

# ISO 50500 series innovation management: overview and potential usages in organizations

Alice De Casanove, Laure Morel, Stéphane Negny

► **To cite this version:**

Alice De Casanove, Laure Morel, Stéphane Negny. ISO 50500 series innovation management: overview and potential usages in organizations. ISPIM, Jun 2017, Vienna, Austria. <hal-01624970>

**HAL Id: hal-01624970**

**<https://hal.univ-lorraine.fr/hal-01624970>**

Submitted on 26 Oct 2017

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

# ISO50500 series innovation management: overview and potential usages in organizations

Alice de Casanove\*

Airbus Defence and Space, 31 rue des cosmonautes, F-31402, Toulouse, France.  
Université de Lorraine, Laboratoire ERPI, EA 3767, Nancy, F-54000, France.

E-mail: [alice.decasanove@airbus.com](mailto:alice.decasanove@airbus.com)

Laure Morel

Université de Lorraine, Laboratoire ERPI, EA 3767, Nancy, F-54000, France.

E-mail : [laure.morel@univ-lorraine.fr](mailto:laure.morel@univ-lorraine.fr)

Stéphane Negny

Institut National Polytechnique de Toulouse, Laboratoire de Génie Chimique, UMR 5503,  
Toulouse, F-31432, France

E-mail: [stephane.negny@ensiacet.fr](mailto:stephane.negny@ensiacet.fr)

\* Corresponding author

**Abstract:** Innovation must be supported by a mindset shift, and cannot be reduced to innovation labs or creativity rooms with fancy furniture, writable walls, adding innovation as a company value, or launching innovation challenges. Those will generate buzz, not a sustainable innovation mindset. Culture is something you need to support, enable, and maintain. In 90's; quality culture has been spread in the whole industry value chain through ISO 9001 standards. This set of standards has defined what quality means, which are the core principles and how to structure the quality system. ISO9001 has been embraced and deployed across many organizations, this standard proved to be instrumental in quality culture dissemination. Innovation management needs the same visibility and the same culture development in today's organization. The future ISO standards on innovation management (ISO 50500 series) is presented in this paper, and their expected impact on building an innovation culture is motivated. ISO50500 series stems from the 2013 ISO Technical committee on innovation management that has been created under the impulsion of AFNOR (French standardization office). The scope of this technical committee has been approved by its members in 2014: "*Standardization of terminology tools and methods and interactions between relevant parties to enable innovation.*" As of today, the committee gathers 48 countries and 6 international liaisons with international institutions (WIPO, WTO, OECD, CERN, World Bank and EPO).

**Keywords:** Innovation; Innovation management; Innovation Management System, ISO 50500, ISO50501.

## 1 Introduction

Innovation is a powerful driver for creating value, competitiveness and profitable growth.

Innovation management helps organizations to grasp innovation opportunities to create and introduce new business models, organizations, products or services into the market. Innovation is a pillar of global competitiveness as well as human progress over the coming decades. In other words, innovation management means not leaving innovation

to chance for outperforming competitors and differentiating from them, but innovation management is a systematic approach to make innovation a guarantee of business sustainability.

Then Innovation has become a must-have in most of large sustainable organizations. Many organizations are today striving towards becoming more innovative to answer the paradigm: disrupt or being disrupted. How can an organization take steps to becoming more innovative?

This paper is organized as follows: in section 2, we introduce Innovation management system in organizations, and the rationale for standard on innovation management. In section 3, we present the first steps of ISO standards on innovation management and introduce the ISO 50500 series. In section 4 we discuss the expected impact of this new series on large organizations and how it will help shaping the development of ecosystems.

## **2 Innovation Management system in organization**

### *Why proposing standards on Innovation Management?*

Management Standards on Innovation break down the existing cultural, structural or organizational obstacles among/between organizations. Bertrand Piccard declared just after Solar Impulse experimentation in December 2016:

"Well, once you get out of your comfort zone, you can do so many more things. The only limitations are the beliefs we have. All our beliefs, all the conditions, all the certitudes, as soon as you get rid of these you function much better and actually this is the magic of adventure"(Shields, Knight, 2016)

In a nutshell, we start to innovate as soon as we withdraw a belief.

Large or small organizations have their own culture and then their own beliefs: when a company is successful, management is not in a comfortable position to change the business or pivot. (Christensen, 1997) shows how large companies consider they are too big to fail and do not consider to change their viewpoint on the business. This belief makes them weak and leaves opportunities for the challengers.

Change in an established and making business requires courage. Select how it is possible to change is even more complex. (Kotter,1990) describes why Innovation management offers a framework of methodologies to make the change acceptable and legitimate for any organization. Working on innovation requires a specific set of tools and methods. This set is different from the ones used in new product/service develops. There are more uncertainties and more unknowns in innovation than in the development of a new product. Managing an innovation project requires developing the learning curve of the team. The methodology of Lean startup (Ries, 2011) is dealing with how setting a strategy and capturing insights to transform the assumptions in knowledge.

These standards provide best practices to support implementation of the innovation policies as well in Small to Medium Enterprises (SMEs) as in worldwide groups including public institutions, universities, research centers or non-profit organizations. In ISO TC 279 experts address: terminology, tools, and methods such as but not limited to open innovation, design innovation, strategic intelligence, creativity management, intra/entrepreneurships and also self-assessment of innovation management.

### *Why organization adopts a Management Systems from ISO standards?*

Organizations set up a framework to support the achievement of the targets of their core businesses and the replicability of the activities. A management system defines this framework with an organization and a set of policies, processes, and procedures. (Asif, Joost de Bruijn, Fisscher, and Searcy, 2010) shows how the different types of managements systems induce meta-management systems. To facilitate the adoption of their standards, and

with the multiplication of the management standards ISO technical management board has taken two measures: a justification study is required prior each creation of new management system and all standards on management systems have to follow the HLS (High Level Structure).

The justification study is required in ISO for new management system standard, or proposals for amendments/revisions to existing Management Systems Standards. This study clarifies the benefits and impacts of the future management systems as well as the type of standards (type A standards with requirements or a type B standards with recommendations). ISO technical management board is in charge of approval of this document.

ISO board also intends to maintain quality in the development of its own standards in asking for such a justification. ISO proposes also a harmonized structure of documents applicable to organizations of all types or sizes, in all kind of business. The High Level Structure is a standardized way of developing and revising ISO management system standards. It is defined in Appendix SL of the (ISO/IEC Directives, Part 1). All new standards should respect and share a common consistent core:

- A common table of contents: identical chapters, article and clause titles.
- Introductory texts for identical articles
- Common terms and core definitions

The characteristics specific to each standard are inserted into this structure in the appropriate clauses. This standardized table of content ensures a consistency among management systems standards. This compatibility among various management system standards facilitates their consistency and deployment in the organization management system.

These standards preserve each organization's ability to improve management systems above and beyond the standard. The first standard drafted in compliance with the HLS was (ISO 55001) on Asset Management System.

### *Which are already published standards on innovation management?*

In starting in 2013 ISO TC 279 has identified the exiting standards in the area of innovation management.

In November 2008 a CEN Technical Committee, CEN/TC 389 'Innovation Management' was created in order to provide organizations with tools, in the form of standardization documents, to ensure a more systematic approach to innovation and optimize the planning and management of all aspects fostering their innovation capabilities:

- EN 16555- part 1 – innovation management system
- EN 16555- part 2– strategic intelligence management
- EN 16555- part 3 – Innovation thinking
- EN 16555- part 4 -intellectual property management
- EN 16555- part 5 – Collaborative management
- EN 16555- part 6 – Creativity management
- EN 16555- part 7 – Innovation management assessment

These European works reused some existing standards established in the different European countries:

The Portuguese standard (NP4457:2007, Management system requirements of R&D+I) as well as the Spanish standard (UNE 166002 - R&D+I: Requirements Management RD, 2006), presents a set of best practices based on research and development including the launch of the product in market and its follow-up.

The British Standard 7000-1:2008 presents a methodology which is divided into several sequential steps aimed at ensuring the organization's development and dissemination of a culture of innovation.

The Irish standard NWA - 1:2009 - a guide to good practices in innovation and the development process, developed by NSAI (National Standards Authority of Ireland). It describes innovation activities from strategy creation to market launch.

The German Standard DIN 77100:2001 - Patent valuation - General principles for monetary patent valuation. Supports the patent portfolio evaluation for financial purposes

The French Standard FD X50-146:2010 – Innovation Management – Intellectual Property Management proposes guidelines to efficiently organize and management intellectual property rights and in particular patents from a strategic point of view.

The French standard FD X50-274: Innovation Management - Creativity management (August 2015) proposes some guidelines on how to develop an creativity atmosphere, and make divergence and convergence phases relevant.

The French standard FD X50-273: Implementation of sustainable development in the innovation process gives guidelines to consider at early stages of innovation design all the questions focused on sustainability.

The French standard FD X50-272: Guidelines for the implementation of open innovation (April 2014) gives good practices to make organization deploy an open innovation policies and to manage the different partnerships

Outside Europe, especially in South America, similar standards have developed in particular:

The Mexican Standard NMX GT 003:2008 follows a simple pattern for a management system focused on process management technology - the technology makes no reference to research, development and innovation.

The Brazilian standard ABNT NBR 16501:2011 - Guidelines for Management Systems R&D+I is included in a set of three standards (concepts, system management and R&D+I projects).

In Asia, China has published in 2013 standards on Intellectual property management to increase national patent applications.

GB/T 29490:2013 “Enterprise intellectual property management” standard outlines requirements which businesses have to achieve across operational aspects of intellectual property management (resources management, and implementation of the system).

GB/T 33250:2016 Intellectual Property Management for Research and development organizations addresses the development of standards in the frame of public Research centers.

GB/T 33251:2016 Intellectual Property Management for higher education institutions addresses patent applications and processes in Chinese universities.

As it has been just presented, there are many existing standards in different regions of the world. In our globalized world, it does not make sense to innovate in an isolated manner. With global organizations, innovations might be concentrated in one country but will be spread and will generate value in another region. International organizations are also impacted by the variety and variability of national innovation policies. Given these, it has appeared relevant to create international guidance on innovation management. Indeed, international Standards on innovation management allow organizations to share their best practices in innovation management across boundaries. This will facilitate international collaboration and also develop the capability to innovate and to bring innovations successfully to market.

### **3 An international standard on Innovation Management: ISO 50500 series**

ISO standards are developed with a proved approach to obtain international consensus. Each stakeholder, each country has a vote and can impact standards contents. This rigor in the process makes ISO standards legitimate and recognized widely. Today 48 member countries in ISO, the International Standardization Organization, are committed to create a new international standard for innovation management under the leadership of ISO TC 279 on Innovation Management.

The charter of this group (ISO/TC279 business plan, 2014) has been defined at the creation the committee in 2013, and aims at defining “*Standards on innovation management will allow organizations to share their best practices in innovation management. This will facilitate collaboration and also develop the capability to innovate and to bring innovations successfully to market.*”

ISO50500 series would be starting being published in 2018 and will provide best practices to support implementation of innovation policies as well in Small to Medium Enterprises (SMEs) as in worldwide groups including public institutions, universities, research centers or non-profit organizations). To achieve this goal, the work is focused in particular on a management system for innovation and all the tools and methods associated to this system (such as but not limited to open innovation, design innovation, strategic intelligence, creativity management and also self-assessment of innovation management...).

#### *Overview of ISO 50500 vocabulary and principles*

ISO 50500 provides Terms and definitions and also Innovation Management Principles.

The vocabulary standard will define some keywords such as Innovation, Innovation Management, and Innovation strategy. (Hakvåg, Karlsson,2017) is showing the impact of this standard on the public policies from international institution. This contribution shows also how terminology and tool such as term tree can clarify and structure the vocabulary.

Another part of ISO 50500 will address the innovation management principles. The innovation management principles describe key aspects of an innovative organization. Seven principles have been proposed by ISO TC 279 experts. These principles are considered as the essence of the innovation management system. In other words, it can be considered as a kind of manifesto of the ISO TC 279:

- Realization of value
- Future-focused leaders
- Purposeful direction
- Innovation Culture
- Exploitable insights
- Mastering uncertainty.
- Adaptability. Transformation of the organization

#### *Overview of ISO 50501 Innovation Management System*

The Innovation management system ISO 50501, to be published in 2018 will allow organisms to share their best practices in innovation management. It will facilitate collaboration and help organizations to identify the need for innovation, the risks and benefits associated, and to develop a capability to innovate and successfully bring innovations to market.

Indeed ISO 50501 is a hat document, giving key insights to establish an innovation management system:

- understanding the context of the organization and the integration of the global Management System of the organization;
- establishing the leadership and commitment of top management;
- planning for innovation development;
- identifying and fostering innovation enablers/driving factors;
- deploying the innovation management process;
- understanding and using innovation management tools and methods;
- spread Innovation culture;
- assessing the performance of the Innovation Management System and change it if necessary.

The document is still under development and will be based on the principles published in ISO50500. The structure of this document is compliant with the high level structure. As explained previously the Management System Standard Chapters contain mandatory chapters:

- 0. Introduction
- 1. Scope
- 2. Normative references
- 3. Terms and definitions
- 4. Context of the organization
- 5. Leadership
- 6. Planning
- 7. Support
- 8. Operation
- 9. Performance evaluation
- 10. Improvement

As ISO 50501 does not contain any requirement, its adoption will show that the content of the document is relevant for organizations and has not been imposed through certification process. It demonstrates a major change in the way to develop and spread standards. Relevancy of the content makes the success of the document and to the certification or other kind of marketing labels.

This type of standard and guidance makes also standard dealing on self-assessment of management all the more important. Indeed the result of the self-assessment will guide the organization in the implementation and improvement of its own innovation practices and culture. This tool on self-assessment will be detailed in ISO 50502.

#### *Overview of ISO 50502 Innovation management assessment*

This innovation management system gives the backbone for innovation management in all types of organizations. When such a document is published, organizations wonder about the relevance of such a management system. Organizations will be able to assess their innovation management potentials with ISO50502 which innovations management assessment.

ISO50502 is based on some principles mirroring the innovation management principles

- Add value to the organization
- Challenge the organizations objectives and strategy
- Motivate and mobilize for organizational development
- Be timely and encourage a focus on the future
- Allow for context and promote the adoption of best practice
- Be flexible and holistic
- Be an effective and reliable process

These principles, their rationale and benefits will be published in a separated ISO publication.

ISO 50502 will cover in particular:

- Existence (to check if a system is present and what is its level of maturity)
- Efficiency (does it produce results in a timely & cost effective manner ?)
- Effectiveness (does it help the organization learn and achieve more/better results ?)

and will describe the process of an Innovation Management Assessment and what is recommended to initiate and manage them successfully, the needed prerequisites, the typical outputs derived, and suggested time intervals (e.g. based on maturity change or innovation/ product/ service life cycles).

ISO 50502 will point out the different lacks or gaps in their organizations, policies, and process. Once the gaps or lacks have been identified, organizations can setup an action plan. ISO5051 will give high level insights on how the organization can be modified. ISO 50503,4,5... describe tools and methods to implement operationally innovation management in all types of organizations.

#### *Overview of ISO 50503 - Innovation management - Tools and methods for innovation partnership*

ISO 50503 will provide guidance on methods and tools that the collaborating partners can use to achieve a successful interaction and outcome. Indeed partnership is becoming increasingly widespread in innovation. Organizations can achieve much more as a result of partnership than acting alone. However, failure to manage it correctly can result in a waste of time and resources. To improve the governance of the partnership, all the stakeholders should be aware of the parameters that must be addressed to increase the chances of success and reduce the waste resulting from failure. Innovation Partnerships are developed to create value for each partner working together towards an innovative outcome.

This document is under ballot among ISO TC 279 and might be published end 2017. This standard will be the first publication of ISO 50500 series.

#### *Overview of ISO 50504 address strategic intelligence and is today at an early stage of the development.*

Technology watch has been identified by ISO TC 279 experts as a key tool in the framework of innovation management systems. Indeed Strategic intelligence provides an improved access to and management of scientific and technical knowledge, as well as better information on its application context and timely understanding of the meaning and implications of the changes and novelties in its environment.

This standard will provide guidelines to facilitate the scanning and analyzing process of the organization environment in order to support decision making at all levels within the organization, fostering the implementation of stable strategic intelligence management practices.

This document is still in early stage of development, the call for experts is open. Interested experts are asked to contact their national standardization office to take part in the development of the standards.

#### *ISO 50505 Intellectual property management*

An efficient management of intellectual property creates an interesting backbone to protect and increase the competitiveness of an innovation project. This standard will propose guidelines for supporting the intellectual property within innovation management. It aims at addressing the following topics of IP management at strategic and operational levels.

- How to build an IP strategy of an organization to support business and innovation strategies?
- How to setup IP management in innovation process?



- Which IP tools and methods and how to implant them in innovation process?

This document is still in early stage of development, the call for experts is open. Interested experts are asked to contact their national standardization office to take part in the development of the standards.

## 4 Conclusion

By using these documents, organizations can increase their awareness of the value of an Innovation Management, expand their capacity for innovation, and ultimately generate more value for the organization and its stakeholders. The use of a systematic approach to managing innovation is a good stepping stone for any organization aiming to become more innovative. First publications of ISO 50500 series will start end 2017.

## References and Notes

(Shields, Knight, 2016)

“Bertrand Piccard: The only limitations are the beliefs we have” July 12, 2016,

CNN.<http://edition.cnn.com/2016/12/07/motorsport/solar-impulse-bertrand-piccard-world-record-qa/> accessed April 28, 2017.

(Christensen, 1997)

Christensen, C. 1997 The innovator's dilemma: When new technologies cause great firms to fail.. Boston, MA: Harvard Business School Press .)

(Kotter,1990)

John P. Kotter, Force For Change: How Leadership Differs from Management

(Ries, 2011)

Eric Ries, The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses (2011)

(Asif, Joost de Bruijn, Fisscher, and Searcy, (2010)

Muhammad Asif, Erik Joost de Bruijn, Olaf A.M. Fisscher, Cory Searcy, (2010) "Meta-management of integration of management systems", The TQM Journal, Vol. 22 Issue: 6, pp.570-582

(ISO/IEC Directives, Part 1)

[https://www.iso.org/files/live/sites/isoorg/files/archive/pdf/en/annex\\_sl\\_excerpt\\_-\\_2015\\_6th\\_edition\\_hls\\_and\\_guidance\\_only.pdf](https://www.iso.org/files/live/sites/isoorg/files/archive/pdf/en/annex_sl_excerpt_-_2015_6th_edition_hls_and_guidance_only.pdf)

NP4457:2007, Management system requirements of R&D+I

UNE 166002 - R&D+I: Requirements Management RD, 2006

BS 7000-1:2008

NWA - 1:2009

DIN 77100:2001 - Patent valuation - General principles for monetary patent valuation.

FD X50-146:2010 - Management de l'Innovation - Management de la propriété intellectuelle

FD X50-274: Innovation Management - Creativity management

FD X50-273: Implementation of sustainable development in the innovation process

FD X50-272: Guidelines for the implementation of open innovation (April 2014)

EN 16555- part 1 – innovation management system

EN 16555- part 2– strategic intelligence management

EN 16555- part 3 – Innovation thinking

EN 16555- part 4 -intellectual property management

EN 16555- part 5 – Collaborative management

EN 16555- part 6 – Creativity management

EN 16555- part 7 – Innovation management assessment

NMX GT 003:2008

ABNT NBR 16501:2011 - Guidelines for Management Systems R&D+I

GB/T 29490:2013 “Enterprise intellectual property management”

GB/T 33250:2016 Intellectual Property Management for Research and development organizations

GB/T 33251:2016 Intellectual Property Management for higher education institutions

(ISO/TC279 business plan, 2014)

[http://isotc.iso.org/livelink/livelink/fetch/2000/2122/687806/ISO\\_TC\\_279\\_\\_Innovation\\_management\\_.pdf](http://isotc.iso.org/livelink/livelink/fetch/2000/2122/687806/ISO_TC_279__Innovation_management_.pdf)

(Hakvåg, Karlsson,2017)

Magnus Hakvåg, Magnus Karlsson "The concept of innovation, bringing order in Chaos",ISPIM 2017

ISO 9001:2015 Quality Management Systems,

ISO 14001:2015 Environmental Management Systems