A PRACTICAL GUIDE

ISO 56002:2019
Innovation
management system

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

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Foreword

Compare your life now to how it was a decade ago. In the past, almost all aspects of life involved more effort, whether it was getting a taxi, renting your favorite movie, or ordering a meal. Today, we can do most of these activities while sitting in a comfortable armchair with nothing more than a small touchscreen phone. All these products, processes, and services have come about because creative people or companies saw an opportunity in the marketplace and came up with an innovative solution. It may seem that some of these innovations came about by a fluke, but in most cases, they are the result of a carefully managed process. The ISO 56002:2019, *Innovation management system – Guidance¸* developed by ISO/TC 279, *Innovation management*, aims to provide organizations with the support they need to develop a systematic approach to effective and efficient innovation. In other words, it is a tool to help your organization spotlight great ideas and initiatives that are directly linked to your vision. This handbook focuses on the fundamental principles of innovation management, which include strategic direction, organizational culture, insights, and adaptability.

Organizations of all sizes and sectors can benefit by following the guidelines and ensuring that they are able to adapt and evolve with their environment. To further support organizations on their innovation management journey, this handbook has been published with the aim of extending the guidelines from ISO 56002:2019.

The content of the handbook is structured to help users understand the processes to successfully innovate and deliver value to stakeholders. Similar to the application of standard ISO 56002:2019, any type of organization can use this handbook. It is of particular interest to SMEs looking to develop or improve a structured approach to innovation.

The International Organization for Standardization (ISO) and the United Nations Industrial Development Organization (UNIDO) have jointly published this handbook with the immense support of ISO/TC 279. UNIDO initiated the drafting of the handbook simultaneously with the development of the ISO 56002:2019 standard for dissemination in developing countries as a capacity development tool for standard bodies, innovation institutions, and academia. For its finalization and validation, a dedicated task force was established within the ISO/TC 279. The handbook provides practical tools and methods to countries for more and better innovations towards inclusive and sustainable development.

We hope your Organization can benefit from this publication and become more resilient, innovative, and prepared for an ever-evolving world.

Gerd Müller
Director General
UNIDO

Sergio Mujica
Secretary-General
ISO

Introduction to the innovation management system

'Systematic innovation requires a willingness to see change as an opportunity'
– Peter Drucker

'No innovation or standard should be rejected as too costly without careful evaluation of the *cost of not doing it*'
– Grace Hopper

'The best way to predict the future is to create it'
– Abraham Lincoln

'Only one can be the cheapest; everyone else has to innovate'
– Raymond Turner

'Genius is 1% inspiration, 99% perspiration'
– Thomas Edison

'When the winds of change blow, some people build walls and others build windmills '
– Chinese Proverb

What 'good' looks like when it comes to managing innovation.

Introduction to innovation management

Innovation is widely recognized as being a key factor in driving economic growth, development of society and increased well-being. Despite good intentions and successful pilots, organizations often struggle to make innovation an enduring and sustainable part of their business.

If you have...

- generated ideas through creativity sessions, design thinking, or online inventiveness and want to take them to the next level;
- struggled to commercialize ideas that your team has generated;
- recently taken up responsibility for innovation, and wondered where to start;
- identified a need to fundamentally transform your organization; or
- a drive to simply do things differently.

... and you want to...

- be confident that you're solving the right problems;
- generate solutions that will disrupt your market;
- build confidence in your ability to manage innovation; or
- avoid some of the common innovation pitfalls.

... then you should consider taking a formalized and systemic approach to delivering innovation.

INNOVATION

Innovation is the successful exploitation of a new idea to realize value. It can relate to a product, a service, a process, a model or any combination of these. Some ideas are small, some are big; but innovative ideas will be novel and will make a difference.

INNOVATION MANAGEMENT

Innovation management is about defining, planning and executing the steps required to progress ideas into innovations. It is a discipline that combines the freedom and creativity of generating ideas with the formality required to manage risks, investments and project implementation.

INNOVATION MANAGEMENT SYSTEM

An **innovation management system (IMS)** is a set of interrelated and interacting elements and activities that enable an organization to develop and enhance its innovation capabilities. These elements and activities include an understanding of the organizational context, leadership commitment towards innovation and realization of value, formal and systemic planning, support and operation of innovation activities, and sustained monitoring and measurements to drive continuous improvement.

This overview of the ISO 56002:2019, *Innovation management — Innovation management system — Guidance*, provides a short introduction to what good looks like when it comes to managing innovation according to experts from over 50 countries.

Consistently generating ideas that will ensure the viability and sustainability of a business requires a conscious decision to put a system in place which will:

- ensure the effort spent on innovation is aligned to, and supports your overall business strategy;
- provide talent-related requirements such as programmes, tools and techniques that enable all your employees to derive creative solutions to the challenges they face, and to transform those insights and ideas into tangible business value that can be measured;
- drive behaviours and activities that can result in attracting new customers or expanding into new markets; and
- support exposure to novel technologies and partnerships which could give a competitive advantage or build intellectual property (IP).

It's likely that your competitors will be embedding innovation in all that they do, quickly responding to changes in markets and operating conditions, and achieving sustained and repeatable innovation success. Ad hoc innovation does add value in the short term, but without systematic support, it will tend to be sporadic and non-sustainable.

You can secure sustained innovation capabilities by implementing a systematic approach. An innovation management system helps you promote, facilitate and manage innovation to realize your organization's full innovation potential.

Innovation management principles

The foundation and successful management of an innovation system depends on a number of key principles.

▸ **Principle 1:** Realization of value
The purpose of innovation is to realize value, whether financial or non-financial, through identifying, understanding, and satisfying the needs and expectations of interested parties.

▸ **Principle 2:** Future-focused leaders
Leaders across the organization need to inspire and engage all teams to challenge the status-quo and balance short-term performance with resourcing future success.

▸ **Principle 3:** Strategic direction
The innovation vision, innovation strategy and associated innovation objectives must be defined and aligned with the overall strategic direction of the organization.

▸ **Principle 4:** Culture
A focus on operational excellence and efficiency needs to be broadened to develop values, beliefs and behaviours that support the creation and implementation of new ideas.

▸ **Principle 5:** Exploiting insights
Identify needs and opportunities, and then apply a systematic approach to gain diverse insights that can be exploited to generate new ideas to realize value. Go beyond the obvious and incorporate a glimpse of the future.

▸ **Principle 6:** Managing uncertainty
Balance the exploitation of ideas with the management of risks. Taking a portfolio approach allows experimentation and exploitation, building confidence during times of uncertainty.

> **Principle 7:** Adaptability
> Exploiting new ideas often requires changes to structures, processes, skills and delivery models. Embrace these changes and provide support to those implementing them.

> **Principle 8:** Systems approach
> Work together towards a common innovation purpose by understanding all the components. Managing innovation as a system improves learning, effectiveness and impact.

INNOVATION APPETITE

Many organizations are put off of innovation because it is perceived to be 'disruptive' or 'radical' and focused on inventing something new. Perhaps you believe it doesn't apply to you because you don't have an R&D department; or perhaps you work in a not-for-profit or charity and are not focused on generating new products (or even on generating profits).

Innovations with high a degree of novelty grab the headlines, but there are levels of innovation that can impact any organization and that are relevant across all sectors.

ISO 56000:2020, *Innovation management – Fundamentals and vocabulary* defines those different levels as follows:

- ▶ Incremental innovation is about improving what you do today.
- ▶ Radical or breakthrough innovation is an innovation with high degree of change where the change can relate to the product or service itself or to its impact.
- ▶ Disruptive innovation is an innovation that initially addresses less demanding needs, displacing established offerings.

Each type of innovation carries different risks, and each organization should assess their own appetite for the risks and benefits of each approach as part of defining their innovation strategy.

ISO 56002:2019, *Innovation management system – Core components*

INNOVATION MANAGEMENT
Deliver repeatable and structured innovation
Embed innovation as a core business activity
Commercialize novel ideas to build value

EVALUATION & IMPROVEMENT
Define and use appropriate innovation metrics
Continuously improve the system
Evaluate outcomes and improve

INNOVATION PROCESS
Establish innovation delivery processes
Generate and protect intellectual property
Creating ideas and new thinking

LEADERSHIP & STRATEGY
Clarify leadership team roles and responsibilities
Set innovation vision & strategy
Define policy and processes

SUPPORT ACTIVITIES
Develop skills and capability
Formalise organizational structures for innovation
Manage documentation and information

CONTEXT & CULTURE
Agree intent, ambitions and aspirations
Inspire, empower and upskill your people
Understand the internal/external issues

An innovation management system consists of interrelated and interacting elements and activities that enable any organization to identify, record and display the policy, strategy, objectives and processes that are needed to fulfil its innovation aspirations.

The innovation management system coordinates and directs the organization's innovation activities to ensure alignment to their customer and business requirements. It also provides mechanisms to measure and improve innovation effectiveness and efficiency on a continuous basis.

Getting started

Getting started with innovation management isn't difficult, and can be achieved in a few simple steps:

1. Establish the need and context for innovation in your organization.
2. Identify one person to own and drive innovation who has the full support of the leadership team.
3. Set a vision for what you want to achieve through innovation.
4. Define an internal roadmap for innovation that's aligned to your corporate strategy and includes a set of objectives and measures.
5. Assign resources and give the people working in your organization the support, training and time they need to deliver innovation.
6. Identify innovation opportunities and challenges to focus on the creation of novel ideas. Verify those ideas with your users or customers, and develop them into new services, products or operations.

The introduction of an innovation management system will help to create a culture of innovation, which in turn will make your innovation activities 'sticky' and sustainable.

This overview relates to the ISO 56000 family of standards, developed by the International Organization for Standardization (ISO), and most specifically to ISO 56002:2019.

If this overview has been of interest, there is a key reference that you might find useful:

▶ ISO 56002, *Innovation management — Innovation management system — Guidance*

This standard provides comprehensive guidance for those looking to establish, implement, maintain and continually improve an innovation management system. Importantly, it doesn't mandate how you should innovate, but instead outlines aspects to be considered if you are planning to innovate. It is available at the ISO Online Browsing Platform: https://www.iso.org/obp.

Introduction

Purpose of this handbook

Innovation may appear to be a uniquely creative process, seemingly without structure. However, innovation rarely happens by chance, and it is more likely to result from an organized process that is sometimes not obvious, but nonetheless real. Accepting that innovation is the result of a process means that it is possible to organize activities in such a way that innovation is more likely to happen and will be more effective.

This handbook provides guidance for organizations wanting to innovate, and it expands upon the standard ISO 56002:2019, *Innovation management — Innovation management system — Guidance*. This handbook increases the understanding of and outlines a progressive implementation approach to the many recommendations of ISO 56002:2019. It is particularly focused on small and medium-sized enterprises (SMEs) where it can be used to initiate or improve innovation dynamics. The handbook is structured as a series of questions, followed by operational guidelines and explanations that are aligned with ISO 56002:2019. In some cases, it provides additional knowledge and tools that facilitate the launch of an innovation and the transition to become an innovative organization.

This handbook is the result of a collaboration between ISO and UNIDO, written by a panel of innovation and standardization experts.

Standardization background

Standardization is a tool for improving the relevance and competitiveness of any given organization. Standards are created at national, regional (such as European), and international levels. International Standards are published by the International Organization for Standardization (ISO) which is an independent, non-governmental international organization with a membership of 165 national standards bodies, **https://www.iso.org/about-us.html**.

Through its members, ISO brings together experts to share knowledge and develop voluntary, consensus-based, market-relevant International Standards that support innovation and competitiveness, and provide solutions to global challenges. In addition to other categories of standards, ISO has developed management system standards (MSS). A management system is the way in which an organization manages the interrelated parts of its business in order to achieve its objectives. Such objectives can relate to several different topics, including product or service quality, operational efficiency, social responsibility, environmental performance, health and safety in the workplace, and many more.

All ISO MSS are based upon a common harmonized structure that enables integration across management systems. Thus, an organization can implement several MSS and benefit from the additionality provided by an efficient approach to implementing different systems.

A MSS can be "Type A MSS" or Type B MSS". Type A contains requirements against which an organization can demonstrate alignment, whereas a Type B contains guidance that does not lead to certification.

After many national and multinational initiatives (see Annex A), in 2013, ISO set up a technical committee ISO/TC 279, *Innovation management*, to draft standards in the domain of innovation management. In 2019, ISO/TC 279 published a Type B MSS: ISO 56002:2019, *Innovation management — Innovation management system – Guidance*. The associated definitions of this guidance are published in ISO 56000:2020, *Innovation management — Fundamentals and vocabulary*, and are the founding elements of this handbook.

Understanding the system approach

ISO 56000:2020, *Innovation management — Fundamentals and vocabulary*, defines innovation as "a new or changed entity, realizing or redistributing value" where:

- Entity can refer to a product, service, process, model or method;
- Value can be financial or non-financial (e.g. image, strategic advantage, knowledge acquisition, IP); and
- Novelty (newness) and value are relative to, and determined by, the perception of the organization and interested parties.

Innovation is defined as an outcome rather than an activity, and innovation management is the method of defining, planning and executing the steps required to innovate.

Delivering successful innovation is an important challenge and often consumes considerable resources. However, it is becoming critical to innovate regularly, and this leads enterprises to look for an efficient way to manage innovation activities, and to integrate innovation activities into daily business life.

Managing innovation activities efficiently means being able to mobilize the adequate processes, resources, and skills at the right time. These interrelated and interacting elements and activities, when combined, form what ISO 56002:2019 defines as an innovation management system.

By developing an innovation management system that meets the needs of your organization, you will increase your ability to deliver new products, processes or services and business models. Formalizing the management system provides a solid basis for innovation and allows for continuous improvement. As with any management system, the innovation management system can be continuously improved by using and Plan-Do-Check-Act (PDCA) approach.

Structure of the handbook

Enterprises often start their innovation journey by seizing an opportunity, experimenting with the generation of ideas, and developing an innovation. For this reason, this handbook does not follow the exact sequence of ISO 56002:2019, which describes the various components of an innovation management system. Instead, this handbook addresses the process required to successfully deliver an innovation. The later sections then invite you to take a step back and look at all the other elements that should be considered when deploying an innovation management system to reinforce your enterprise's abilities to innovate.

The guidance presented in this handbook does not necessarily need to be implemented all at the same time, or even in the sequence shown. Taking a systems approach will ensure that all the elements are tied together and that your organization considers all the aspects and elements required to innovate successfully.

Delivering innovations

Do you consider that your organization has established adaptable processes for innovation initiatives?

The first concern of managers, when they start to get interested in the concept of an innovation management system, is to bring an innovation to the market in a structured way. This is why the first chapter of the handbook is devoted to delivering innovation. However, we strongly recommend that you read all the chapters as you aim to develop effective innovation capabilities (see **Figure 1**).
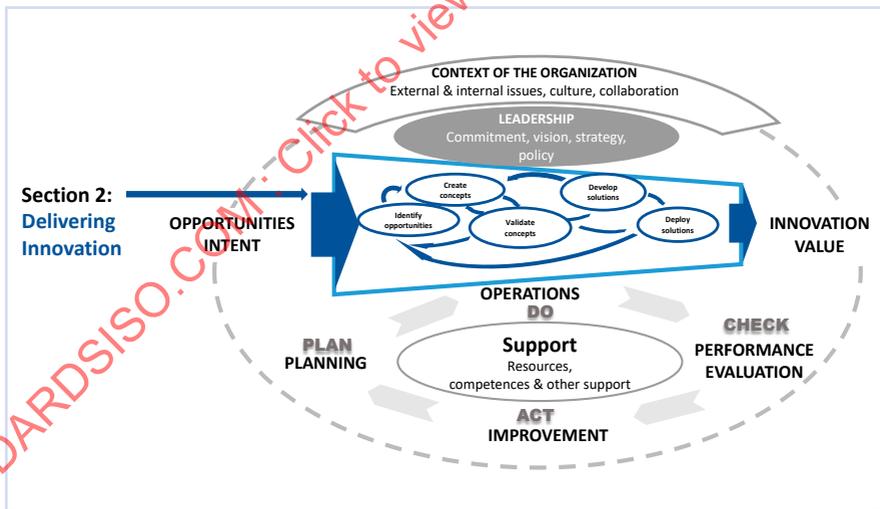

Figure 1: *ISO 56002:2019 Innovation Management System – Visual representation with relation to the second section of this handbook.*

Innovation initiatives

In terms of operational planning and control, ISO 56002:2019 suggests that every innovation activity needs to be managed, whether it leads to an incremental change or a more radical, disruptive change.

ISO 56002:2019 provides a comprehensive list of aspects and perspectives that each organization needs to consider, some of which are highlighted below.

SCOPE
Set a clear scope for the innovation activities – what is to be included and excluded; what are the objectives, constraints, expected outputs and deliverables?

INDICATORS
Define and agree on a set of measures to inform decision-making along the innovation processes and drive continuous improvement. Determine how these measures will be evaluated.

LEADERSHIP
Provide strong leadership to empower, encourage and support the team, ensuring they have the resources they need.

TEAM
Make sure the right people are involved and that they are available to review and make key decisions. Create a broader team when needed, and include suppliers, third parties, educational bodies, customers, and other interested parties when their input could add value.

DECISIONS
Agree how decisions are to be made and who will lead the process. There will be a lot of unknowns and uncertainties, so agreeing on the next steps will be critical throughout the innovation activities.

> **ROLES**
> Define all the key roles and ensure those taking on the roles are committed and understand their critical importance to the organization.
>
> **EARLY ASSET CAPTURE**
> Watch out for any opportunities to protect the IP you are building. It can be all too easy to give this away and fail to leverage the value it generates.
>
> **REVIEWING & LEARNING**
> Review and capture feedback to refine the process as it becomes integrated into the organization's other processes and systems.

When implementing your innovation activities, aim to manage the process consistently, whether you have one internal process or many and whether you plan one or several innovation activities.

When agreeing on the approach to managing innovation initiatives, seek input from many people across all disciplines within the organization. Lead this with positive determination and energy. Consider building a network online to make it easier to listen to and learn from others who have successfully innovated within their own organizations.

As you learn how others deliver successful innovation, carry out a further review of your own innovation model to refine it further.

Innovation processes

Well-structured innovation processes provide a framework to guide the organization through the steps required to address a need to change or to improve. Your organization needs to determine processes that work for you, and that are appropriate to the scope, constraints and ambitions of your innovation initiatives. The innovation processes guide those involved, step by step, on how to undertake the innovation activities.
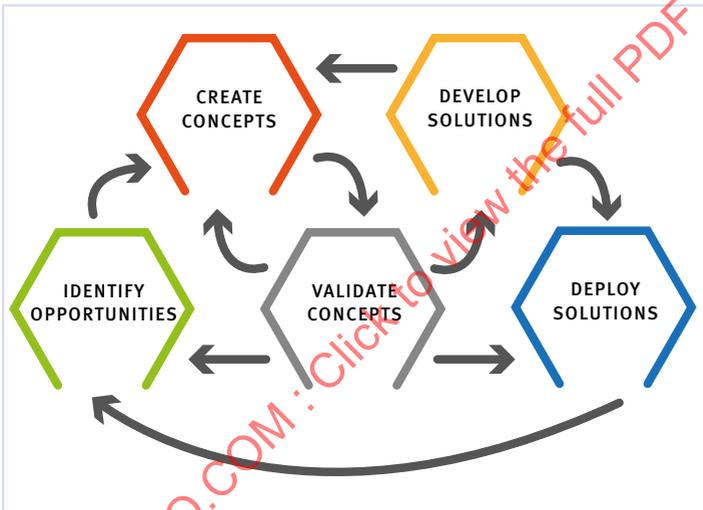
Figure 2: *Innovation Process following the ISO 56002:2019 Innovation Management System.*

Clear processes for innovation within your organization will enable you to authorize, empower and train your people to explore better ways of delivering positive outcomes. Organizational thinking is often bound within a set of organizational constraints, and the innovation processes grant permission to take a more open approach to exploring the root causes of any challenges, and to seeking out new and smarter solutions.

The previous diagram (**Figure 2**) shows how innovation processes are represented in ISO 56002:2019. Unlike more traditional processes and operating procedures, innovation processes are not linear, and it does require a more open mindset than is required for more traditional work practices.

Well-considered and effective innovation processes will provide guidance on:

- identifying the right opportunities and problems to address, for the benefit of your organization and the other interested parties;
- creating concepts that will address the challenge in the right way for all involved, whether this results in a small incremental change or in a disruptive or radical change;
- validating the concept, whether it is a new or updated service, product, technology platform or business model (or indeed a combination of all four) to ensure it meets the issue or challenge being addressed;
- developing the concept into a viable solution that can be exploited to have a positive impact, and realize value; and
- deploying the solution to its relevant market, once there is confidence that the right solution has been developed, and a commercialization plan has been agreed.
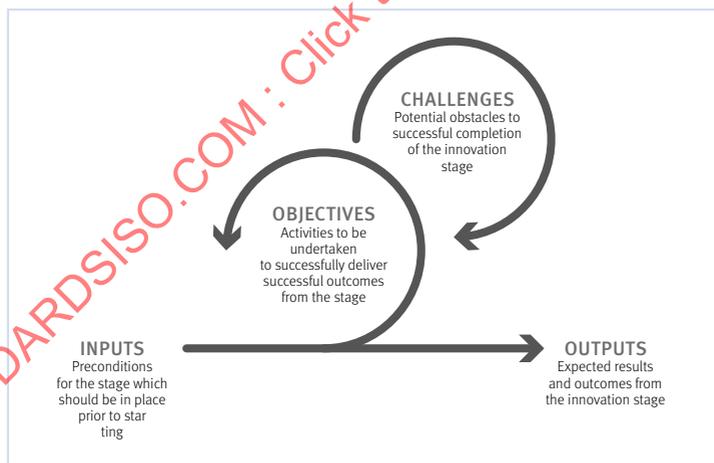

Figure 3: *Stages of Innovation.*

The sections below cover each stage in turn, using the simplified model shown in the diagram (**Figure 3**) above.

Identify opportunities

IDENTIFY OPPORTUNITIES

The first stage of the process is to identify and capture opportunities for innovation within the organization's context. This stage focuses on identifying areas of the organization, or its service or product offerings, that may lead to innovation and the generation, validation, development and ultimately deployment of new solutions.

Objectives of this stage

Novel ideas can originate from many places but many may be less relevant to a specific organization. To focus innovation effort, it is critical to set the scope and boundaries for the generation of new ideas. The scope for innovation will be influenced by gaining insights from market trends, research, horizon scanning and from a review of internal processes, products and services.

The opportunities must be aligned to organizational needs and aspirations and should take into account the learning and experiences from previous business activities.

Inputs into this stage

- The organizational context and intent for innovation has been agreed;
- a clear scope of the innovation initiative outlines how radical or otherwise ideas and new concepts should be;
- requirements (or constraints) as related to the innovation agenda within the organization; and
- insights and knowledge gained from external sources, such as emerging technologies, industry trends, or changes to the markets the organization operates within.
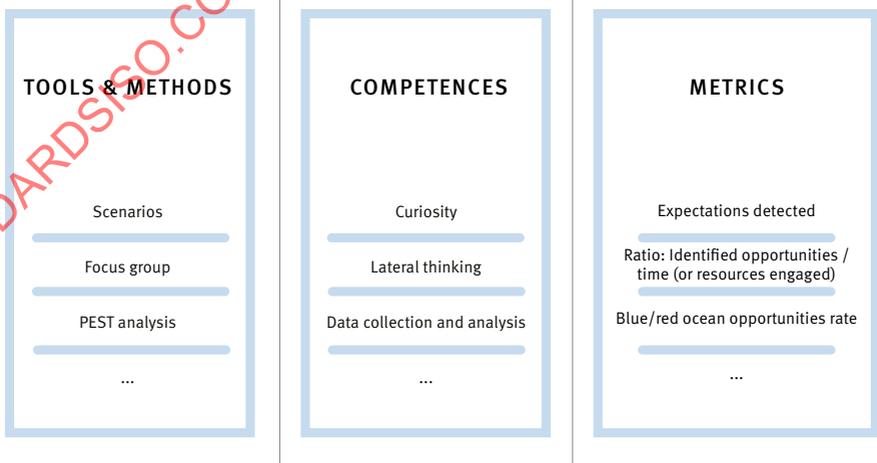
Challenges you might face during this stage

- A reluctance to change the existing portfolio of products and services;
- a lack of awareness of technology or market trends that could apply to the organization; and
- a narrow perspective on challenges the organization faces, often leading to cost-cutting exercises rather than investment in new innovation.

Outputs from this stage

- A clearly identified opportunity or prioritized opportunities that can be used as the basis for idea generation;
- clear guidance for ideating against the opportunity, considering the scope, potential constraints, and acceptance criteria for the ideas generated in the next stage;
- an understanding of the state-of-the-art, including a consideration of intellectual property rights (IPR) as applicable; and
- an understanding of the potential value to be realized and other potential impacts (positive or negative)".

Additional considerations you may have during this stage:

TOOLS & METHODS	COMPETENCES	METRICS
Scenarios	Curiosity	Expectations detected
Focus group	Lateral thinking	Ratio: Identified opportunities / time (or resources engaged)
PEST analysis	Data collection and analysis	Blue/red ocean opportunities rate
...	...	...

Create concepts

CREATE CONCEPTS

Having identified opportunities, the next step is to develop concepts or ideas which have the potential to be transformed into future products, services or business processes. New ideas can come from a range of sources that are internal or external to the organization, and the actual idea generation can be performed using a variety of techniques such as creativity workshops, online ideation, design thinking, or experimentation.

The methods or process an organization uses should take into account the skills and the capabilities of those involved; the needs of interested parties; alignment with innovation strategy; and the time and resources available.

Objectives of this stage

These usually include developing new ideas or potential solutions from internal and external sources; using a variety of ideation and creative problem-solving techniques; and identifying ideas that could have the potential to be developed into a viable product or service. The ideation activities can result in the generation of hundreds of ideas, which need to be further validated against criteria such as feasibility, desirability, affordability, risk, novelty or sustainability.

Inputs into this stage

- A clearly defined opportunity, or prioritized opportunities;
- ideation skills, with those facilitating ideation being competent in a variety of innovation techniques such as design thinking, ideation, and creative problem-solving; and
- clearly defined evaluation criteria to allow the assessment and selection of ideas.
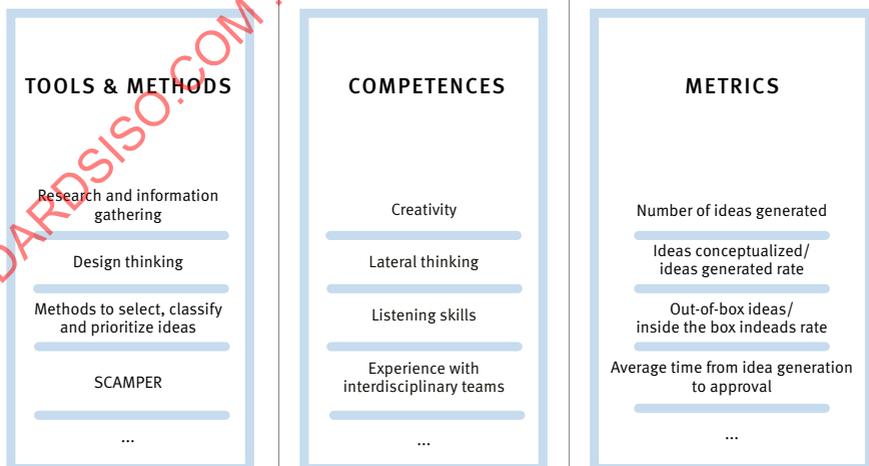
Challenges you might face during this stage

- Lack of ideation skills because of inadequate training for those driving the ideation;
- insufficient resources or time commitment to innovation and idea generation;
- key influencers prejudging and dismissing ideas before they have been fully validated; and
- not understanding the appetite that the organization has towards taking a risk when it comes to innovation.

Outputs from this stage

- A list of all generated ideas assessed against the agreed selection criteria;
- a shortlist of concepts to be taken through to validation, and their associated preliminary value realization model; and
- an initial assessment of the risks, degree of novelty, and critical uncertainties associated with each shortlisted idea.

Additional considerations during this stage:

TOOLS & METHODS	COMPETENCES	METRICS
Research and information gathering	Creativity	Number of ideas generated
Design thinking	Lateral thinking	Ideas conceptualized/ ideas generated rate
Methods to select, classify and prioritize ideas	Listening skills	Out-of-box ideas/ inside the box indeads rate
SCAMPER	Experience with interdisciplinary teams	Average time from idea generation to approval
...	...	...

Validate concepts

VALIDATE CONCEPTS

Once novel ideas have been generated and shortlisted, this critical but often overlooked step is required to ensure concepts have been well thought through before embarking on expensive and time-consuming solution development.

Objectives of this stage

Verifying the feasibility of the concept aims to reduce uncertainty and confirm commercial viability. By focusing effort on validated concepts, resources can be engaged most efficiently on the initiatives most likely to add value. Validation should start before any significant time or money is spent on solution development. You may want to consider one or more approaches to validation, such as user testing, experimentation, prototyping and pilots, and research studies.

When validating concepts, it is critical to reduce uncertainties and challenge assumptions and get feedback as soon as possible. This knowledge and feedback can come from customers, users, partners (internal or external to the organization) or from other interested parties.

Validation can take many forms – prototyping, experimentation, studies, customer discovery interviews, etc. Regardless of how validation is achieved, the key factor is that the feedback and new knowledge gained are used to refine and improve the concept.

Inputs into this stage

- A shortlisted idea from the creation stage;
- clear acceptance criteria set out for the validation process (you need to know what 'good' looks like to your organization); and
- a clearly defined approach to concept validation that is appropriate to the organization and the concept, e.g. it might not be sensible or appropriate to create a technical prototype for a new service offering.
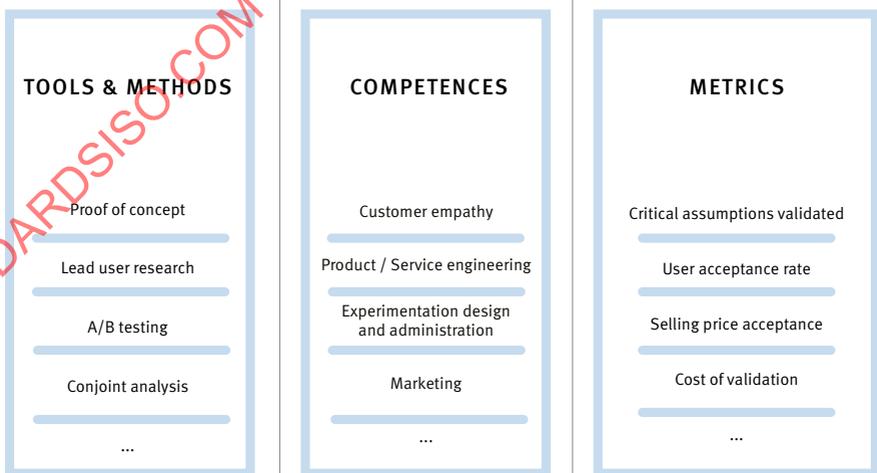
Challenges you might face during this stage

- A vague or unclear concept;
- lack of skills to create a viable prototype for a new product;
- insufficient time or budget to conduct the validation step;
- a fixed, pre-existing view on how the concept will be received by the market; and
- an unwillingness to hear potentially negative feedback from customers or partners.

Outputs from this stage

- A refined, validated concept ready to be developed;
- reduced uncertainty associated with the concept;
- insights and knowledge that are new to the organization; and
- an improved level of trust and cooperation with customers, partners and other interested parties outside of the organization.

Additional considerations during this stage:

TOOLS & METHODS	COMPETENCES	METRICS
Proof of concept	Customer empathy	Critical assumptions validated
Lead user research	Product / Service engineering	User acceptance rate
A/B testing	Experimentation design and administration	Selling price acceptance
Conjoint analysis	Marketing	Cost of validation
…	…	…

Develop solutions

DEVELOP SOLUTIONS

Once concepts have been validated, the next target is to develop practical solutions, ready for deployment.

Objectives of this stage

These usually relate to transitioning from a broad view of the opportunity and the various ideas created to developing a specific solution. Not every idea will be taken through to this development stage, or on to deployment, so during this stage the various elements of a viable solution are created which can realize value for the key interested parties. Once the various elements of the overall solution are proven, then these can be brought together and refined into a solution that can be deployed.

Inputs into this stage

- Concepts that have been identified, elaborated upon and validated;
- a broad understanding of the risks, uncertainties and benefits associated with the solution;
- lessons learned from the validation stage, such as results of experimentation, outputs of user testing, or market analysis; and
- an outline, or detailed, business case as required by the organization to justify the investment in the development phase.

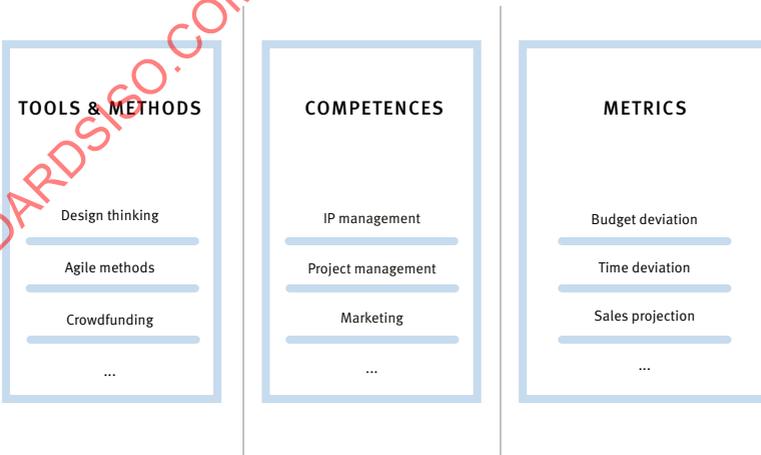## Challenges you might face during this stage

- Unrealistic expectations regarding costs or timelines to develop the solution;
- Failure to consider IP (generated or potentially using others);

- not considering the full impact on the organization in terms of budgets or structural changes required to support the solution;
- legal, environmental, regulatory or political considerations; and
- lack of specialist skills required to develop the solution.

Outputs from this stage

- A viable solution that is ready for deployment including a plan with established activities, resources, relationship and timing to fulfil all the deployment needs and requirements;
- a go/no-go decision to move to deployment – some solutions may be identified as non-viable and therefore terminated during the development stage, some others may be identified as needing further analysis before deployment and may go back to previous innovation processes. Finally, the organization may choose to hold on to a solution for a while, waiting for the context to align with the desired impact of this solution; and
- a model outlining how the solution might impact the organization and the chosen target market.

Additional considerations during this stage:

TOOLS & METHODS	COMPETENCES	METRICS
Design thinking	IP management	Budget deviation
Agile methods	Project management	Time deviation
Crowdfunding	Marketing	Sales projection
...	...	...

Deploy solutions

DEPLOY SOLUTIONS

Once solutions have been developed to the point of being ready to be implemented, the organization should consider the approach to deployment that will best support successful and widespread adoption.

Objectives of this stage

A common objective is to introduce the product or service generally, in a manner that ensures the introduction is timely and to an agreed level of quality. This allows the organization to realize the potential value, perhaps in terms of increased revenue, improved relationships, larger market share, or a positive impact on users and interested parties. Large scale deployment often represents a degree of product or service maturity.

Inputs into this stage

- A solution that has been developed in accordance with organizational standards;
- a clear value-proposition and marketing/sales plan to ensure the solution is available and promoted, so that the impact is maximized; and
- a defined mechanism for monitoring the success of the deployment, in terms of uptake, sales, savings or other form of impact.

Challenges you might face during this stage
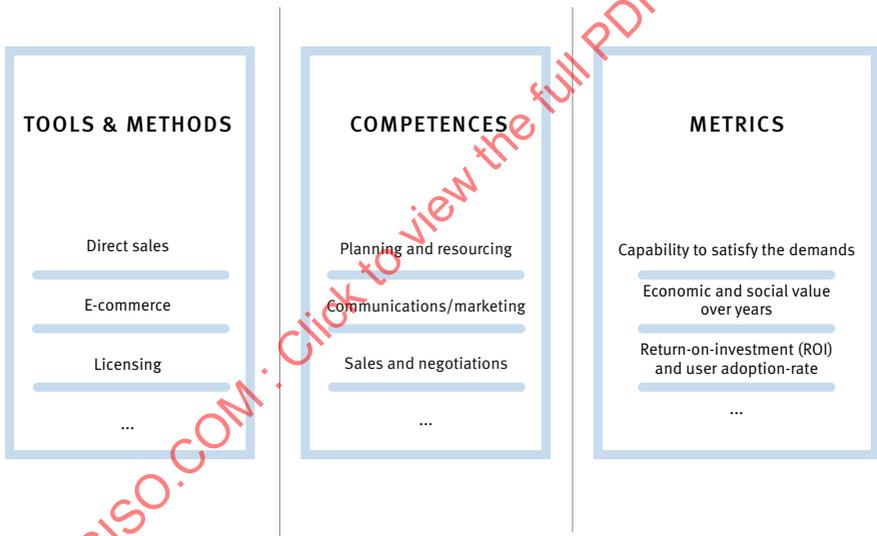
- A solution not ready for full deployment, which might not be fully viable and requires further refinement or further development to reach the status of deployment-ready;
- changed market needs after the concept was validated, especially if planning and monitoring of the market is not done during the development stage; and
- risks escalate to issues if not managed carefully.

Outputs from this stage

- Realized value and a positive impact on the organization and its interested parties, e.g. an increase in turnover, profit, market share and social impact; and
- additional insights gained throughout all stages of the innovation processes, which should be captured and fed back into the innovation system to perhaps identify opportunities for further innovations or continuously improve your innovation management system.

Additional considerations during this stage:

TOOLS & METHODS	COMPETENCES	METRICS
Direct sales	Planning and resourcing	Capability to satisfy the demands
E-commerce	Communications/marketing	Economic and social value over years
Licensing	Sales and negotiations	Return-on-investment (ROI) and user adoption-rate
...	...	...

Designing
the innovation
management system

To develop your organization's capabilities to innovate, setting up a development process for innovation is an important element, but it is not the only one. This process is just one part of an innovation management system that will enable your organization to innovate more effectively.

The following chapter will assist you in the design of your innovation management system (see **Figure 4**).
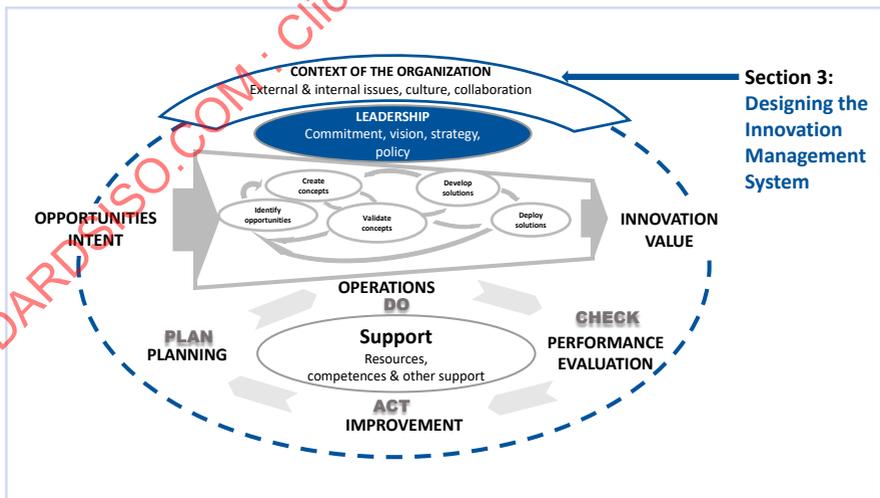

Figure 4: *ISO 56002:2019 Innovation management system –*
Visual representation with relation to the third section of this handbook.

Understanding the organization and its context

Do you consider that your organization carries out internal and external analysis as well as it is able to in order to identify trends and future developments?

Organizations are immersed in a context where external and internal issues interact with their processes, affecting the way they operate and their results. Therefore, any planning should include an analysis of the context since it can affect, either positively or negatively, the organization's ability to achieve the intended results of its innovation management system. Furthermore, in accordance with the innovation management principle 'exploiting insights', understanding the context of an organization and its external and internal issues is crucial in creating knowledge that will be used to generate innovative ideas, as it allows identification of areas of opportunity for value realization.

Consequently, the organization should use appropriate methods to determine the internal and external issues and provide useful information to manage innovation. As those issues can change over time, they should be monitored and reviewed at an appropriate frequency.

Examples of external issues relevant to the organization's context can include (but are not limited to):

- economic factors such as macro-economic situation, inflation forecast, credit availability, funding sources, and tax reduction opportunities;
- social factors such as trends related to environmental and sustainability issues, education levels, demographic issues and diversity, work and lifestyle;
- political factors such as regulations, legislation, political stability, public policies on innovation, and international trade agreements;
- technological factors such as new technology, new materials and equipment, patent expirations, professional codes of ethics, standards, and scientific developments; and

- market factors such as user needs and expectations (unmet or uncovered), market leader trends, supply chain and partner relationships, national innovation infrastructure, potential opportunities and threats, e.g. those that might result from disruptions.

This scanning can be done at local, regional and international level.

Examples of internal issues can be related to:

- strategic direction, vision, overall performance of the organization and present innovation practices and activities, ambition level, and other MSS implemented in the organization;

- human aspects such as core competences, creativity and knowledge management, organizational behaviours and culture supporting innovation activities, relationships among different hierarchy levels and areas of the organization, and commitment at all levels of the organization;

- operational factors such as business models, processes, products and services, existing supporting innovation tools and methods, budgeting and collaboration;

- governance factors, such as rules and procedures for decision-making, organizational structure, tolerance to failure, risk appetite, and resistance to change; and

- potential and maturity (position on the life cycle) of current offerings and value realization models.

Information about external issues can be found in many sources, such as internal documented information and from meetings; in the national and international press; Websites; publications from national statistics offices and other government departments; professional and technical publications; conferences and meetings with relevant agencies; meetings with customers and interested parties, and; professional associations.

Once relevant information sources have been identified, it is important to consult them regularly to identify and analyse possible opportunities and threats related to your current strategic direction and innovation portfolio.

When a major issue has been identified, a brief analysis should be presented to top management to ease decision-making.

At the strategic level, tools such as the Political, Economic, Social, Technological, Legal, Environmental (PESTLE) analysis, followed by a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis, can be used to gather information. Simpler approaches, such as brainstorming and asking "what if" questions, can also be useful, depending on the size and complexity of an organization's operations.

One common approach is to first to carry out a PESTLE analysis, then process the information gathered through the 2x2 matrix shown below (see **Figure 5**).
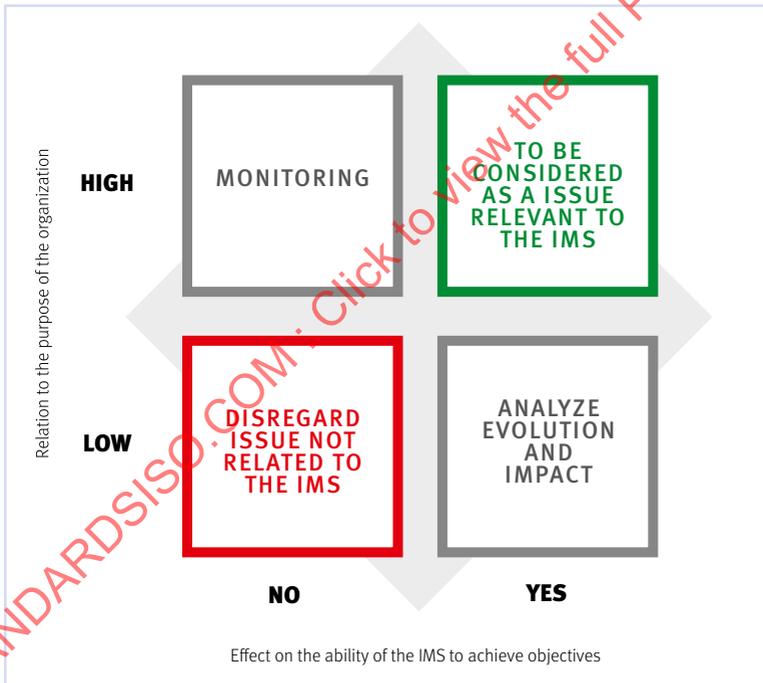

Figure 5: *Information gathering 2x2 matrix.*

The matrix is very useful for 'separating the wheat from the chaff'. You may find that some issues landing on the grey boxes could be disregarded if you are looking for a quick and focused exercise or to go through a second round of analysis. After the PESTLE and the matrix have been done, the contextual analysis may be completed by a SWOT analysis using only the issues falling into the green box. The "strengths" and "opportunities" detected will then become opportunities for the innovation management system, and the "weaknesses" and "threats" will be treated as risks to the innovation management system. We will come back to this later.

It is important to understand that this is not a "one-shot exercise"; the organization should monitor and review information about the external and internal issues regularly. This task could be performed during management review meetings or during a specific meeting to address this task.

Determining the relevant interested parties, their needs and expectations

Do you consider that all relevant interested parties' needs and expectations have been determined? Have you defined how to interact with all of them?

Understanding present and future needs and expectations of relevant interested parties would bring in opportunities with the potential for the realization of value. Therefore, it is important to identify them as part of the process for understanding the context of the organization.

Interested parties and their requirements, needs and expectations could be different for the different initiatives and projects of your innovation portfolio, and can change due to unforeseen circumstances. The following is a non-exhaustive list of some examples of interested parties that can be considered relevant to an organization:

- customers, end users or beneficiaries;
- joint venture partners, suppliers;
- owners of IP;
- parent and subsidiary organizations;
- employees, owners, shareholders;
- financial institutions, cooperation agencies, international development banks;
- research organizations, science communities, universities;
- statutory and regulatory authorities (local, regional, national or international); and
- scientific and professional associations.

Determining which interested parties are relevant for your innovation management system requires criteria, such as:

- possible influence or impact on the organization's performance or decisions;
- ability to create opportunities and manage risks;
- possible influences or impact on the market or society; and
- ability to affect the organization through their decisions or activities.

Once again, after listing all the parties considered of interest by, or interested in, your organization, you could compare each of them against a 2x2 matrix such as the one showed below in **Figure 6**. This is a simple and quick method to determine the relevance of an interested party. The matrix can be used as follows:
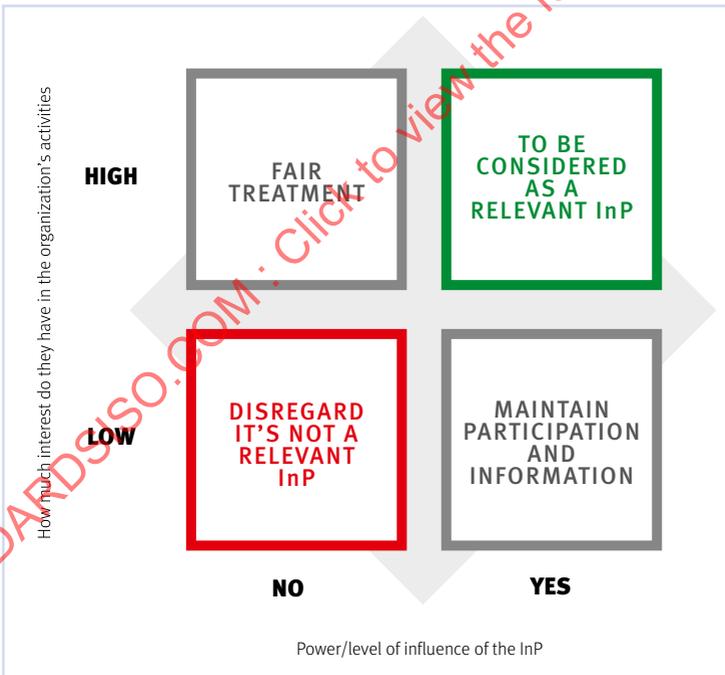

Figure 6: *Interested parties 2x2 matrix.*

The organization should regularly monitor and review the relevant interested parties of its innovation management system as well as their needs and expectations and any particular requirements to detect whether any change will have a significant impact on the innovation management system, or on areas of opportunity for value realization.

Setting the scope of the innovation management system

Are you satisfied with the established scope of the innovation management system in your organization and its associated documentation?

An innovation management system is a set of processes, activities and resources that work together to generate innovation. Therefore, when the organization decides to implement an innovation management system it has to identify not only the processes related with the innovation activities themselves (those needed to realize value from insights and ideas), but also the processes that are needed for the effective implementation, maintenance and improvement of the system. Such processes can include internal audits, management reviews, planning, and improvement, as well as processes performed by partners or other external interested parties. The level to which processes need to be determined and detailed can vary according to the context of the organization and the application of risk-based thinking. The extent to which the processes affect the organization's ability to achieve its intended results (innovations) should be considered.

In some organizations, including SMEs, innovation processes are probably not explicitly defined and there might be a lack of a common understanding of the processes among the different participants engaged in innovation activities.

Managing innovation with a systemic approach would allow the organization to get a clear and common understanding of which processes are part of the innovation management system, and be able to integrate the innovation management system within other existing management systems. This would facilitate the assessment, benchmarking and improvement of the innovation management system and help focus on the most important and relevant innovation activities and enablers.

The scope of your innovation management system should be decided on the basis of the result of an analysis carried out by the organization's top management. The innovation management system can include the whole organization, specifically

identified functions of the organization, specifically identified sections of the organization, or one or more functions across a group of organizations. At a minimum, the following should be considered when establishing the scope:

- the understanding of the context;
- the needs and expectations of the relevant interested parties;
- the opportunities to realize value; and
- the organizational structure, the existing competences and capabilities and the interactions with other management systems.

Documenting the scope of the innovation management system will help to ensure that your own organization and the relevant interested parties understand it. The organization should consider that the scope is dynamic and needs timely updating. Assessing the performance of the organization (this will be addressed later on) presents a good opportunity to consider if the scope of the innovation management system remains adequate for the purpose of the organization.

Deploying your innovation management system

Do you think that your organization has adequately defined the steps required to establish, implement, maintain and improve the innovation management system?

When deploying the innovation management system, the organization should consider the innovation management principles (IMP), since implementing an innovation management system is nothing less than transforming the concepts of the principles into operational structures and processes. The aim is to impact the organization's culture and maintain it in the long term.

An innovation management system is constituted of different elements, each of them fulfilling a particular aspect in the process of realizing value. The organization can adopt these elements gradually according to its context, strategy and resources, but it has to be kept in mind that the maximum benefits are obtained when all elements are deployed and interact holistically as shown in the figure below (see **Figure 7**).
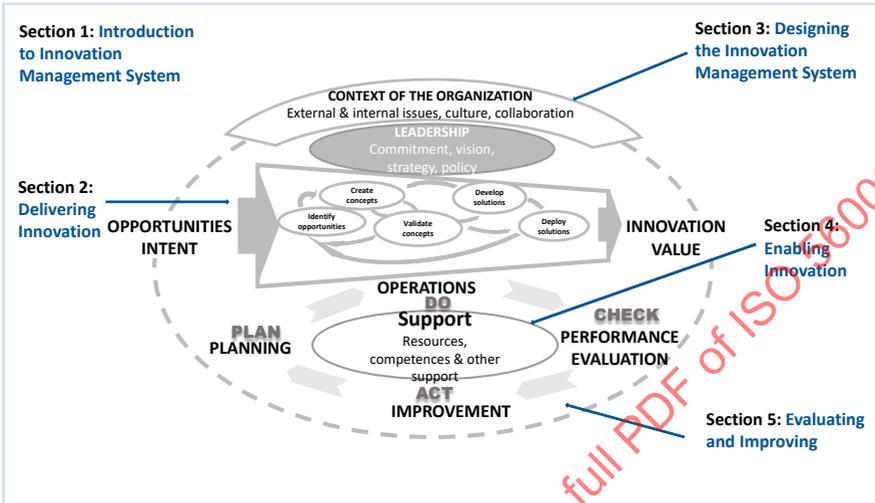
Figure 7: *ISO 56002:2019 Innovation management system – Visual representation with relations to the sections of this handbook.*

Your organization should follow these steps when setting up its innovation management system:

- identify the innovation activities that can be structured into processes of the innovation management system;
- determine interactions and interrelations of these activities, considering iterative aspects;
- make the system visible by mapping its main activities;
- determine the methods and criteria needed to ensure the effective operation and control of these activities;
- ensure the availability of resources and information required to support the operation and monitoring of these activities;
- assess the performance of the innovation management system and implement the actions required to achieve the intended results and improve the effectiveness of the innovation management system;
- establish and document the mechanisms for the protection and exploitation of results;

- address and balance the opportunities and risks;
- assign responsibilities and authorities; and
- determine the level of documented information needed.

The organization should try to keep documentation at the minimum level to ensure the effectiveness of the innovation management system without taking the risk of stifling innovation dynamics.

Innovation culture

Do you consider that your organization promotes an organizational culture that supports innovation activities?

Culture is sometimes seen as an elusive concept. Here it refers to the shared behaviours, values, and beliefs of an organization or a community. It is one of the most important aspects in creating an innovative organization, so much so that Peter Drucker said: "Culture eats strategy for breakfast and technology for lunch and everything else for dinner."

Any organization, indeed, may succeed in carrying out an innovation initiative once. However, to transform itself into an innovative organization requires a culture with defined attributes.

The desirable attributes are not always present in the organization and are sometimes even resisted by the organization itself.

Nurturing a culture where innovation activities are embedded in the day-to-day operations of the organization is an integral part of the implementation of the innovation management system and should be a permanent goal of the organization. Furthermore, it has to be understood that this is not an overnight task and top management should be aware that time and commitment would be required from their side to succeed in achieving this goal.

An organization may have relied on events such as developing a brilliant idea that someone had when taking a shower, asking a group of employees to participate in a creative workshop, or even carrying out a structured innovation initiative. Such isolated events are not indicators that an innovation culture is being developed or embedded in the organization.

Even when the organization has been working hard and for a long time on improving the effectiveness of their processes and increasing the profits or outputs from the existing offerings, it may have developed some reluctance to take risks, be creative, and work on scenarios of high uncertainty. These issues should be considered when the organization starts working on fostering an innovation culture.

Moreover, it has to be remembered also that organizations do not exist only to innovate. They have to deliver their established offerings to their current interested parties. Consequently, the organization needs an operational culture to help it to focus on continuously improving the effectiveness and efficiency of its operations as well as the satisfaction of their customers, users, etc. This operational drive is part of the innovation culture. The organization has to be creative as well as efficient and customer-focused.

If we consider the IMP, it is clear that applying and deploying them throughout the organization would contribute significantly to fostering a strong innovation culture.

Focusing the organization on identifying, developing and deploying new solutions to realize value would require the following from the organization:

- providing a work environment characterized by openness, curiosity, collaboration and networking among different interested parties (internal and external);
- encouraging creativity, change, and challenging current assumptions through experimentation, risk taking, and learning from failure;
- balancing assumption-based and evidence-based analysis;
- supporting leaders to ensure that they promote and demonstrate their commitment to innovation activities;
- allowing time and other resources for innovation activities as well as supporting guides, tools, and methods;
- supporting the development of competencies which support innovation activities such as training innovators, managers and other roles related to innovation activities;
- clarifying how persons in the organization and other interested parties can (be allowed or expected to) contribute to innovation activities;
- engaging people in providing and managing structures for multidisciplinary collaboration, to enable the coexistence of and the effective transitions between creative and operations-oriented mindsets;
- encouraging and striving to obtain diversity, respect and inclusiveness of different people, disciplines and perspectives;

- assessing the innovation culture and innovation performance using relevant innovation performance indicators;
- supporting and recognizing innovators, innovative behaviours and innovation initiatives and communicating successful innovation stories; and
- providing relevant incentives (not only monetary) for innovation achievements.

Organizations very often resist any initiative to change, captured by the notion of "this is not the way we do things here".

So, to a certain degree, the existence of constructive conflict could challenge the status quo, encourage the debate and trigger creativity, which are all essential elements for innovation activities.

Collaboration

Are you satisfied with the internal and external collaborative dynamics of your organization?

In order to identify new opportunities for innovation and innovate quickly, organizations need to identify potential interested parties with which to collaborate, and effective processes to achieve this. Usually, innovation initiatives require the participation of different areas within the organization, as well as with suppliers, research centres, government agencies, and other relevant interested parties. Collaboration helps organizations to share and access knowledge, competences and other intellectual assets and resources. Thus, establishing effective approaches to collaborate within the organization is essential for innovation to succeed.

In order to implement effective approaches for collaboration, the organization should consider the following:

- the need for internal and external collaboration based on the innovation strategy, existing resources, including knowledge and competencies;
- the diversity of experiences, disciplines, competencies, perspectives, etc., when establishing collaboration;
- determining the methods for collaboration with external organizations, e.g. partnership, open innovation, and alliances;
- the importance of respect, openness, and trust between parties to encourage people, teams, and organizations to collaborate, e.g. foster collaboration as part of the organizational culture; and
- issues of IP (see the subsection on Intellectual property management, under Section K, Innovation management).

Collaboration may also be done in different fields and areas of expertise or needs such as:

- identifying user needs, expectations and challenges;

- sharing of ideas, knowledge and know-how;
- access to infrastructure;
- access to portfolios, markets, and users;
- acquiring new skills and resources; and
- jointly executing innovation activities.

The organization may address collaboration approaches when the innovation initiative has been agreed and its different stages are defined. Collaboration can involve people from different teams within the organization, as well as users, partners, suppliers and other relevant parties. Thus, its roles, responsibilities, authorities and activities should be defined as well as the communication channels.

Leadership and commitment

Do you consider that top management demonstrates commitment to the innovation management system and its processes?

Leadership is one of the fundamental principles of management systems. Appropriate leadership at all levels of the organization establishes unity of purpose and direction, thus creating the conditions in which people are engaged in achieving the organization's innovation objectives.

In order that an innovation management system produces the desired outcomes, top management should be completely involved and show commitment to innovation and the system itself by:

- being accountable for the effectiveness and efficiency of the innovation management system;
- ensuring that the innovation vision, strategy, policy, and objectives are established, consistent and compatible with the context and the strategic direction of the organization;
- fostering a culture supporting innovation activities;
- ensuring the adoption and integration of the organization's innovation management system requirements into the organization's existing structures and business processes, as appropriate;
- ensuring that resources needed for the innovation management system are available;
- creating awareness and communicating the importance of effective innovation management and of adopting the innovation management system guidance;
- ensuring that the innovation management system achieves its intended outcomes;
- engaging, directing, and supporting people to contribute to the effectiveness of the innovation management system;

- encouraging and recognizing innovators who demonstrate good practices, ensure engagement, and facilitate learning from both successes and failures;
- promoting performance evaluation at planned intervals and continual improvement of the innovation management system;
- ensuring the promotion of, and commitment to: a culture of creativity, value focus, openness and collaboration, conflict consciousness, tolerance of failure and learning throughout the organization; and
- recognizing innovators, innovative behaviours and innovation initiatives by directing and supporting people to contribute to the effectiveness of the innovation management system.

No innovation management system can be effective and sustainable without top management support and commitment.

Vision and strategy

Do you consider that your organization's vision and innovation strategy are effectively communicated and understood within your organization?

The organization should not embark on the innovation journey if there is not a clear vision of innovation. An innovation vision should give clear indications about the prime reasons for innovating and how innovation activities would contribute to the overall performance of the organization. The innovation vision should be aligned with the overall organizational vision.

Once an inspiring vision is formulated, people can be creative and innovative in moving towards it.

The vision is the starting point for the innovation strategy, innovation policy, objectives and indicators. The key performance indicators of the organization will measure how progress is made in meeting the goals that ultimately flow from the vision.

Consequently, the vision should:

- set a direction and a challenge that can inspire people to commit and to work towards it and that can be communicated externally to engage interested parties or raise reputational benefits;
- be ambitious and challenging and not constrained by the organization's current capabilities; and
- provide a framework for setting innovation strategy and policy, against which progress can be measured.

Once the vision has been set, the organization should establish the strategy to achieve it. The innovation strategy should be aligned with the overall strategy of the organization and should describe why innovation activities are important for the organization.

The strategy should be flexible and adaptable and change as a result of feedback and performance of innovation activities. Good practices recommend the strategy to be communicated to, and understood by, relevant interested parties.

The strategy should clearly define what kinds of innovations the organization is going to pursue (incremental, breakthrough, disruptive) and on what it is going to innovate (process, products, services, business models). Otherwise, people could be confused about what they should do, and resources may not be spent on projects aligned with the organizational goals and objectives.

The innovation vision and strategy are usually kept as documented information. The vision is generally made public while the innovation strategy can be more of an in-house document shared with selected interested parties.

Establishing both the vision and the strategy is a team effort. We consider that facilitation by a third external party, not involved in the internal processes, helps to balance participation and avoid one participant's opinion prevailing over the rest. It is an exercise that could take somewhere between two or four meetings, carried out during a two- to three-week period, for example. It is recommended to give time between meetings to allow participants to mature the ideas expressed and agreed upon in previous meetings. Meetings should not last more than three or four hours. Both the innovation vision and the strategy have to be clear and easy to convey.

Innovation policy

Do you consider that your organization's innovation policy is effectively communicated and understood?

The innovation policy, together with the innovation strategy, provides a framework to establish goals and objectives. Establishing an innovation policy supported by top management can ensure that resources to fund innovation projects and functions will be allocated.

The organization has to set a very clear direction and objectives to transform into an innovative organization. Having an innovation vision, strategy and policy defines where you would like to be, how to go there, and what principles and approaches will guide your journey to that destination.

Likewise, having the full weight of the highest level of authority behind a policy signals that it is not just a good idea but an essential one for the organization. It means that there are specific and certain expectations that must be met and that innovation activities are not just another "flavour of the month". Organizations seeking to establish an innovation management system should set the innovation policy and get it approved at the beginning of the journey. It has to be a multi-year policy, not just for one cycle. The policy should be written using a language understood by the organization, by the sector the organization belongs to, and by the relevant interested parties.

Another important point is that the innovation strategy and policy should be communicated very clearly to all people in the organization, so they know what the innovation strategy and policy are about and how they can contribute to innovation activities.

This communication process should also be extended to all relevant interested parties to ensure that the entire value chain and network of associates, partners, and subcontractors, etc., understand where the organization is heading and what it is looking for.

If the organization has implemented other management systems to address further aspects of the organization, such as quality, environment, safety, etc., then it may be worth considering issuing an integrated policy.

Finally, establishing an innovation policy supported by top management can ensure that resources to fund innovation projects and functions will be allocated.

Organizational structure, roles, responsibilities and authorities

Do you think that the organizational structure, roles, responsibilities and authorities related to the innovation management system are properly defined?

Top management should establish specific responsibilities and authorities for the identified roles and ensure that members of the organization are aware of their assignments through effective communications activities (e.g. through the use of relevant documented information, such as job descriptions, work instructions, duty statements, organization charts, manuals, or procedures).

Responsibilities and authorities can be assigned to one or more persons for existing and dedicated roles with a focus on general innovation management or specific innovation initiatives and activities, to ensure that:

- risk taking, learning from failure, creativity, and value focus become part of organizational culture;
- processes are adaptable and delivering their intended outputs;
- performance reporting and improvement opportunities of the innovation management system are submitted in a timely manner to top management;
- the integrity of the innovation management system is maintained when changes to the innovation management system are planned and implemented; and
- the innovation management system follows the guidance of ISO 56002:2019.

It is essential to emphasize that although authority can be delegated, the overall responsibility and accountability for the innovation management system remains with top management.

In some organizations, there could be a limited number of people with the required competences available to carry out the tasks required. Therefore, it could be useful to plan for sharing roles and responsibilities. Such plans are valuable when managers are away from the facility, e.g. during holidays or in cases of accident or illness.

Performing the above tasks is not easy if the individuals selected are not true believers of the need to innovate and do not have appropriate communication and assessment skills. In this sense, selecting a person(s) with seniority within the organization is advisable.

It should be noted that this person, in most cases, does not have authority over the rest of the personnel. They would guide by example and persuasion.

Actions to address opportunities and risks

Do you think that your organization determines the opportunities and risks to be addressed when planning for the innovation management system?

Risk management is an important part of any management system. Reducing the risk is a natural approach for most enterprises.

However, risk and innovation are linked. An opportunity may be hidden behind any risk and developing a successful innovation without taking any risk may not be possible. The important aspect is to identify the risks and to balance risk and opportunity.

When planning for the development of the innovation management system, an organization should define its risk appetite. Depending on the innovation ambition, the types of innovation it seeks to achieve and in particular the context, an organization may need to accept and prepare themselves to accept different levels of risk taking.

When the organization identifies a field of opportunity or when it develops an innovation initiative, it should identify the related risks, quantify them as much as possible and finally decide whether the opportunity should be pursued or stopped.

Risks and opportunities should be monitored along innovation initiatives and processes to ease the management of uncertainty that is associated with creative and examination activities. Information available from a specific context will help assertive decision-making.

The actions that an organization can take to address risks will depend on the nature of the risk, for example:

- avoiding the risk, by no longer performing the innovation projects where that risk can be encountered;
- controlling/minimizing the risk, for example, by using documented procedures, making additional revisions or controls, utilizing more solid techniques during the idea generation phase, etc.;
- sharing the risk, e.g. by working with partners on a consortium to reduce the potential impact of, for example, financial losses;
- taking no action, where the organization accepts the risk itself, based on its potential effect or the cost of the needed action; and
- accepting the risk of performing the innovation projects since the risk to the organization of not performing them is considered to be higher.

Furthermore, the level of documentation needed to carry out these activities varies from one organization to another, depending on the culture and degree of control wanted. This is usually an Achilles heel in many organizations which lack the competences for carrying out a comprehensive and useful risk analysis. Training or external help could be required at this stage of the process until this capability is well developed and the organization can act by itself.

Innovation objectives

Do you consider that your organization has established innovation objectives aligned with the innovation strategy and policy, and has developed plans to achieve them?

"An elephant can be eaten one piece at a time" is a familiar analogy. Once your organization has a vision (setting the place where it aspires to be) and a strategy (establishing the pathway to follow to reach that place), the next step is to decide the objectives that would help you to follow the pathway without losing the direction and encouraging you to pursue that direction every time you reach a set milestone. It is important to set innovation objectives to:

- provide guidance and direction;
- facilitate planning;
- motivate and inspire employees: and
- help organizations evaluate and control innovation performance.

Setting innovation objectives at relevant levels of the organization provides a framework for translating the organization's vision and strategy into smaller chunks that are then assigned or delegated to individual persons. This needs to be completed because an organization achieves its overall objectives to the extent that each person does his or her part in completing the right job tasks in an effective way.

Clear objectives allow the organization to monitor the deployment of the innovation strategy continuously and make the necessary corrections when the organization detects a trend showing a risk of the innovation strategy going off track.

Several theories and methods exist to define objectives. One of the most common approaches is probably the "SMART Goals". This approach uses a mnemonic acronym to prompt that objectives should always be:

- **Specific** – target a specific area for improvement.
- **Measurable** – quantify or at least suggest an indicator of progress.
- **Assignable** – specify who will do it.

- **Realistic** – state what results can be realistically achieved, given available resources.
- **Time-related** – specify when the result(s) can be achieved.

Following best practices, innovation objectives should:
- be consistent with the innovation vision, strategy and policy, i.e. when establishing the innovation objectives, the organization needs to use the innovation strategy and policy as a framework to ensure objectives are aligned;
- determine which are the driving factors and innovation enablers, as well as what will be done in terms of focus areas, planning horizons and types of innovations targeted;
- consider what resources will be required, what types of collaborations and alliances are needed;
- be measurable, establishing what has to be achieved over a certain period of time using both quantitative methods and qualitative ones;
- address applicable requirements from all interested parties, including those set by the organization itself;
- be monitored and/or reviewed for progress being made in achieving the innovation objective; this could be carried out through any suitable means, including progress reports, customer/partner feedback or management reviews, etc.;
- be communicated as necessary – the organization should communicate its innovation objectives throughout the organization and to relevant interested parties, as necessary, for example, through meetings to inform relevant persons of the innovation objectives related to their activities or notifying partners/associates in an innovation project about expected delays in achieving some project milestones; and
- be updated as appropriate.

Portfolio management

Do you consider that your organization successfully manages and regularly evaluates and prioritizes the portfolio of innovation initiatives?

Depending on its innovation dynamic, an organization may have from just a few innovation initiatives to a large number of them being developed simultaneously. Furthermore, it should be remembered that innovation activities may cover a broad area that includes everything from developing a new packaging to introducing a radical new cancer treatment. Consequently, managing the organization's portfolio of innovation initiatives is in the best interest of the organization to ensure it produces the highest overall return while maintaining alignment with the organization's appetite for risk. If the organization does not have an approach to manage its portfolios of innovation initiatives, it might end up with a collection of ad hoc, stand-alone efforts that compete with one another for time, money, attention, and prestige. Ensuring that its innovation portfolio is aligned with its innovation strategy and has consistency between innovation initiatives will help to optimize resources and assets through realization of synergies, re-use of technologies, infrastructures or processes.

Portfolios of innovation should be well-balanced. The balance depends on several variables, depending on the strategy of each organization, such as:

- Categories of innovations – products, processes, services, and business models innovation.
- Sources of innovation – by balancing internal innovations and external innovations in which you have invested, have options to pick up, or are tracking.
- Degrees of novelty, time horizon and the ambition of the innovations.

The Innovation Matrix (By Greg Satell – *Mapping innovation: A playbook for navigating a disruptive age*) and the Innovation Ambition Matrix (By Bansi Nagji and Geoff Tuff – *Managing your innovation portfolio, Harvard Business Review*) can help you to position your innovations under those criteria.

As in any other management system, measurements are key to determine if goals are being achieved. This is especially true when speaking about innovation initiatives. It is necessary to measure innovation at the process and project level and at the portfolio level. This helps to ensure alignment among top management that the organization is taking on the appropriate amount of risk, as well as that the individual projects will take the organization in the direction of the strategy. Innovation portfolio metrics/indicators assist in the aligning of organizational priorities. By setting up metrics for managing innovation portfolios, the organization could monitor the risk level and balance it accordingly. For example, a portfolio with a high percentage of core projects will not make a drastic impact in the market or on users. On the other hand, a portfolio with too many transformational innovation projects may increase the risk above the acceptable level for the organization.

Innovation portfolio metrics should not be considered only from a financial perspective. The aim of focusing on innovation is to produce value and, while this value could be financial, it could also be related to acquiring knowledge, gaining a competitive advantage, developing employee commitment, prepare the company for the future, etc. Thus, the portfolio metrics should be adapted to the organization's strategy and be regularly updated.

Innovation portfolio metrics can be considered at the project level, portfolio level and/or company level and could be:

- predicted revenue/earnings (annual and cumulative);
- expected degree of variability in revenue/earnings;
- number of long-, medium- and short-term projects;
- amount of investment;
- innovation-type portfolio mix (incremental, expansion, disruptive);
- type and amount of risk (market, technical, operational/executional – high, medium and low); and
- resource constraints.

The metrics should regularly be reviewed and, depending on the level of maturity and complexity of the innovation management system, they could be centralized from a simple report to a scorecard.

Enabling innovation

To enable innovation, the innovation management system should provide adequate support. There are many different types of support for innovation, including resources (people, knowledge, infrastructure, and finance), competence, communication and awareness, tools and methods, as well as approaches for strategic intelligence and IP management (see **Figure 10**).
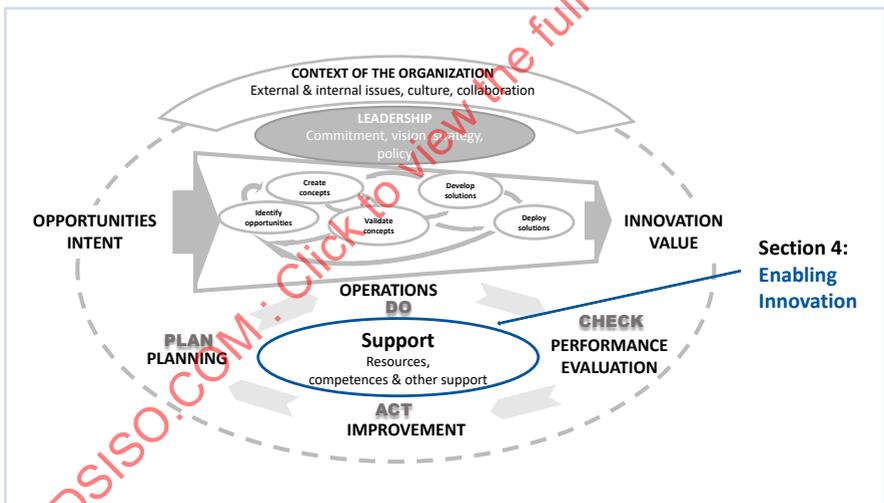

Figure 10: *ISO 56002:2019 Innovation management system – Visual representation with relation to the fourth section of this handbook.*

Resources

Are you satisfied with the way your organization determines and assigns the resources needed to implement, maintain, and improve the innovation management system?

Each management system needs resources to operate effectively and allocating them is one of the non-delegable responsibilities of top management. The resources for implementing and maintaining an innovation management system may include, but are not limited to, human resources, infrastructure, equipment, knowledge, and information.

In order to allocate the appropriate resources for the innovation management system, the organization should consider:

- a proactive, transparent, flexible, and adaptable approach for providing resources;
- the capabilities of, and limitations on, existing internal support;
- what needs to be obtained from external providers, e.g. by outsourcing or partnering;
- internal and external collaboration, e.g. sharing or re-use, to optimize the use of resources;
- securing resources for innovation activities separated from other activities; and
- the long-term build-up of capabilities for innovation activities.

When innovation initiatives begin, the organization should plan and allocate resources to assure it will be possible to finish them.

People

Do you consider that your organization has the necessary, trained people for the effective implementation and operation of its innovation management system?

People are probably the most important resource for an innovation management system and their commitment to and involvement within innovation initiatives are crucial to achieving success.

Top management should determine and provide the necessary personnel to ensure that the innovation management system is implemented and maintained effectively. Also, top management should encourage the active participation of the organization's personnel in innovation activities, providing the required time to conduct them and, when necessary, training should also be provided.

In order to have a focus on the engagement of people, the organization should consider:

- the need to attract, recruit, and retain people;
- forming teams with a mix of people from different disciplines and with diverse personal attributes and backgrounds, to encourage cross-pollination that can result in unexpected positive outcomes;
- establishing appropriate incentives, including non-financial incentives, e.g. rewards and recognition;
- protecting innovators, given the potential higher degree of risk of innovation activities; and
- establishing and communicating the terms and conditions for the ownership of ideas, handling of patents and exploitation of innovations, which can be subject to different national laws, regulations, and other agreements.

It is expected that if the organization is determined to transform itself into an innovative organization, personnel should have time dedicated to innovation activities, including top management.

Some very well-known innovative organizations allow and encourage their employees to invest some of their working time on innovation activities. For

example, Google looks for recruits who have off- the-wall hobbies and unconventional interests — people who are not afraid to defy conventional wisdom — and, after they are hired, it encourages them to spend up to 20 % of their time working on whatever they feel will benefit Google's users and advertisers.

Another good example is 3M, where its engineers and scientists can spend up to 15 % of their time pursuing projects of their own choice. They can look for unexpected, unscripted opportunities, for breakthrough innovations that have the potential to expand the business for the company. The benefits from these focused innovation activities in these enterprises are also very well known. Each organization should look for its own approach to engaging people in innovation, but it should not expect important outcomes if dedicated people and time are not allocated to these activities.

It is also important to be aware that some effective innovation teams are made up of a mix of people from different disciplines and backgrounds, and organizations would need to put in place processes to attract, recruit and retain them. Succeeding in getting the right people is a challenge, but keeping them in the organization is even more difficult.

Infrastructure

Can you confirm that your organization has determined, provided, and maintained the necessary infrastructure for the effective implementation of its innovation management system?

The innovation management system, as with any other management system, requires the infrastructure for operating and delivering expected outputs. This should not be overlooked when the system is implemented and when different innovation initiatives are pursued. It is important to determine the necessary infrastructure to conduct innovation initiatives as soon as they are agreed, so that top management can allocate the necessary resources.

Infrastructure may be dedicated to innovation or be shared within the organization (e.g. use of production tools for prototyping, use of dedicated rooms for creativity sessions). When making decisions about allocating infrastructure, the organization has to consider factors such as flexibility, cost effectiveness, and coordination benefits.

Also, top management should consider and evaluate the benefits of obtaining the necessary infrastructure from external interested parties by such means as outsourcing or partnering.

The infrastructure to support and operate the innovation management system may include:

- buildings, facilities and associated utilities, e.g. creative environments, research and development (R&D) laboratories, maker spaces, simulation laboratories, and living laboratories;

- research and simulation equipment, physical tools, other hardware, software, methods, advanced technologies and models;

- transportation resources;

- information and communication technology, e.g. for the management of collaboration, ideas, portfolios, insights, talent, projects, and programmes; and

- networks, e.g. knowledge networks, and market networks.

Finance

Do you consider that your organization has determined and provided the necessary financial resources for the effective implementation of its innovation management system?

Similar to infrastructure, financial resources are required for the operation of the innovation management system.

As organizations may be running different innovation initiatives at the same time, covering different types of innovations with different degrees of risks, a careful approach to funding them should be developed, to ensure that all initiatives have the financial support needed during all phases of their development and deployment. When allocating funding, the following should be considered:

- the financial opportunities, risks and constraints associated with innovation activities, including the financial implications and other risks of not innovating;
- establishing funding principles, e.g. central financial resources versus funding through local or operational budgets;
- allocating dedicated financial resources for innovation activities, e.g. as a percentage of annual budget or designating funds for innovation initiatives by top management;
- identifying and accessing relevant financial resources outside the organization, e.g. from private and public investors, research agencies, partners, co-sponsors, innovation grants, tax credits for R&D, or crowdsourcing;
- establishing investment principles, e.g. investing in internal versus external activities, investing in start-ups, corporate venture capital, or innovation accelerators;
- the balance of funding across different time horizons, different degrees of risk and different types of innovations, e.g. incremental innovation or radical innovation;

- ensuring the funding of other relevant resources and support, e.g. people, time, infrastructure, or competence; and
- ensuring that the funding approach covers all activities needed.

Many organizations set up a funding board to manage their financial resources to ensure they are well managed.

Competence

Do you think that your organization has established the competencies required for the effective implementation, maintenance and improvement of its innovation management system?

To innovate effectively, organizations should engage different people at different stages of the processes. At each stage, defined competencies are needed to ensure that work can be done as planned.

The innovation competencies that organizations need may include:

- strategic (e.g. planning and change management);
- operational (e.g. designing, prototyping, producing and supply);
- engineering (e.g. project management and testing);
- commercial (e.g. market introduction and value realization);
- technical (e.g. IP and strategic intelligence);
- management (e.g. leadership and team building); and
- soft (e.g. idea generation and managing creative people).

When conducting innovation initiatives, organizations need to identify their existing competencies and analyse them against what is required. Generally, the gap between the competencies that the organization has and those that are required should be identified. Top management should take action to close this gap. Such action may include:

- upgrading the existing competencies, e.g. by providing training, reassigning currently employed people, or hiring new people; and
- outsourcing innovation activities through collaboration with universities, research centres, consulting and servicing enterprises, etc.

Determining the necessary competencies is not the only task the organization should do. It is also critical to ensure that the necessary collaborations between people with different competencies take place and that different competencies are combined to achieve the full potential of the collective competence of the organization.

Awareness

Do you consider that your organization has ensured that all people doing work under its control are aware of the innovation vision, strategy and policy, as well as their responsibilities within the innovation management system?

So that people working to the innovation management system are committed to innovation initiatives and the system itself, organizations should ensure that people are aware of:

- the innovation vision, strategy, policy and objectives;
- the meaning and importance of innovation for the organization;
- their contribution to the effectiveness and efficiency of the innovation management system, including the benefits of improved innovation performance;
- the implications of not meeting the innovation management system; and
- the availability of support for innovation activities.

Sometimes, people do not follow procedures or instructions because they are not aware of the consequences of their actions for the innovation management system. Top management should implement actions so that people in the organization are aware of these potential consequences. These actions may include establishing an awareness programme that may include:

- identifying the target audience and developing messages aligned with the innovation vision and strategy;
- communicating the benefits of managing innovation with a systematic approach and why people should pay attention to it; and
- creating a team with the technical and communications competencies to carry out the programme.

Some ideas to consider in communicating the awareness programme may include:

- creating poster boards and signs to hang up round the organization;
- including articles about the innovation management system and innovation initiatives in the organization's newsletter, if there is one;

- carrying out brief talks, seminars, blogs, etc., on the topic;
- including innovation topics regularly on the news board of the organization's Website; and
- having casual meetings with personnel and discussing innovation management system issues.

Communication

Do you consider that your organization has determined the internal and external communications that are relevant to the innovation management system? Communication plays a very critical role in the effectiveness of any management system, innovation included. Consequently, any MSS requires activities regarding how to approach communication. The organization should ensure that every time it communicates anything related to the innovation management system, the following issues are considered:

- what will be communicated;
- why to communicate;
- when to communicate;
- with whom to communicate;
- how to communicate; and
- who communicates.

Communication serves various purposes: creating awareness, increasing people engagement, preparing for action, establishing thought leadership, influencing, building brand value, etc. However, the organization should take into consideration that communication topics may differ for internal and external parties. For example, the organization could communicate the status of innovation management system corrective actions within the organization while communicating with external partners or associates about the innovation projects being developed on a collaborative basis. It is very important that the organization determines the relevant internal and external parties with whom it needs to communicate, to ensure the effective operation of the innovation management system. This may include relevant people within organizations at all levels and relevant interested parties (such as customers, partners, associates, government, and participants in collaborative innovation projects).

Different communication methods are often required for different situations, including formal and informal ones. Some examples of communication methods are:

- team meetings;
- notice boards;
- intranet;
- newsletters;
- games;
- magazines;
- staff conferences;
- Websites;
- annual reports;
- white papers;
- briefings to financial institutions, customers, users, partner, suppliers, and other interested parties;
- advertising;
- press releases;
- trade shows; and professional conferences.

Documented information

Do you consider that your organization has established policies and procedures to ensure that documented information is controlled?

The goal of having documented information is to set the basic guidance to preserve knowledge and good practices within the innovation management system.

Most management systems couldn´t effectively work without some documented information associated with them. This is not necessarily only referring to high-level documents such as the management system policy or the objectives, which are often required for a management system developed in line with the ISO harmonized structure. Procedures, instructions, records, minutes, reports, etc., related to the innovation management system should also be documented. In all cases, the organization should strive to keep the documented information at a minimum level.

The amount of documented information is influenced by the size of the organization and the types of activities and offerings it has. Also, the complexity of the processes and their interrelations as well as the competences of the personnel will influence the amount of documented information required.

Having said that, if you will have documented information related to the implemented innovation management system, you should set up a process addressing the creation, distribution, access, retrieval and use, storage and preservation, updating, control of changes, and retention and deposition of all documented information pertaining to the innovation management system. This is applicable to internal as well as external documented information.

Usually, you should develop a procedure where your policy to address the above issues is defined. You only have to follow the guidelines set up in ISO 56002:2019, addressing each of the points that are mentioned.

Remember that documented information can change as an organization improves its processes and its innovation management system. So, historical documented information should be maintained, stored, and retrieved in order to keep track

of previous developments; saving some ideas that have not been developed (e.g. due to unfeasibility or strategic analysis) is important in order to analyse them later on. Consideration should be given to version control, where the organization determines some means of identifying current from obsolete documented information and establishes controls to ensure that only current documented information is used.

The storage of obsolete documented information can be important. The documented information should be maintained in an appropriate medium to ensure its preservation and legibility. The retention time for documented information could be a statutory or regulatory requirement, a contractual requirement, or can be determined by the organization (depending on the lifetime of its offerings).

Tools and methods

Do you consider that your organization has determined, provided and maintained the necessary tools and methods for developing, maintaining and improving the innovation management system?

An organization does not have to reinvent the wheel to perform innovation efficiently.

A wide range of tools and methods is already available to support the organization in every innovation activity or process at any stage of the innovation path, from opportunity identification to solution deployment.

The organization should determine, provide, and maintain the necessary tools and methods for developing, maintaining and improving the innovation management system.

The organization should consider:

• selecting and providing a mix of appropriate tools and methods supporting innovation activities, as well as for different types of innovations;

• creating awareness of, ensuring access to, and providing training for the available tools and methods; and

• sharing, reusing and collaborating in the use of tools and methods.

Tools and methods can be of different types, including descriptive, provocative, participative, challenging, analytical and communicative. They can take many forms and formats, including guides, instructions, games, templates, presentations, videos, software, and hardware.

Examples of tools and methods are back-casting, ethnographic research, scenario planning, brainstorming, idea management, inclusive design, and business model templates.

For additional guidance on tools and methods you could consult documents already developed and in continuous development by ISO/TC 279, such as the following:

- ISO 56003:2019, *Innovation management — Tools and methods for innovation partnership — Guidance*
- ISO/TR 56004:2019, *Innovation management assessment — Guidance*
- ISO 56005:2020, *Innovation management — Tools and methods for intellectual property management — Guidance*
- ISO 56006 (under development), *Innovation management — Tools and methods for strategic intelligence management — Guidance*
- ISO 56007 (under development), *Innovation management — Tools and methods for managing ideas and opportunities — Guidance*
- ISO 56008 (under development), *Innovation management — Tools and methods for innovation operation measurements — Guidance*

Strategic intelligence management

Do you consider that your organization has established an approach for the management of strategic intelligence?

In the new "era of knowledge", organizations need to utilize data, information and knowledge to respond to changes in their environment (such as technological, market, regulatory, policy, etc.) and to define their organizational and innovation strategy.

To this extent, it is necessary to isolate or synthesize data and information with high confidence and to convert it into knowledge for making strategic decisions and to take advantage of untapped opportunities.

Strategic intelligence is the outcome of a structured process for collecting, processing and communicating data, information and knowledge to decision-makers, which can be applied continuously or on specific innovation initiatives to be launched.

The backbone of the process rests on ensuring objectivity and adequacy of scope and criteria, reliability of data sources and the information derived from them, and transparency of the actions performed to interpret and communicate the knowledge.

An organization can leverage strategic intelligence as an enabling factor to achieve its business objectives and to implement innovation initiatives for a range of purposes such as:

- identifying new business opportunities;
- increasing competitive advantage;
- anticipating risk and uncertainty;
- enabling technology transfer opportunities;
- forecasting technological and business drivers;
- identifying weak signals to anticipate change;
- overcoming barriers that limit value creation; and
- implementing a structured approach to problem solving.

In order to do this, the organization should establish an approach for the management of strategic intelligence that considers:

- the need to acquire intelligence from internal and external sources;
- the need to collaborate with relevant interested parties;
- the use of tools and methods, e.g. data mining, analytics, prediction markets;
- different perspectives, e.g. present and future, internal and external; and
- the need for developing influencing activities to increase acceptance of innovations.

Strategic intelligence can include activities to acquire, collect, interpret, analyse, evaluate, apply, and deliver to (or share between) decision-makers and other interested parties the necessary data, information, and knowledge.

For additional guidance on strategic intelligence you could consult CEN/TS 16555-2:2014, *Innovation management — Part 2: Strategic intelligence management*, and ISO 56006 (under development), *Innovation management — Tools and methods for strategic intelligence management — Guidance*, and/or get additional advice from a subject expert.

Intellectual property management

Do you consider that your organization has established an approach for managing IP issues?

Every organization involved in innovation initiatives has to address IP, which refers to the type of property. IPR are the rights arising from value generated by human ingenuity, creativity and inventiveness through new knowledge, inventions, creative expressions or, generally, output such as technological products or processes, software, data, know-how, literary and artistic works, designs, symbols and names.

IP is becoming increasingly important on a global scale in today's knowledge-based economy for both large and small organizations because it allows all organizations to capture the benefits of innovation and it can facilitate co-developing, exchanging and trading of ideas.

An organization can leverage IP to achieve its business objectives and to implement innovation initiatives for a range of purposes including:

- strategic positioning;
- finding routes to innovation;
- protecting innovation results;
- attracting and securing investment;
- increasing competitive advantage;
- establishing clear ownership of IP and IPR;
- establishing freedom to operate;
- creating innovation value; and
- enabling collaboration.

The organization should establish an approach for the management of IP that aligns with, and supports, the innovation strategy, considering:

- what IP assets are to be, and not to be, protected and when, how, and where (e.g. patent, copyright, trademark, open-source licensing);

- the rationale for creating, protecting, and utilizing IP, (e.g. defend against infringement);
- the rationale for not protecting IP (e.g. confidentiality, cost, speed);
- if and how to establish and maintain an inventory of the organization's intellectual assets;
- the need for managing, monitoring and analysing disclosed IP that is relevant for the organization;
- how to realize value from IP (e.g. through licensing, cross-licensing);
- establishing awareness and providing training in the organization about the approach;
- access or restriction to IP by persons, internally and externally;
- how to manage infringements, potential and actual, from other parties; and
- the development and differences of relevant national legislations and other internationally applicable legal requirements and compliance commitments.

IP can be used to achieve objectives such as brand building, differentiation and positioning of offerings, customer loyalty, R&D, and revenue generation.

Organizations should be aware that considering IP only from a defensive perspective can obscure some benefits that IP can achieve, which may support additional innovation and business objectives.

IP management can enable collaboration with partners, competitors, and customers, which can yield enhanced innovation outcomes. IP management can create collective value through collaborative approaches (e.g. open innovation, joint development, ecosystems, and network effects), and be a driver of additional sources of revenue (e.g. cash flows through licensing).

For additional guidance you could consult CEN/TS 16555-4:2014, *Innovation management — Part 4: Intellectual property management*, ISO 56005:2020, *Innovation management — Tools and methods for intellectual property management — Guidance*, and/or get additional advice from a subject expert.