



BSI Standards Publication

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

Part 5-2-1: Organizational management guidelines

National foreword

This British Standard is the UK implementation of ISO/IEC 29110-5-2-1:2025. It supersedes PD ISO/IEC TR 29110-5-2-1:2016, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee IST/15, Software and systems engineering.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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29110-5-2-1**

**Systems and software
engineering — Life cycle 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: Lignes directrices de gestion organisationnelle

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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 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).

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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 Technical ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*.

This first edition cancels and replaces ISO/IEC TR 29110-5-2-1:2016, which has been technically revised.

The main changes are as follows:

- major editorial changes were made to align this document with other parts in the ISO/IEC 29110 series;
- it has been clarified that this document can be used by VSEs that have at least one operational process implemented by projects or by services;
- Annex A has been deleted as this document can be applied to any type of VSE that has at least one operational process;
- Annex B has been deleted because the mapping to the base standards is made in ISO/IEC 29110-4-2.

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 and www.iec.ch/national-committees.

Introduction

0.1 Introduction to the ISO/IEC 29110 series

Very small entities (VSEs) around the world are creating valuable products and services. For the purpose of the ISO/IEC 29110 series, a VSE is an enterprise, an organisation (e.g. government agency, non-profit organisation), a department or a 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.

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. 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 did not address the needs of VSEs. Implementation of and conformity with these standards was 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 lifecycle 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.

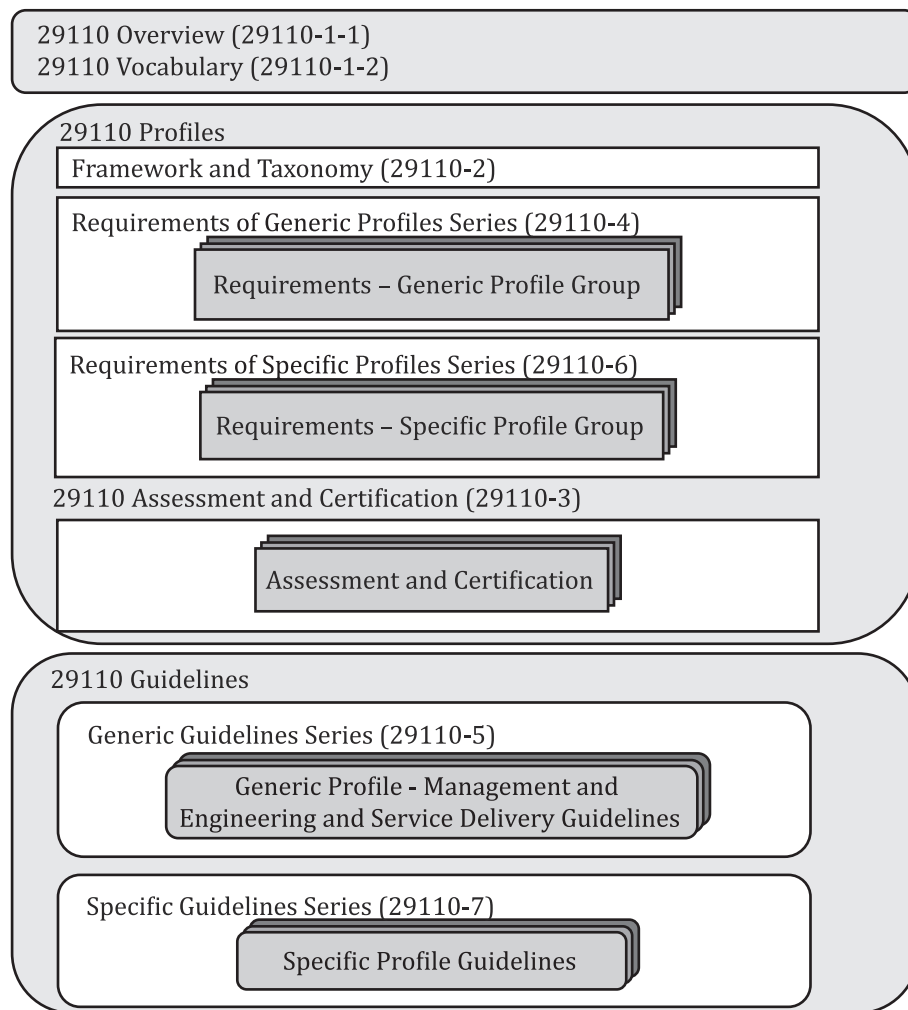


Figure 1 — ISO/IEC 29110 series

ISO/IEC 29110-1-1 introduces processes, lifecycle 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, conformance, assessment). For domain-specific profiles (profiles that are not standardised and developed outside of the ISO process), it provides general guidance adapted from the definition of standardised 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.

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 customers.

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 or ISO/IEC 29110-6 can be developed with minimal impact to existing documents.

0.2 Introduction to this document

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:

- formalizing and following its business strategy in a measurable and controlled way;
- controlling projects or services' human and material resources;
- managing the generation and accomplishment of its projects or services;
- continuously improving its operational and administrative processes;
- continuously monitoring the customers satisfaction.

Conformity requirements for implementations of this document can be found in ISO/IEC 29110-4-2.

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

Part 5-2-1: Organizational management guidelines

1 Scope

This document provides management guidelines to the organizational profile specified in ISO/IEC 29110-4-2 through organizational management, product portfolio management, resource management and process management processes.

This document applies to VSEs that develop software or works thru operating processes.

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

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 29110-1-2, *Systems and software engineering — Lifecycle profiles for Very Small Entities (VSEs) — Part 1-2: Vocabulary*

3 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 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

process map

document that defines the process elements and their connexions

3.2

product

project or service that is the result of a process

4 Naming, diagramming and definition convention

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 – 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 OM.01, RM.02.

Input work products – Work products (WP) which can be used to perform the process and its corresponding source, which can be another process or an external entity to the process, such as the customer. 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 process, such as customer. Identified by the abbreviation of the process name.

Internal work products – Work products generated (i.e. output work product) and consumed (i.e. input work product) by the process. Identified by the abbreviation of the process name.

All work products’ names initiate with capital letters. Some work products should have one or more statuses attached to the work product name surrounded by square brackets “[]” and separated by “,”. The work product state may change during the process execution. See [Clause 11](#) for the alphabetical list of the work products, its descriptions, possible states and the source of the work product. The source can be another process or an external entity to the process, such as the customer.

Roles involved – Names and abbreviation of the functions to be performed by processes, projects or services team members. Several roles may be played by a single person and one role may be assumed by several persons. Roles are assigned to processes, projects or to services participants based on the characteristics of the process, project or service. The role list is identified by the abbreviation of the process name and showed as two column table. See [Clause 10](#) for the alphabetical list of the roles and required competencies description.

Diagram – Graphical representation of the processes. The large round-edged rectangles indicate process or activities, and the smaller square-edged rectangles indicate the work products. The directional or bidirectional thick arrows indicate the major flow of information between processes or activities. 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 lifecycle.

Activity – A set of cohesive tasks of a process. The task statements in this document are not imperative. A process activity is the first level of process workflow decomposition, and the second one is a task. Activities are identified by process name abbreviation followed by consecutive number and the activity name.

Activity description - Each activity description is identified by the activity name and the list of related process outcomes surrounded by parentheses “()”. For example, PSM.01 process management planning and monitoring (PSM.01, PSM.05) means that the activity PSM.01 contributes to the achievement of the listed process outcomes: PSM.01 and PSM.05.

Tasks description table contain four columns corresponding to:

- Role - the abbreviation of role(s) involved in the task execution.
- Task - description of the tasks to be performed. Each task is identified by activity ID and consecutive number, for example PSM.01.01, PSM.01.02. A few numbered items are added to provide additional information intended to assist the understanding or use of tasks.
- Input work products – work products needed to execute the task.

— Output work products – work products created or modified by the execution of the task.

NOTE 1 A conditional task is executed if its associated work product (e.g. software user documentation) is required by the customer and listed in the delivery instructions. The conditional task statement is preceded with this text: " x) Conditional task:".

Incorporation to the organizational repository – list of work products to be saved in organizational repository; the organizational repository strategy should be applied to some of them.

NOTE 2 Tables used in process description are for presentation purpose only.

NOTE 3 The term 'Basic' is using a capital 'B' to indicate an ISO/IEC 29110 profile (e.g. the Basic profile) while the term 'basic' is used when referring to the most important part of something (e.g. basic principles).

NOTE 4 A work product is baselined when it has been approved and uploaded in the repository.

4.3 Abbreviations

AS	assessor
CUS	customer
OM	organizational management
PG	planning group
PSMG	process manager
PPMG	product portfolio manager
PSM	process management
PPM	product portfolio management
PDM	product manager
PO	process owner
RM	resource management
RRM	resource manager
VSE	very small entity

5 Overview

5.1 General

This document provides organizational management (OM), resource management (RM), process management (PSM), and product portfolio management (PPM) processes which integrate tasks based on the selection of elements from ISO/IEC/IEEE 12207, ISO/IEC/IEEE 15288 and ISO/IEC/IEEE 15289.

This document is intended to be used by any VSE that needs to establish organizational processes to manage at least one operating process.

5.2 Entry conditions to use the organizational profile

To use this guideline, a VSE needs to fulfil the following entry conditions:

— The VSE is already working with at least one operating process like those suggested by the Basic profiles in the ISO/IEC 29110 series.

- The VSE knows and carries out its business but requires formalizing its management
- The VSE identifies the external or internal best practices sources (standards, models, methods and techniques) and uses them as a basis for the process definition and improvement.

5.3 Processes and activities of the organizational profile

This document provides four processes: an organizational management (OM), resource management (RM), process management (PSM), and product portfolio management (PPM) processes.

All the processes of the organizational profile are interrelated (see [Figure 2](#)).

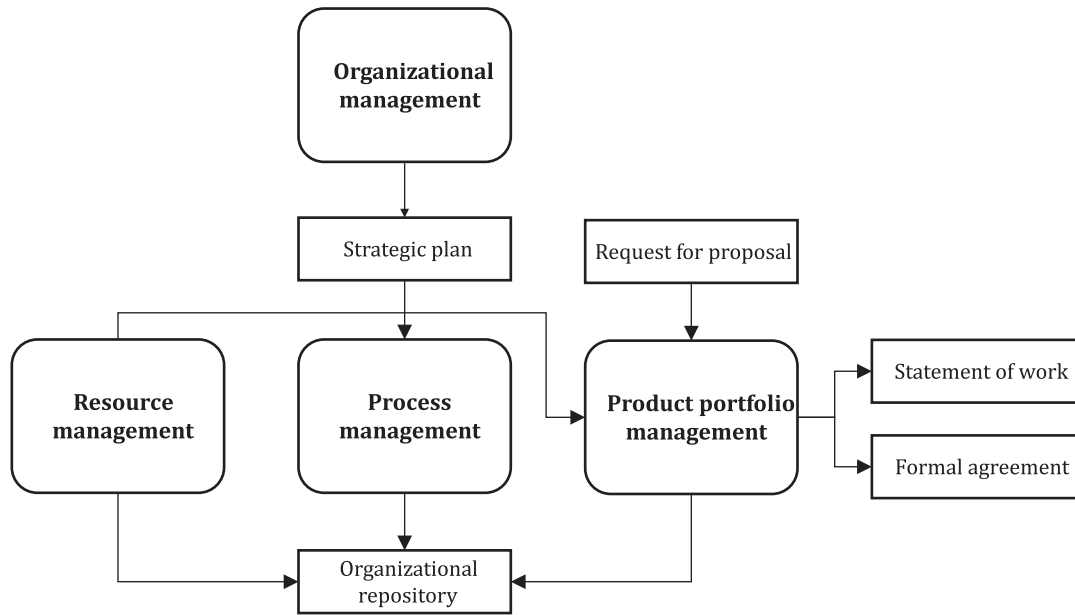


Figure 2 — Process and activities of the organizational management profile

The OM process makes sure that value is delivered by the VSE to its customers through planning, organizing, monitoring and controlling organizational activities. The RM process obtains and provides the organization with the necessary resources. The PSM process establishes and improves the organizational processes. The PPM process generates projects or implements services for the organization, provides technical content to establish the products formal agreements, and supervises its performance, while monitoring the customer satisfaction.

The OM process will generate the strategic plan that will guide the activities of the VSE.

The RM, PSM and the PPM processes receive the strategic plan as an input that will guide the activities of the VSE.

The RM process receives the resource request from all the processes, projects or services, analyses them and assigns resources to the processes, projects or services according to the resource policies and/or mechanisms.

The PSM process receives the process improvement suggestions from all the processes, analyses them and applies suggestions to the processes to improve them. The process evaluation activity evaluates the processes implementation finding strengths and weakness and coordinates the resolution of the weakness.

The PPM process receives the request for proposal from the customers, activates the accepted projects or services and supervises the correct execution of these products.

6 Organizational management (OM) process

6.1 OM process purpose

The purpose of the organizational management process is to make sure that value is delivered by the VSE to customer through planning, organising, monitoring and controlling organizational activities.

6.2 OM process outcomes

OM.01. Establish or refine an appropriate value proposition and its corresponding business model description.

OM.02. Develop or revise objectives for the organization, based on the business model description, and establish the strategies and resources necessary to support those objectives.

OM.03. Measure the achievement of the objectives, identify deviations and control actions.

6.3 OM roles involved

The roles involved in the OM process are:

- organizational manager;
- planning group.

6.4 OM activities and tasks

6.4.1 Overview of the OM process

[Figure 3](#) shows the flow of information between the organizational management process activities including the most relevant work products and their relationship.

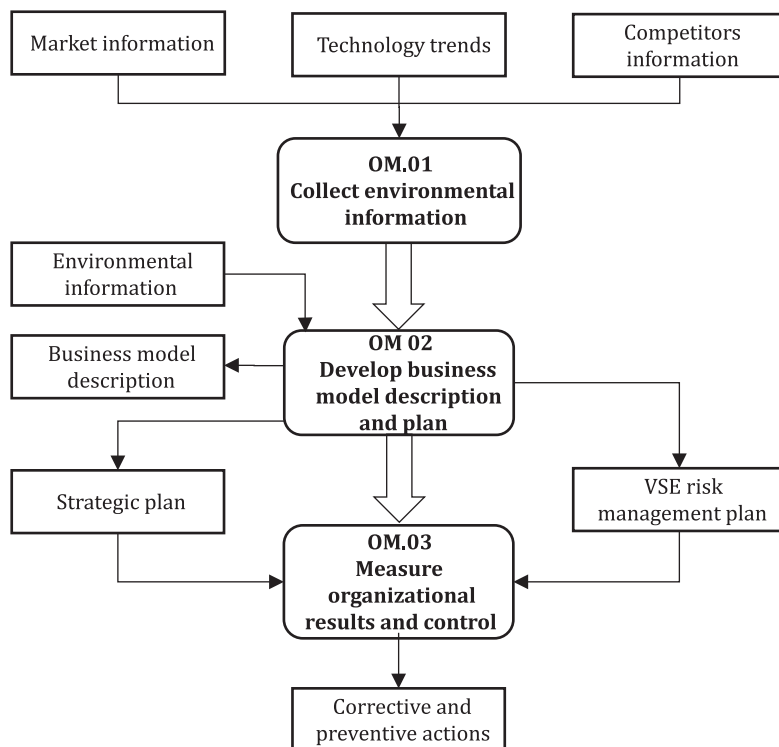


Figure 3 — Organizational management process

6.4.2 OM activities

6.4.2.1 General

The organizational management process should have the following activities:

- OM.01 Collect environmental information.
- OM.02 Develop the business model description and plan objectives and strategies.
- OM.03 Measure organizational results and control.

6.4.2.2 OM.01 Collect environmental information (contributes to OM.01)

This activity makes sure the VSE has the necessary environmental information to plan with a solid basis. The activity provides:

- a report with market information, technology trends and competitors' information.

The task list for OM.01 is given in [Table 1](#).

Table 1 — OM.01 task list

Roles	Task List	Input work products	Output work products
OM	OM.01.01 Collect information about market changes. 1) Review changes of consumer needs and habits	Market information [external]	Environmental information report [identified] — Market information
OM	OM.01.02 Collect information about technology trends. 1) Review latest trends in information technology solutions and other related technologies	Technology trends [external]	Environmental information report [identified] — Technology trends
OM	OM.01.03 Collect information about competitors. 1) Review important actions, market strategies and product improvements	Competitors information [external]	Environmental information report [identified] — Competitors information

6.4.2.3 OM.02 Develop business model description and plan (contributes to OM.02)

This activity generates the business model description and the strategic plan based on environmental information and budget restrictions. The activity provides:

- the business model description and the strategic plan;
- a VSE risk analysis management plan to prevent possible risks.

The task list for OM.02 is given in [Table 2](#).

Table 2 — OM.02 task list

Roles	Task List	Input work products	Output work products
OM	OM.02.01 Identify participants to the planning group. 1) The first time the group is formed with the main actors of the VSE 2) In subsequent times the group is formed with each process responsible, including operational processes	Process definition [created or updated] — Process owner	Strategic plan [created, updated] — Planning group
OM PG	OM.02.02 Schedule planning sessions. 1) Schedule planning sessions 2) Identify resources and or services needed 3) Acquire resources and services needed for the sessions	Strategic plan [created, updated] — Planning group	Planning agenda [created, updated] — Date — Location — Participants — Resources and/or services
OM	OM 02.03 Establish budget restrictions.	Financial information [created, updated]	Budget restrictions [created, updated]
OM PG	OM.02.04 Develop or revise the business model description. 1) Identify target customer segments based on market information and technology trends 2) Establish a value proposition identifying problems, needs and desires of customers 3) Identify the customer relationship type(s) and channel(s) to be established, including sales channel(s) 4) Identify key partners and suppliers needed to provide value to customers and the type of relationship to be established with them 5) Identify key processes, projects, services, activities and resources needed to provide value to customers, including those needed to establish and maintain customer and partners relationship 6) Identify key functional areas and organizational structure	Planning agenda [created] Environmental information report [identified]	Business model description [created, updated] — Target customer — Value proposition — Customer channels — Partners and suppliers — Key processes — Key projects — Key services — Key resources — Key functional areas — Organizational structure
OM PG	OM.02.05 Develop or revise objectives for the VSE. 1) Develop or revise the VSE's mission, vision and values. 2) Establish middle and short-term objectives for the VSE, with indicators and goals for each indicator, including sales and quality objectives, based on the business model description.	Business model description [created, updated] Budget restrictions [created, updated]	Strategic plan [created, updated] — Mission — Vision — Values — Objectives