach focuses on speed and quality of software development combined with continuous delivery of software into a production or production-like environment, optimizing the software development, deployment and support process. It emphasizes a self-organizing, collaborative culture that leverages automated processes and challenges non-value-added work. This can be perceived to be in opposition to the requirements to follow processes and documentation requirements specified in standards. However, this document provides a clear framework for a robust implementation of agile and DevOps practices which can be used to achieve certification of conformance to the ISO/IEC 29110 Basic profile.

DevOps and agile are separate approaches and do not have to be implemented together. However, they are complementary, and agile serves as an effective enabler for DevOps with its focus on small teams and high quality code. The most likely VSE implementation of DevOps is in combination with an agile approach; the focus of this document.

Whilst DevOps focusses primarily on speed and quality, DevSecOps additionally focusses on integration of security as a shared responsibility throughout the IT life cycle. This document can also be used for DevSecOps guidance by highlighting the security focus when the DevOps approach is agreed.

This document provides examples of work product templates (see [Annex A](#)).

This document is based mainly on the scrum and XP agile methods (see [Annex B](#)) and on DevOps concepts (see [Annex C](#)).

This document also aims to help VSEs that want to initiate a certification of the two processes of the software Basic profile of ISO/IEC 29110, as specified in ISO/IEC 29110-4-1, while performing their agile/DevOps practices (see [Annex B](#) and [C](#)).

This document has been developed, using the management and engineering guidelines of the ISO/IEC 29110-5-1-2 software Basic profile, by modifying and adding elements (e.g. task, work product, role) for VSEs involved in the development and support of software using an agile and DevOps combined approach (see [Annex B](#) and [C](#)). However, this document does not contain any requirements; and organizations cannot claim conformity to this document.

Using this document, VSEs can obtain the following benefits:

- project planning: by providing a set of events to enable the team to track the work and know what an impediment can be and assign tasks to each member of the team;
- effort estimation: by providing estimation techniques for the sprint planning event;

- progress tracking: by providing tools (e.g. burndown chart, product backlog, daily scrum) to update and track the work, the budget and the schedule until the project's closure;
- management of changes and artefacts: by providing a set of tasks to control the changes to the software and management work products;
- clarity of each role: by providing a set of tasks for each role;
- agile risk management: by providing work products to identify and manage risks;
- reduced rework: by providing a set of tasks that minimize errors and handle the detection and correction of defects effectively;
- closer alignment between development and operations: by including operations support needs in project implementation to deliver an optimized end to end process;
- increased responsiveness to resolving customer issues which require development work: by integrating support incident responses into project work, rather than separating them into a separate work stream.

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

Part 5-5: Agile/DevOps guidelines

1 Scope

This document provides guidelines for very small entities (VSEs) want to reinforce their agile/DevOps environment to develop and support software using an agile approach with practices of the ISO/IEC 29110 series.

This document is applicable to VSEs that do not develop safety-critical products.

2 Normative references

The following documents are referred to in the text in such a way that some or all 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 29110-1-2, *Systems and software engineering — Lifecycle profiles for Very Small Entities (VSEs) — Part 1-2: Vocabulary*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

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

ISO and IEC maintain terminological 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/>

3.1.1

acceptance criteria

working *agreement* (3.1.6) on the required quality attribute that work meets before it completes a specified story or feature, item or artefact

3.1.2

agile

approach to development, delivery and maintenance of products and services by enabling rapid response to feedback

Note 1 to entry: The required specification for the software under development is elaborated with specific requirements only when the work is started. This lean principle is meant to avoid waste of work and to provide an *agile team* (3.1.5) with means of prioritizing their work.

[SOURCE: ISO/IEC 33202:2024, 3.2, modified — "need specification" has been replaced by "required specification".]

3.1.3

agile development

development approach based on iterative development, frequent inspection and adaptation, and incremental deliveries in which requirements and solutions evolve through collaboration in cross-functional teams and through continuous stakeholder feedback

[SOURCE: ISO/IEC/IEEE 26515:2018, 3.1, modified – Note 1 to entry has been removed]

3.1.4

agile environment

organizational culture, infrastructure, and methodologies that support *agile development* ([3.1.3](#))

[SOURCE: ISO/IEC/IEEE 26515:2018, 3.2]

3.1.5

agile team

organization or team using *agile development* ([3.1.3](#)) methods and approaches

Note 1 to entry: Typically, with roles such as team lead, project manager, user or user representative, software and information developers, and testers

[SOURCE: ISO/IEC/IEEE 26515:2018, 3.3]

3.1.6

agreement

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

EXAMPLE Contract, memorandum of agreement.

[SOURCE: ISO/IEC/IEEE 12207:2017, 3.1.5]

3.1.7

backlog

collection of *agile* ([3.1.2](#)) *features* ([3.1.18](#)) or stories of both functional and *operations requirements* ([3.1.25](#)) that are typically sorted in an order based on value priority

[SOURCE: ISO/IEC/IEEE 26515:2018, 3.4]

3.1.8

baseline

formally approved version of a configuration item, regardless of media, formally designated and fixed at a specific time during the configuration item's life cycle

[SOURCE: ISO/IEC/IEEE 12207:2017, 3.1.11]

3.1.9

build

operational version of a system or component that incorporates a specified subset of the capabilities that the final product will provide

[SOURCE: IEEE 828-2012, 2.1, IEEE dictionary]

3.1.10

burndown chart

graph that represents the work remaining to do on a project

[SOURCE: ISO/IEC/IEEE 26511:2018, 3.1.6]

3.1.11

burnup chart

graphical representation of the work completed toward the release of a product

[SOURCE: Agile Practice Guide, Project Management Institute, 2017]

3.1.12

continuous integration

technique that continually merges artefacts, including source code updates from all developers on a team, into a shared mainline to build and test the developed system

[SOURCE: ISO/IEC/IEEE 32675:2022, 3.1]

3.1.13

definition of done

DoD

statement on the required quality attributes that requirements that work meets before the work completes a specified life cycle activity or task and is ready for use

[SOURCE: ISO/IEC/IEEE 33202:2024, 3.13]

Note 1 to entry: 'done' in a DevOps environment will include deployment into a production environment or a production-like environment

3.1.14

DevOps

set of principles and practices which enable better communication and collaboration between relevant stakeholders for the purpose of specifying, developing, and operating software and systems products and services, and continuous improvements in all aspects of the life cycle

[SOURCE: ISO/IEC/IEEE 32675:2022]

Note 1 to entry: DevOps uses lean principles to increase speed and quality of software delivery and may be regarded as the logical continuation of the agile software journey

3.1.15

DevOps specialist (DS)

Team member with a wide-ranging knowledge of both development and operations including coding, infrastructure management, system administration and DevOps toolchains. This individual is known as a DevOps engineer in many organizations

3.1.16

DevSecOps

DevOps practices with a focus on building systems to be secure from the very beginning of the lifecycle and continuing throughout the lifecycle

Note 1 to entry: Whilst DevOps is focused on increasing speed and quality of software development and delivery, the primary focus of DevSecOps is on securing the software development process by integrating security early and throughout the software development, testing and support lifecycle.

[SOURCE: ISO/IEC/IEEE 32675:2022]

3.1.17

event

ceremony

key meeting in which a set of tasks are performed to help the *scrum leader* ([3.1.37](#)), *product owner* ([3.1.31](#)), and developer to organize, evaluate, and adjust the work to be done to develop a product

EXAMPLE *Sprint* ([3.1.41](#)) planning, *daily scrum* ([3.1.36](#)), sprint review and sprint retrospective.

3.1.18

feature

functional or operational distinguishing characteristic of a system

Note 1 to entry: A feature, item or artefact is usually an enhancement to an existing system

[SOURCE: ISO/IEC/IEEE 26515:2018, 3.7, modified — The original note 1 to entry has been replaced by a new one]

3.1.19

incident

unplanned interruption to a service, a reduction in the quality of a service or an event that has not yet impacted the service to the customer or user

[SOURCE: ISO/IEC 20000-10:2018, 3.2.5]

3.1.20

increment

tested, deliverable version of a *software product* ([3.1.39](#)) that provides new or modified capabilities

[SOURCE: ISO/IEC 33202:2024, 3.17]

3.1.21

infrastructure

facilities such as power and physical security of the data center, networking, hardware, and software needed to support the systems life cycle and maintain IT services

Note 1 to entry: does not include the associated people, processes, or documentation. In DevOps, software defined infrastructure enables elasticity.

[SOURCE: IEEE 2675:2021]

3.1.22

infrastructure-as-code

IAC

definition, management and automated provisioning of infrastructure components using software

[SOURCE: IEEE 2675:2021]

3.1.23

left-shift

prioritizing the involvement of relevant stakeholders in applying quality activities, security, privacy, performance, verification, and validation earlier in the life cycle

[SOURCE: IEEE 2675: 2021]

3.1.24

metric

defined measurement method and measurement scale

[SOURCE: ISO/IEC 14102:2008, 3.4]

3.1.25

operations requirement

requirement which defines how a product or the environment in which it is developed and deployed should operate

Note 1 to entry: operations requirements include aspects such as performance, security, scalability, maintainability, automation. They complement functional requirements which are expressed in agile methodologies as 'user stories'

Note 2 to entry: an operations requirement is also known as a non-functional requirement

3.1.26

pair programming

practice from eXtreme Programming (XP) that typically involves one developer writing source code or configuring a system while a second developer observes the work to look for errors and to determine whether the work completed is accurate and meets its requirements

Note 1 to entry: Pairs alternate roles periodically so a different developer writes code while the other developer observes.

3.1.27

planning poker

team-based estimation approach whereby relative estimates of the effort required to develop and test each *user story* ([3.1.48](#)) and operations requirement are set via consensus

Note 1 to entry: The approach uses poker cards that are typically based on a Fibonacci sequence (i.e. 1, 2, 3, 5, 8, 13).

3.1.28

process purpose

high-level objective of performing the process and the likely outcomes of effective implementation of the process

[SOURCE: ISO/IEC/IEEE 24774:2021, 3.12]

3.1.29

process outcome

observable result of the successful achievement of the process

[SOURCE: ISO/IEC/IEEE 24774:2021, 3.11]

3.1.30

product backlog

an emergent, ordered list of what is needed to improve the product. It is the single source of work undertaken by the *agile team* ([3.1.5](#))

3.1.31

product owner

designated stakeholder accountable for defining and accepting outcomes of the work and managing *backlog* ([3.1.7](#)), while aligning with the stakeholder needs

Note 1 to entry: A product owner is also the 'voice of the user' or the user representative on the team.

[SOURCE: ISO/IEC 33202:2024, 3.2, modified — Note 1 to entry has been added.]

3.1.32

profile

subset of appropriate standards' processes and their outcomes, activities and tasks combined to accomplish a particular function

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

3.1.33

repository

organized and persistent data storage that allows data retrieval

[SOURCE: ISO/IEC/IEEE 26511:2018, 3.1.24]

3.1.34

safety-critical product

software 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
- environmental harm

[SOURCE: ISO/IEC 23643:2020, 3.15, modified — EXAMPLE has been removed.]

3.1.35

self-organizing team

group composed of motivated individuals working together toward meeting a goal

Note 1 to entry: They have the ability and authority for decision-making They manage their work and readily adapt to changing demands.

Note 2 to entry: Principles of self-organizing teams are competency, collaboration, motivation, trust, respect and continuity

3.1.36

scrum

iterative project management framework used in *agile development* (3.1.3), in which a team agrees on development items from *product backlog* (3.1.30) and produces them within a short duration of a few weeks

[SOURCE: ISO/IEC/IEEE 24765:2017, 3.3637]

3.1.37

scrum leader

person who facilitates the *scrum* (3.1.36) process within a team or project

[SOURCE: ISO/IEC/IEEE 24765:2017, 3.3638, modified — The term has been changed from "scrum master" to "scrum leader".]

3.1.38

daily scrum

in *agile development* (3.1.3) methods, a brief daily meeting where team members share accomplishments from the prior daily meeting, plans for the current day and identification of impediments

3.1.39

service level agreement

written agreement between a service provider and a client that documents services and agreed service levels

[SOURCE: ISO/IEC 20000-1:2011, 3.29, modified]

3.1.40

software product

set of computer programs, procedures, and possibly associated documentation and data

[SOURCE: ISO/IEC/IEEE 12207:2017, 3.1.54, modified – Note 1 to entry has been removed]

3.1.41

sprint

short time frame, in which a set of software *features* (3.1.18) is developed, leading to a working product that can be demonstrated to stakeholders

Note 1 to entry: In some organizations, a sprint is known as an iteration.

[SOURCE: ISO/IEC/IEEE 24765:2017, 3.3914]

3.1.42

sprint backlog

iteration backlog

sprint catalogue

set of *backlog* (3.1.7) items [e.g. *user stories* (3.1.48)] that are selected for inclusion in a given *sprint* (3.1.41)

3.1.43

story points

units of measure for expressing an estimate of the overall effort required to fully implement a *product backlog* (3.1.30) item or any other piece of work

3.1.44

time-boxed

having a prescribed duration limit for a project task

[SOURCE: Adapted from Software Extension to the PMBOK Guide Fifth Edition]

3.1.45

task board

kanban board

scrum board

visual representation of an *agile team's* ([3.1.5](#)) progress within an iteration

3.1.46

technical debt

deferred cost of work not done at an earlier point in the product life cycle

[SOURCE: Software Extension to the PMBOK Guide Fifth Edition]

3.1.47

unit test

testing of individual routines and modules by the developer or an independent tester

[SOURCE: ISO/IEC/IEEE 24765:2017, 3.4429, definition 1]

3.1.48

user story

a brief description of desired functionality

Note 1 to entry: a user story can describe the stakeholder roles, goals, benefits, and motivation.

Note 2 to entry: Work items in the *backlog* ([3.1.7](#)) can also be referred in other ways such as epics, features, items or artefacts.

[SOURCE: ISO/IEC 33202:2024, 3.1.54, modified – in Note 2 to entry, “items or artefacts” has been added.]

3.1.49

velocity

rate of current work unit completion, measured as work units completed per fixed time period, such as *story points* ([3.1.43](#)), delivered *features* ([3.1.18](#)), functions, function points, *user stories* ([3.1.48](#)), use cases, or requirements completed in a given time period

Note 1 to entry: Used as a measure of burndown rate or burnup rate.

[SOURCE: ISO/IEC/IEEE 32675:2022, 3.1]

3.2 Abbreviated terms

DOT	DevOps team
CUS	customer
PM	project management
PJM	project manager
PO	product owner
SIS	software implementation and support
SL	scrum leader
TE	task event

TL technical leader

WP work product

Note the responsibilities of the DevOps team (DOT) extend beyond the development cycle to include software/system support.

4 Naming, diagramming and definition conventions

This clause provides a description of the process structure and the notation used to describe the processes.

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

Process purpose – high level objective of performing the process and the likely outcomes of effective implementation of the process.

Process outcomes – observable result of the successful achievement of the process purpose. Outcomes are identified by the abbreviation of the process name, followed by the letter “O” and a consecutive number, for example PM.O1, SIS.O2.

Events – key meetings throughout the software development to organize, evaluate, and adjust the work to be done to develop a product in an agile environment. For the purpose of this guide, an event is composed of a set of tasks to be performed. An event is the first level of process workflow decomposition, and the second one is a task. Events are identified by a process name abbreviation followed by a consecutive number and the event name. Each event description is identified by the event name and the list of related outcomes surrounded by parentheses “()”. For example, PM.O1 Project planning (PM.O1, PM.O5, PM.O6, PM.O7) means the event PM.O1 Project planning contributes to the achievement of the listed outcomes: PM.O1, PM.O5, PM.O6 and PM.O7. The event description begins with the task summary and is followed by the task descriptions table. The selection of the techniques or methods is left to the VSE or project team.

Input work products – work: products required to perform the process and its corresponding source, which can be another process or an external entity to the project, such as the customer. They are identified by the abbreviation of the process name and shown as two-column tables of work product names and sources. Parentheses after the work product name show the state of the work product.

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 customer or organizational management. They are identified by the abbreviation of the process name and shown as two-column tables of work product names and destinations. Parentheses after the work product name show the state of the work product.

Internal work products – work products generated and consumed by the process itself. An internal work product is not reviewed or approved by the customer. They are identified by the abbreviation of the process name and shown as one-column tables of the work product names. Parentheses after the work product name show the state of the work product.

Roles involved – names and abbreviations for the sets of tasks and responsibilities which project team members are assigned. Several roles may be played by a single person, and one role may be assumed by several persons. Roles are assigned to project participants based on the characteristics of the project. The role list is identified by the abbreviation of the process name and shown as a two-column table. See [Table 9](#) for the alphabetical list of the roles, its abbreviations and required competencies description.

Diagram – graphical representation of the processes. The large round-edged rectangles indicate an event, and the smaller square-edged rectangles indicate the work products. The directional or bidirectional thick arrows indicate the major flow of information between events. The thin directional or bidirectional arrows indicate the input or output work products. The notation used in the diagrams does not imply the use of any specific process life cycle.

Task – description of the task to be performed. The practices to be performed from an agile method such as scrum or XP. Therefore, an agile task is identified by indicating that it is a task event TE; PM or SIS specifies if it is a project management event or a software implementation and support event, and the event number with a consecutive number, for example TE.PM.1.2, TE.PM.2.1, TE.SIS.1.1.

Input work products - work products required to execute a task.

Output work products - work products created or modified by the execution of a task.

Incorporation to the organizational repository – list of work products to be saved in the organizational repository.

NOTE 1 Tables used in the process description are for presentation purposes only.

NOTE 2 The term 'Basic' uses a capital 'B' to indicate an ISO/IEC 29110 profile (e.g., the Basic profile) whilst the term 'basic' is used when referring to the most important part of something (e.g., basic principles).

5 Overview

5.1 General

This clause provides guidelines for VSEs that want to reinforce their agile environment to develop and support software using an agile/DevOps method with practices of the ISO/IEC 29110 series. See [Annex C](#) for more details on how this document was developed.

5.2 Project management process of the Basic profile and the agile/DevOps events performed to manage the project

[Figure 2](#) presents an overview of the project management process of the software Basic profile compared with the events of the agile/DevOps methods performed to manage the project and provide ongoing support. The events not related to project management are greyed. Each event is described in detail in [Clause 6](#).

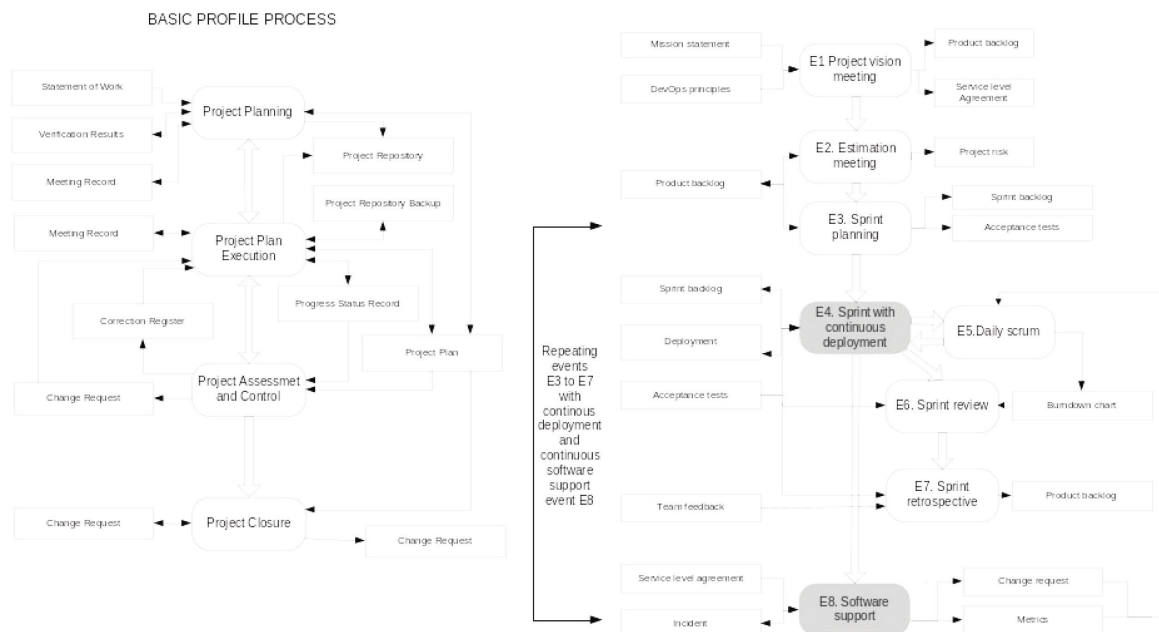


Figure 2 — Overview of the project management process of the Basic profile and the agile/DevOps events

5.3 Software implementation process of the Basic profile and the agile/DevOps events performed to implement the project and provide ongoing support

[Figure 3](#) presents an overview of the software implementation process of the software Basic profile compared with the events of the scrum and DevOps methods performed to implement the project and provide ongoing support. The events not related to software implementation and support are greyed. Each event is described in detail in [Clause 6](#).

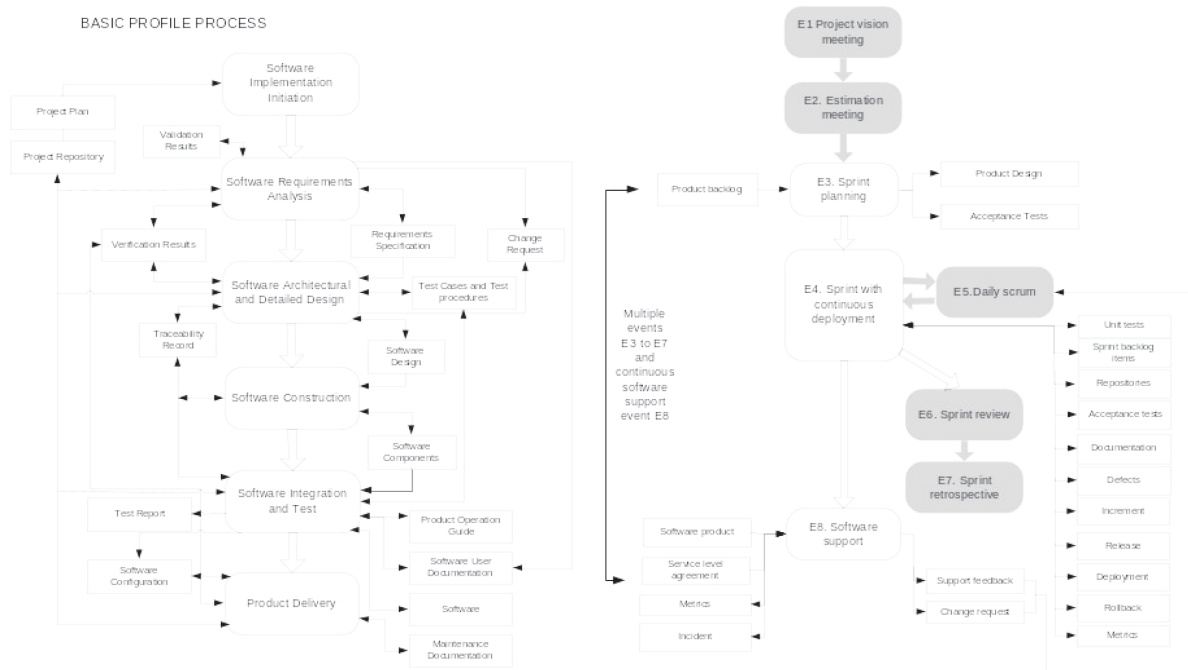


Figure 3 — Overview of the software implementation process of the Basic profile and the agile/DevOps events

5.4 Roles involved

The list of roles involved for the project management and the software implementation and support events are:

- Customer
- Product owner
- Scrum leader
- DevOps team
- DevOps specialist

6 Agile/DevOps software development process

This clause provides a description in detail of the agile/DevOps development processes.

6.1 Agile/DevOps project management process

6.1.1 Agile/DevOps project management process purpose

The purpose of the agile/DevOps project management process is to achieve the project's time, quality and cost objectives by establishing and executing the tasks of the software implementation project systematically whilst integrating ongoing support into the process. It also carries out administrative tasks relating to the storage, handling, protection and delivery of work products and configuration items.

This document is intended to be used by the VSE to establish processes to implement an agile/DevOps approach based on the VSE or project needs.

6.1.2 Agile/DevOps project management process outcomes

PM.01. The project plan for the execution of the project is developed according to the agreement and reviewed and accepted by the customer. The tasks and resources necessary to complete the work are sized and estimated.

PM.02. The progress of the project is monitored against the project plan and recorded in the progress status record. The customer approves changes to the project plan. Corrections to remediate problems and deviations from the plan are taken when project targets are not achieved. Closure of the project is performed to get the customer acceptance documented in the acceptance record.

PM.03. The change requests are addressed through their reception and analysis. Changes to requirements are evaluated for cost, schedule and technical impact. Change requests that impact the project plan, the requirements or the agreement are approved by the customer.

PM.04. Review meetings with the work team and the customer are held. Agreements are registered and tracked.

PM.05. Risks are identified as they develop and during the conduct of the project.

PM.06. A software and environment version control strategy is developed. Items of software product are identified, defined and baselined. Modifications and continuous release of the items into a production environment are controlled and made available to the customer and work team. The storage, handling and delivery of the items are controlled.

PM.07. Software quality assurance is performed to provide assurance that work products and processes comply with the project plan and requirements specification.

NOTE Software quality assurance is implemented through the performance of the verification, validation and review tasks performed in project management and software implementation processes.

NOTE ADD DEVOPS BIT

6.1.3 Overview of the agile/DevOps project management process

[Figure 4](#) presents an overview of agile/DevOps project management. The events not related to project management are greyed. Each event is described in detail in [sections 6.3 to 6.9](#).



Figure 4 — Overview of the agile/DevOps project management process

6.2 Agile/DevOps software implementation and support process

6.2.1 Agile/DevOps software implementation and support process purpose

The purpose of the agile/DevOps software implementation and support process is the systematic performance of the analysis, design, construction, continuous integration, testing activities and assembly of work products for a new or modified software product according to the specified requirements, whilst incorporating support tasks for live software in the workflow. This document is intended to be used by the VSE to establish processes to implement an agile/DevOps approach based on the VSE or project needs.

6.2.2 Agile/DevOps software implementation process outcomes

SIS.01. Tasks of the activities are performed through the accomplishment of the current project plan.

SIS.O2. Software requirements are defined, analysed for correctness and testability, approved by the customer, baselined and communicated. Traceability between customer requirements and software requirements is established.

SIS.O3. Software architectural and detailed design is developed and baselined. It describes the software components and internal and external interfaces of them. Consistency and traceability to software requirements are established.

NOTE 1 Software architecture and detailed design can be performed separately according to the project schedule.

SIS.O4. Software components defined by the design are produced. Unit tests are defined and performed to verify the consistency with requirements and the design. Traceability to the requirements and design are established.

SIS.O5. Software is produced performing integration of software components and verified using test cases and test procedures. Results are recorded in the test report. Defects are corrected and consistency and traceability to software design are established.

SIS.O6. A software product, that meets the requirements specification as agreed to with the customer, which includes user and operations documentation is integrated, baselined and stored in the project repository. Needs for changes to the software product are detected and related change requests are initiated. When the software product is 'done' it is released into the production environment.

SIS.O7. Verification and validation tasks of all required work products are performed using the defined criteria to achieve consistency among output work products and input work products in each activity. Defects are identified and corrected; records are stored in the verification/validation records.

NOTE 2 It is not the intention that all verification activities and work products are made available to the customer. Verifications are performed by individuals that have organizational freedom, authority, to permit objective evaluation, and to initiate, effect, resolve and verify problem resolution.

SIS.O8. Monitoring of the production environment and the software running in it and receipt of defect information from customers, response and restoration of service and provision of input to the project management process.

6.2.3 Overview of the agile project management/DevOps software implementation and support process

[Figure 5](#) presents an overview of the agile/DevOps software implementation and support process. Events not related to software implementation and support are greyed. Each event is described in detail in [sections 6.4](#) to [6.10](#).

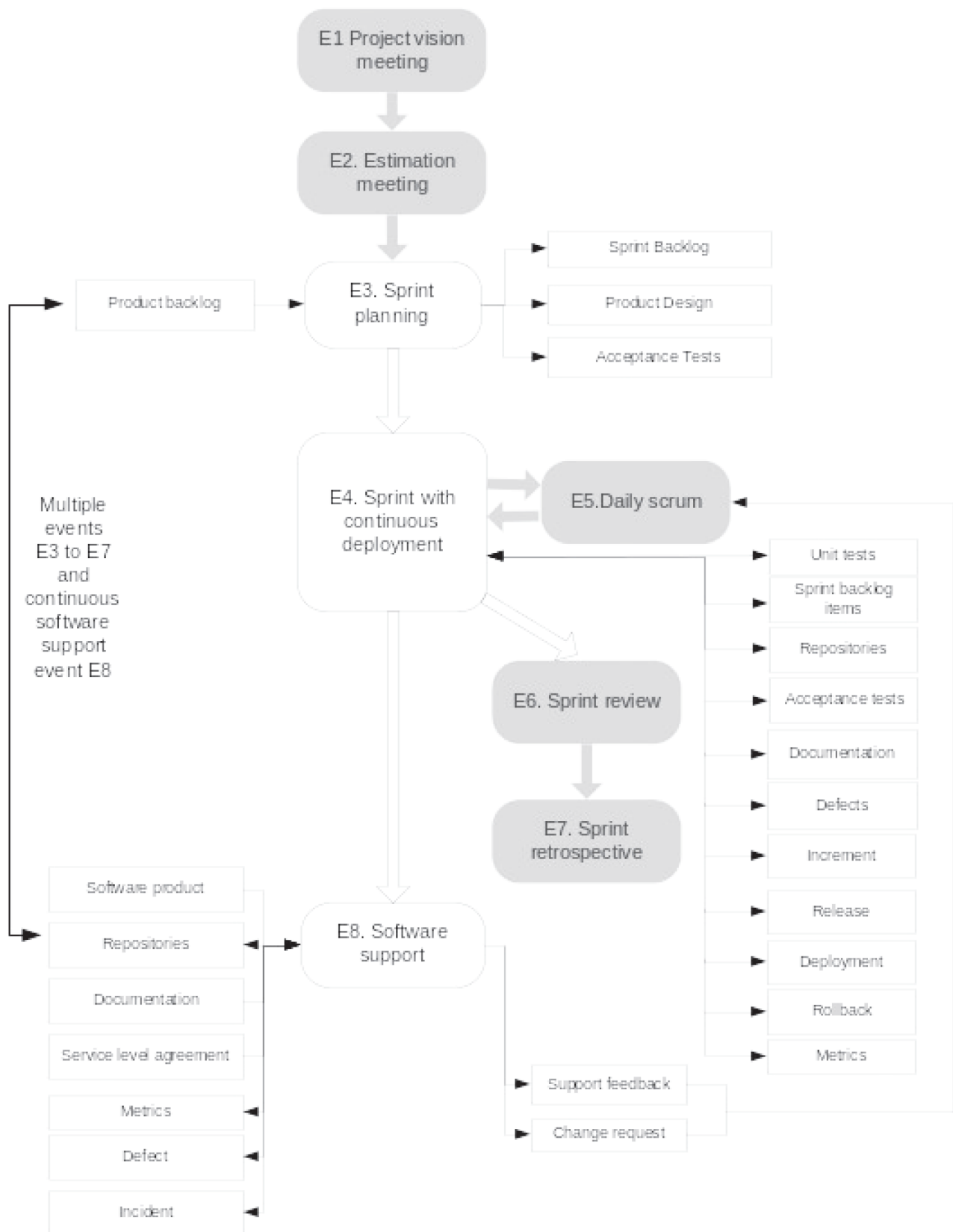


Figure 5 — Overview of the agile/DevOps software implementation and support process

6.3 Event 1 - project vision meeting (contributes to outcome PM.01)

6.3.1 Justification

The VSE and the customer use the mission statement and the DevOps principles to determine the events that should be performed. Descriptions of these work products are provided in [Annex A](#).

6.3.2 Overview of event 1- project vision meeting

[Figure 6](#) shows event 1, the project vision meeting. The event receives the mission statement and the DevOps principles which the project will use as inputs and produces a reviewed mission statement, the initial service level agreement for the product to be delivered, the agreed DevOps team, prioritized product backlog and the number of sprints planned.



Figure 6 — Overview of event 1 - project vision meeting

6.3.3 Tasks of event 1 - project vision meeting

[Figure 7](#) shows the tasks of event 1.



Figure 7 — Tasks of event 1 - project vision meeting

Table 1 provides the list of tasks of event 1.

Table 1 — Event 1 - project vision meeting task list

Role	Task list	Input work products	Output work products
CUS PO SL	TE.PM.1.1 Reviewing the mission statement supplied by the customer. 1) Using the mission statement, the developers and the product owner get an understanding of the requested product. 2) If the VSE has not documented its mission statement, a template is provided in Annex A .	Mission statement [Developed]	Mission statement [Reviewed]
PO SL	TE.PM.1.2 Assigning people to the DevOps team. 1) During the project vision meeting the DevOps team is formed and their names added to the project plan. A DevOps specialist (DS) may be nominated as part of the team.	Mission statement [Reviewed]	Project plan: — DevOps team assigned [Reviewed]

Table 1 (continued)

Role	Task list	Input work products	Output work products
CUS PO SL DS DOT	TE.PM.1.3 Determining how the product is to be delivered in context of the mission statement and DevOps principles. 1) A summary of DevOps principles is provided in Annex C 2) The DevOps team and the product owner decide how they will implement DevOps principles including acceleration of flow into production, amplifying feedback loops, minimizing technical debt, fostering trust, experimentation and learning and maximizing automation. These decisions consider the level of automation which is possible and practical for the product and are documented in the DevOps approach. 3) The DevOps approach determines the delivery strategy for the project. A project with an agile approach will deliver functionality to the customer at the end of each sprint. The two approaches are combined in an agile/DevOps project by using a continuous delivery approach within the sprint. The is delivery may either be into a production environment or a production-like environment, depending on the customer needs and the specific approach chosen. 4) The repository approach, which includes the software configuration management strategy and automation of its usage in the project through use of DevOps tools, is an important part of the DevOps approach. 5) To meet audit requirements, the customer may be required to sign off the project deliverables before deployment into production. For a DevOps project, the customer pre-agrees this signoff, conditional on agreed criteria. 6) The DevOps approach specifies the metrics which will be used to drive continuous improvement. These could include deployment frequency, lead time, mean time to recovery, and change failure rate. Suggested metrics suitable for a VSE are provided in Annex E. 7) If DevSecOps is the focus, the DevOps approach includes a focus on how security considerations are to be emphasized and included at every step. 8) A template for a DevOps approach is provided in Annex A.	DevOps principles [Reviewed]	DevOps approach [Agreed] Repository approach [Developed]