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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 279, Innovation Management.

A list of all parts in the ISO 56000 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

0. Introduction

0.1 Why innovation operation measurements are critical for success.

An organization's ability to innovate is recognized as a key factor for sustainability, competitiveness, economic success, increased well-being, and the development of society. However, one cannot understand and manage innovation operations without measuring them.

ISO 56008 "Tools and methods" on innovation *operation* measurements" guides organizations on understanding the importance and implementation of measurements in managing their own innovation operations, which are the combination of their innovation activities, innovation processes, innovation initiatives, and innovation portfolios. It is a guidance standard applicable to innovation operations in organizations of all kinds and sizes, and for any type of innovation. This standard helps organizations think, design, implement, measure, and take actions based on measurement results. It provides examples of innovation operation measurements, indicators, and metrics but does not prescribe any specific ones. While the guidance is for all types of organizations engaged in innovation, we recommend users to consider implementing other 56000 series of innovation management standards in combination with ISO56008.

Innovation is characterized by novelty and value creation. Thus, by definition, it involves risk-taking in coping with the unknown and uncertain in a manner fundamentally different from that of established operational activities. Attempting to innovate without acknowledging the fundamentally non-linear, iterative, and high uncertainty-fraught nature of innovation operations invites costly errors, high probability of failure, and needless waste of time, material, and financial resources. Furthermore, in the light of our global and local challenges, as put forward in the UN's Agenda 2030 for Sustainable Development, innovation is becoming more needed than ever. Hence, the need for organizations to be able to measure the value created by their innovation operations, their results and outcomes for themselves and their interested parties, while helping to determine the impacts (positive/negative, intended/unintended) they may have on the economy, society, and the environment with regards to the Sustainable Development Goals (SDGs).

Measurements, when designed, implemented, and reviewed properly, increase the success ratio of innovation operations. They participate in reducing uncertainty and validating key assumptions that are critical to the success of an innovation initiative (e.g., demand, feasibility, profitability, adaptability), while enabling evidence-based decisions for go/no-go/pivot/refine decisions along the innovation operations.

Measurements also help shape how organizations determine their objectives, generate, and maintain know-how, undertake tasks while monitoring the progress of projects/initiatives, operate with external factors, establish incentives, and assess the results, outcome, and impacts of their innovation operations.

A proper set of measurements contributes to an effective framework for strategic/tactical/operational decision making, planning, value-creation/impact assessment, and overall organizational learning. Such a set of measurements or innovation operation measurement framework, is useful at all levels of the organizations, from top management to people conducting innovation activities on the ground.

The quality of decision-making largely depends on how well the measurements are chosen, implemented, and interpreted. Therefore, organizations should consider the following questions.

— ***Why*** measure: because measurements are essential for understanding the situation, making evidence-based decisions, and managing activities towards success.

— ***What*** to measure: deciding on the indicators providing relevant information on the situation and/or the system.

— ***How*** to measure: designing and selecting the appropriate metric for each indicator, i.e., formulae by which the indicator can be valued qualitatively or quantitatively; how to implement the measurement, i.e., select right tools,, collect data and analyze it while considering the implied cost and benefits.

— ***Who*** should measure: Organizational entities related to the measurement processes and their roles (data retrieval, data synthesis, interpretation, responsibility, and accountability for the measurements).

— ***Who benefits***: The measurements should be adapted to the needs and purpose of the persons implementing and interpreting them.

— ***When*** to measure – the appropriate time and duration for doing the measurement.

— ***How*** to interpret measurements' results and act following the measurements to correct the situation if necessary and to draw relevant lessons.

Measurements are some of the most important management actions and as such, should address the following fundamental inquiries concerning the status, evolution, and performance of an organization's innovation operations.

— **Are we doing the *right things*?** Are we aligned with respect to the organization's mission, innovation vision, strategy, policy, and objectives? Are we addressing the most critical innovation opportunities for our organization? Have we gathered the necessary evidence to reduce the uncertainties that are critical to the success of our innovation operations?

— **Are we doing these things in the *right way*?** Do we have the necessary and sufficient leadership, resources, capabilities, effective processes, required support, and organizational structures to proceed towards success legally and ethically? Do we generate sufficient evidence for effective and efficient evidence-based decision-making?

— And **are we *succeeding*?** How well (or poorly) are we doing? Are we achieving sufficiently valuable results and outcomes, thereby increasing our relevance to interested parties? Do we understand the value and impact our innovations are creating on society, the environment, and the economy?

Furthermore, we know that the way people and their activities are assessed and measured has a significant impact on their behavior, thus requiring careful design of innovation operations measurements to ensure that the **right behaviors** are nurtured and supported.

Note: There is no universally appropriate collection of innovation operation measurements. Each organization should consider its own dynamic context, the evolving needs, and expectations of its interested parties, its objectives, and its innovation initiatives to devise its own appropriate set of measurements or innovation operation measurements framework.

0.2 Benefits of innovation operation measurements

The benefits of implementing a systematic approach to measuring innovation operations involve the following:

— strategic positioning to focus the efforts and innovation resources on the desired outcomes while optimizing opportunities vs risk;

— enabling an evidence-based decision-making process for determining innovation operational issues, along with their progress, results, and outcomes;

— ensuring adequate and timely resource allocation for innovation operations;

— monitoring the expected progress of innovation operations and adjusting them in time for meeting objectives efficiently;

— generating needed evidence to manage innovation processes for go/no-go/ pivot/ refine decisions to advance innovation activities concretely;

— ensuring that innovation operations management is relevant, ethical, effective, and efficient;

— nourishing an innovation culture that targets value creation; and rewarding and recognizing innovators

— providing reliable data on value creation opportunities for attracting investments and the engagement of interested parties; and ultimately

— ensuring that the innovation results contribute to value creation and the intended impacts of the organization's IMS.

0.3 Structure of this document

This document is structured to present measurements concerning innovation operations within an organization. In addition to Introduction (Clause 0), Scope (clause 1), Normative references (clause 2), and Terms and definitions (clause 3), the ISO 56008 contains 6 clauses as shown in Figure 0.1. An introductory clause 4 provides the fundamentals of innovation operation measurements. Clause 5 provides guidance on measurements related to the context, leadership, planning, and supporting elements of the organization that will trigger or impact innovation operations. Three central clauses provide guidance on measurements for innovation operations at the innovation process (clause 6), innovation initiative (clause 7), and innovation portfolio (clause 8). Clause 9 is dedicated to continual review and improvement of the set of measurements and/or the innovation operation measurement framework. Additionally, annexes A to E provide detailed examples of indicators and metrics related to clauses 5 to 8 respectively.

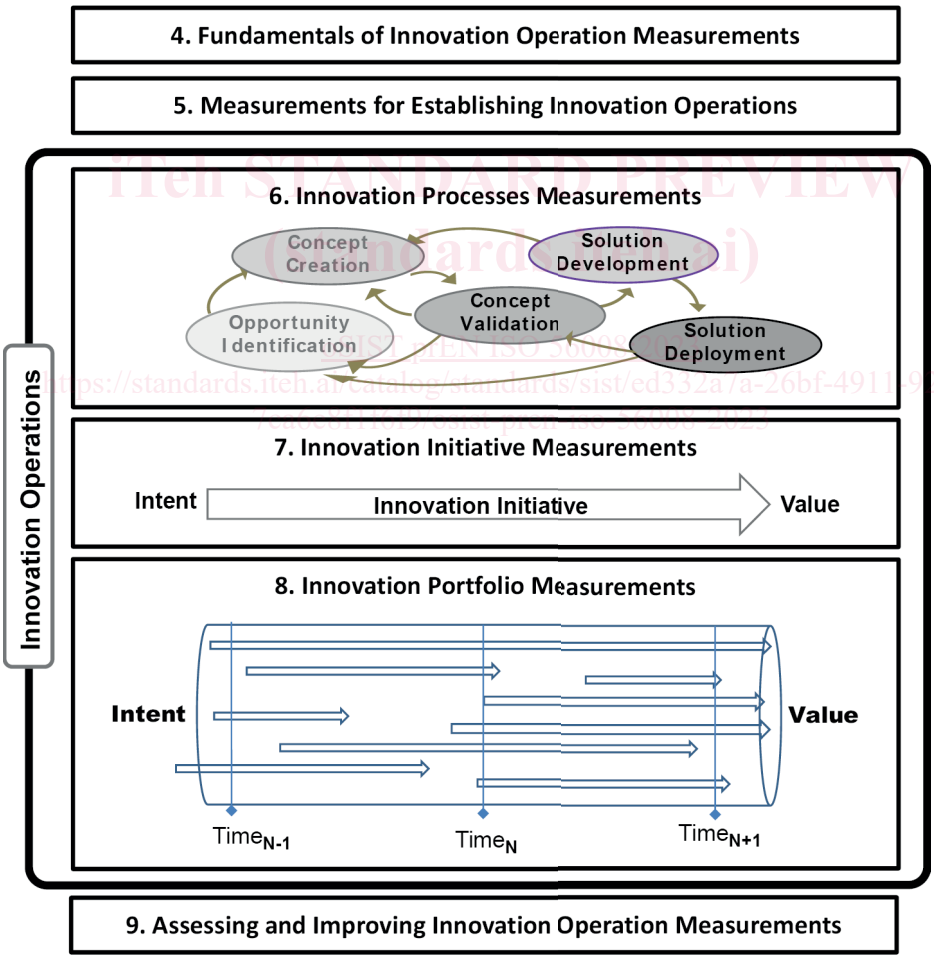

Figure 0.1 — Core clauses of ISO 56008 Innovation Operation Measurements

The core ISO 56008 clauses on innovation operation measurements are as follows.

Clause 4 *Fundamentals of Innovation Operation Measurements* – provides guidance on the role of measurements in addressing the uncertainties and risks of innovation activities, the high-level processes involved, and the leadership, strategy, and planning for effective innovation measurements. This clause also guides in determining what to measure and how to measure it, the design of innovation

metrics, and the support required. Clause 4 also includes the basics of data gathering, analysis, learning, and corrective actions engendered by measurements.

Clause 5 *Measurements for Establishing Innovation Operations* – provides guidance on the measurements required to understand an organization's external and internal context, including the needs and expectations of interested parties. This clause will help to ensure the alignment of innovation operations with business objectives, the adequacy of innovation leadership, the organization's needed culture, and the effectiveness of innovation planning and support. Such measurements also help gather evidence on the relevant internal-&-external issues and the areas of opportunity for potential value realization that will trigger or impact the course of innovation operations.

Clause 6 *Innovation Processes Measurements* – provides guidance on the measurements necessary to: support the identification of opportunities, the creation and validation of concepts, and the development as well as deployment of solutions. These measurements should enable better decision-making and advance innovation activities concretely from one innovation process to another based on evidence-gathering and hypotheses validation. Additionally, this clause provides guidance on the measurements needed to detect problems, decide on adequate corrective/improvement actions, and ensure the progress of the organization's innovation processes.

Clause 7 *Innovation Initiative Measurements* – provides guidance on the measurements to be considered during the course of an innovation initiative in order to reduce uncertainties, detect issues, minimize risks, undertake corrective/proactive action (including the abandonment of an initiative), and ensure progress towards achieving intended results.

Clause 8 *Innovation Portfolio Measurements* – provides guidance on the measurements needed for assessment, management, and decision-making regarding the organization's portfolio(s) of innovations.

Clause 9 *Assessing and Improving Innovation Operation Measurements* – provides guidance on improving the effectiveness and efficiency of the set or framework of measurements to reflect changes in the organization and its external context, along with changes to its innovation objectives and its activities, or in the case of inadequate choices of measurements and/or metrics.

Several annexes (A to E) offer detailed examples of key questions to be asked, indicators and metrics related to various innovation operations measurements.

Details on an Innovation Management System (IMS) can be found at ISO 56002:2019. Details on Innovation Management Assessment can be found at ISO/TR 56004:2019. For details on specific innovation management tools or techniques, consult ISO 56003:2019, ISO 56005:2020, ISO 56006:2021, and, under preparation, ISO/DIS 56007. For common innovation management terminology consult ISO 56000:2020.

Innovation management — Tools and methods for innovation operation measurements — Guidance

1 Scope

This document provides guidance for the definition, implementation, evaluation, and improvement of the measurements necessary to effectively manage innovation activities in an organization. It establishes the fundamentals of innovation operation measurements and guides their application towards four areas

— measurements for establishing and launching innovation initiatives,

— measurements for innovation processes,

— measurements for innovation initiatives,

— measurements of innovation portfolios.

This document is applicable to:

— organizations that are seeking to define and implement an innovation operations measurement approach focused on value creation based upon the appropriate selection and use of indicators and metrics;

— organizations and interested parties seeking to improve the areas of accountability, transparency, and evidence-based assessment of innovation operations;

— customers, and other interested parties, seeking confidence in the organization's innovation operations management and its results;

— providers of training in innovation operations and measurements, including assessment of and consultancy for achieving results;

— experts in innovation operations evaluation and impact assessment, favoring the use of a harmonized international guidance standard;

— innovation policy makers and program managers who are looking to obtain evidence of progress and desired outcomes of innovation activities supported through public policies and programs.

All the guidance provided within this document is generic and intended to be applicable to:

— all types of organizations regardless of sector or size, whether they be private, public, not-for-profit, governmental or societal;

— all types of innovations (e.g., product, service, process, model, and method) ranging from incremental to radical;

— all types of time horizons, from short-term to long-term evaluation and measurement.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 56000:2020 and the following apply:

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

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

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

3.1
operation
performance of practical work or something involving the practical application of principles or processes

Note 1 to entry: An operation is also an activity planned to achieve something.

Note 2 to entry: An act or process of working, doing something, being in action, or having an effect.

Note 3 to entry: ISO 9001 explains that... "Operation is what your business does. Operations can be optimized and effectively run when all the processes involved are planned, managed, and controlled".

3.2
innovation operation
operation with regard to innovation

Note 1 to entry: Innovation operations are all the activities performed to achieve innovations.

Note 2 to entry: Within the context of innovation management, innovation operations encompass innovation activities, innovation processes, innovation initiatives, and innovation portfolios.

3.3
result
something that occurs as a consequence, issue, or conclusion

Note 1 to entry: The output, outcome, or impact of an operation.

3.4
input
resources such as people (with their skills and attitudes), finance, data or knowledge (tacit or codified) that are put into a system, organization, innovation operation, or process

3.5
output
results produced from a process or activity

Note 1 to entry: Results from innovation activities (e.g., new products or services; new organizational methods).

3.6
outcome
effect of outputs (e.g., effect of innovations on firm performance) that follow as a result or consequence

Note 1 to entry: For the sake of this document, "outcome or result" are used interchangeably.

3.7
impact
significant or major effect resulting from a process or activity

Note 1 to entry: Positive and negative, primary and secondary short- and long-term effects, directly or indirectly, intended or unintended.

3.8
measurement
a process to determine value

Note 1 to entry: This constitutes one of the common terms and core definitions of the high-level structure for ISO management standards

Note 2 to entry: The difference between measurement and measure as nouns is that measurement is the act of measuring, and measure is the result of the measurement.

3.9
indicator
specific information on a state, condition, or impact

Note 1 to entry: An indicator can be quantitative or qualitative.

Note 2 to entry: This constitutes one of the common terms and core definitions for ISO management system standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives, Part 1.

Note 3 to entry: Indicators are the characteristics that can be measured to determine if an operation is successful or not.

3.10
metric
metrics are the ways by which indicators are measured

Note 1 to entry: The speed of implementation may be the indicator (see definition for Indicator), but the actual metric would be the amount of time from project initiation to project completion.

3.11
composite metric
a metric whose values are defined by a mathematical formula involving other metrics

Note 1 to entry: A composite metric can be created by weighted combinations of two or more metrics, with the weights chosen to emphasize the perceived relative significance of some of the components.

Note 2 to entry: Examples include - Culture of Innovation Metric could be calculated as 0,25 x (Percentage of people submitting valuable ideas) + 0,15 x (Percentage of collaborations without complaints) + 0,35 x (Percentage of Communicated Lessons drawn from failure) + 0,25 x (Percentage of people rewarded for innovation).

3.12
monitoring
determining the status of a system, a process, or an activity

Note 1 to entry: To determine the status, there may be a need to check, supervise, or critically observe

Note 2 to entry: This constitutes one of the common terms and core definitions of the high-level structure for ISO management system standards.

Note 3 to entry: Monitoring is the function of using measurements to observe and track innovation operations at the levels of activities, processes, initiatives, and portfolios.

3.13
evaluation
process of comparing results of analysis to established criteria

Note 1 to entry: Evaluation can be done to determine effectiveness, efficiency, performance, conformity, or value.

Note 2 to entry: Evaluations determine the appropriate actions required.