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Innovation management — Tools and methods for strategic intelligence management — Guidance

Management de l'innovation — Outils et méthodes de management de l'intelligence stratégique — Recommandations

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Foreword

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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).

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

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

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

Introduction

0.1 General

Organizations operate in a volatile, uncertain, complex and ambiguous environment which is characterised by expanding knowledge flows, increasing global competition and rapid rates of change. This creates the need to anticipate change, influence the environment and make timely and informed decisions regarding innovation.

Global knowledge and information-based environments require strategic-thinking leaders to utilise this knowledge to define their organizational and innovation strategy. This supports organizations in responding to changes in their environment, e.g. social, technological, market, regulatory, policy.

To this extent, it is necessary to isolate or synthesize data and information with high-confidence and to convert it into knowledge for driving strategic decisions.

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

The process backbone lies on the capability of ensuring objectiveness and appropriateness of scope and criteria, reliability of data sources and information derived, transparency of the actions performed to interpret and communicate the knowledge. As such, it is both an element of risk reduction as well as strategic growth and it enables organizations to set strategic direction and implement their innovation initiatives.

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

0.2 Principles

Strategic intelligence within the context of innovation management should conform to the following innovation management principles that are the foundation of an innovation management system:

a) Realisation of value

Strategic intelligence impacts on the vision, mission and innovation activities of an organization. As such, it should support the creation of value for all relevant stakeholders. This includes long-term and short-term value; explicit and implicit value; financial and non-financial value (e.g. competence growth, technological and/or competitive advantage, societal benefit, sustainability improvement).

b) Future-focused leaders

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When managing innovation initiatives, leaders across the organization should foster strategic intelligence as an enabling factor for long-term value creation.

c) Strategic direction

The organization should align the overall strategic direction for the management of strategic intelligence with its business and innovation strategies.

d) Culture

Strategic intelligence management should be aligned and fostered within the shared values, beliefs and behaviours across the organization (and relevant community) and should be part of its identity.

NOTE 1 The concept of "culture" (supporting innovation activities) is defined in ISO 56000:2020, 3.2.10 and specifically addressed in ISO 56000:2020 4.3.4 and ISO 56002:2019, 4.4.2 respectively.

NOTE 2 The concept of "identity of an organization" is specified and addressed in ISO 9004:2018, Clause 6.

e) Exploiting insights

Pursuing innovation opportunities in order to drive innovation and create value, clearly relies on the capacity of generating insight, defined in ISO 56000:2020, 3.4.3 as profound and unique knowledge about an entity.

In this perspective, strategic intelligence management should ensure access to a diverse range of internal and external data, information and knowledge sources to systematically build expertise in support of strategic decision-making.

f) Managing uncertainty

The organization should foster strategic intelligence management in support of identifying, assessing and managing innovation uncertainties and related opportunities and risks.

g) Adaptability

The organization should align the need of strategic intelligence with its vision and mission, addressing and even anticipating changes at different time scales in the external and internal context.

h) Systems approach

The organization should manage strategic intelligence based on a systems approach (instead of an *ad-hoc* basis) with a view to reducing organizational risks and enhancing value creation potential for the organization.

These principles can be considered as an open set to be integrated and adapted within the organization.

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Innovation management — Tools and methods for strategic intelligence management — Guidance

1 Scope

This document provides guidelines for supporting strategic intelligence within innovation management. It aims at addressing the following areas concerning strategic intelligence at strategic and operational levels:

- creating a strategic intelligence management strategy to support innovation in an organization;
- establishing strategic intelligence management in support of the innovation activities and initiatives within the innovation management system and the related innovation processes;
- applying strategic intelligence tools and methods in support of the innovation activities and initiatives within the innovation management system and the related innovation processes.

Strategic intelligence is transversal and cross-sectorial by nature. It is not limited to innovation activities and can apply to all areas where knowledge is required for strategic decision-making and consequent actions.

This document is not applicable to:

- certification;
- data protection.

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2 Normative references

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

ISO 56000, *Innovation management — Fundamentals and vocabulary*

3 Terms and definitions

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

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

intelligence

result of gathering, analysing and interpreting data, information and knowledge

Note 1 to entry: Intelligence can be of different kinds, e.g. (but not limited to) market, technology, competitive, intellectual property or business.

3.2

strategic intelligence

intelligence directed to top management with recommendations to make decisions impacting the vision, strategy, policy and objectives as well as innovation activities of the organization

4 Fundamentals of strategic intelligence

4.1 Purpose of strategic intelligence

Intelligence is required at every stage of the innovation processes, including but not limited to idea generation, engineering conception, and business model determination.

Knowledge is the key resource in generating innovative concepts, e.g. knowledge of technology progress, of markets, business trends, geopolitics.

Strategic intelligence promotes decision-making based on knowledge, assists in managing uncertainty by addressing opportunities and risks and is integral to the innovation management system activities and processes.

4.2 Strategic intelligence needs

To accomplish this purpose, the strategic intelligence team should:

- acquire data, information and knowledge from internal and external sources;
- collaborate and cooperate with relevant interested parties;
- gain additional perspectives, e.g. present and future trends, internal and external factors, demand and supply for intended products/services, needs of providers and users related to new or changed products, services, processes, models, methods, competitors and collaborators, regulatory changes, intellectual property management, consumer safety, security and ethics, and sustainable development considerations;
- develop influencing activities and initiatives to increase acceptance of innovation, e.g. evolution of regulatory requirements, standards, and innovation ecosystems;
- identify external interested parties: customers, suppliers, internal and external auditors and assessors (e.g. compliance with standards, regulations), governments at all levels (e.g. compliance with regulations, statutes, laws), consumer groups (e.g. concerns regarding fairness, ethics, safety), regulatory bodies, industry and trade associations;
- identify internal interested parties: employees, union representatives (if applicable), management (e.g. performance, costs), shareholders/owners (e.g. earnings);
- anticipate and analyse external trends (e.g. megatrends, policies, regulations, economy, society, technology, environment, legal), drivers and signals;
- identify internal tendencies (e.g. resources, competencies, assets, business models);
- understand interested parties' issues that are relevant to its purpose and that affect its ability to achieve the intended outcome(s).

4.3 Core of the strategic intelligence process

The primary strategic intelligence cycle is referred to as the DIKI model:

Data → Information → Knowledge → Intelligence

NOTE The DIKI model is an adaptation of the DIKW (data, information, knowledge, wisdom) pyramid. In this sense, while "wisdom" is an ideal/asymptotic concept, "intelligence" can be achieved by implementing an appropriate intelligence management process, such as the one specified in this document.

The implementation of the strategic intelligence process requires use of various tools and methods, e.g. data mining, analytics, artificial intelligence, machine learning, prediction techniques, environmental scanning, technology watching, ethnographic research, to support the DIKI model.

4.4 Strategic intelligence timing

Ideally the strategic intelligence cycle should be a continuous cycle. However, due to practical reasons, it may not be feasible. Gathering of data, extraction of knowledge and intelligence can be either calendar driven or triggered by an external and/or internal event that requires leadership attention and/or decision(s).

4.5 Expected strategic intelligence outcomes

The following outcomes are expected:

- a set of recommendations to the leadership for use in strategic planning and decision-making;
- a set of recommendations to the strategic intelligence team on new or alternative directions and any additional data requirements for confirmations. This includes appropriate levels of confidentiality, protection, disclosure and maintenance of the proprietary nature of intelligence, also considering intellectual property-related aspects.

4.6 Strategic intelligence essentials

The strategic intelligence cycle should require:

- a) Support in terms of infrastructure and access to:
 - 1) specialized databases such as intellectual property, business, marketing and other commercial databases, with appropriate licences and permits;
 - 2) specific techniques and tools for generation, search, retrieval, analysis and treatment of data and information, e.g. text mining, big data, machine learning, social network analysis, voice and other methods and [ISO/FDIS 56006](https://standards.iteh.ai/catalog/standards/sist/e39a22b4-b8e5-44fe-9266-944190122429/iso-fdis-56006)
 - 3) workspace infrastructure, and associated facilities, utilities and equipment, e.g. facilities, IT hardware/software. <https://standards.iteh.ai/catalog/standards/sist/e39a22b4-b8e5-44fe-9266-944190122429/iso-fdis-56006>
- b) Recommended competencies, e.g. a team of multidisciplinary expertise:
 - 1) team/project management;
 - 2) subject matter expertise, e.g. technology scenario analysis, business environment and market analysis, innovation management, sustainability, prospective, intellectual property, human resources & social sciences;
 - 3) ethnography, behavioural science, design research, user insights;
 - 4) industry sector expertise, e.g. chemical, energy and power, oil and gas, automotive, aerospace and defence, manufacturing, healthcare, government and public administration;
 - 5) data analytics, e.g. statistics, big data analytics, AI/Machine Learning, forecasting.

NOTE 1 These are minimum options for a multidisciplinary expertise. Depending on the size of the organization, the number of people involved, the type of information or other reasons, the same person can fulfil one or more roles, when there is a need to add the relevant skills.

NOTE 2 The strategic intelligence team can foster knowledge exchange and have sufficiently developed interpersonal and personal skills (e.g. communication skills, emotional intelligence, problem solving, flexibility, analytical capacity and intuition).

Some of the reasons for poor intelligence generation can include:

- inadequate collection of data, information and knowledge;
- missing requirements, deadlines or costs;

- wrong or poor communication of intelligence;
- wrong or poor execution of the strategic intelligence cycle (e.g. lack or wrong execution of one or more steps).

5 Strategic intelligence cycle

5.1 Operational planning and control

The strategic intelligence needs of an organization regarding innovation depend on the identification of the relevant data, information and knowledge in the context of the organization (e.g. market, competitors, technical, stakeholders). It should be aware that the business environment is dynamic and continually changing. The strategic intelligence team should consider the following external and internal aspects as a minimum:

- business areas of the innovation projects identified, business areas of the identified innovation activities and initiatives;
- relevant interested parties, e.g. competitors, investors, partners, academia and research infrastructures and ecosystems;
- market trends including unstated customer needs and expectations;
- technology trends;
- standards, industry codes and best practices;
- legal and regulatory relevant frameworks and trends;
- intellectual property and intellectual property rights;
- aspects related to environmental, social and economic sustainability.

Verification is performed in order to reduce uncertainty, minimize risks and avoid incurring unnecessary costs. Verification is applied to outcomes at each step throughout the strategic intelligence cycle, evaluating them against a set of requirements. The strategic intelligence team may select one of the many existing models for this purpose.

5.2 Strategic intelligence cycle

The strategic intelligence cycle is shown in [Figure 1](#).