PD CEN/TS 16555-3:2014



BSI Standards Publication

Innovation management

Part 3: Innovation thinking



National foreword

This Published Document is the UK implementation of CEN/TS 16555-3:2014.

The UK participation in its preparation was entrusted to Technical Committee IMS/1, Innovation management.

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

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Published by BSI Standards Limited 2015

ISBN 978 0 580 86325 7

ICS 03.100.40; 03.100.50

Compliance with a British Standard cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 January 2015.

Amendments/corrigenda issued since publication

Date Text affected

TECHNICAL SPECIFICATION SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CEN/TS 16555-3

December 2014

ICS 03.100.40; 03.100.50

English Version

Innovation management - Part 3: Innovation thinking

Management de l'innovation - Partie 3 : Réflexion axée sur l'innovation

Innovationsmanagement - Teil 3: Innovatives Denken

This Technical Specification (CEN/TS) was approved by CEN on 27 October 2014 for provisional application.

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Foreword

This document (CEN/TS 16555-3:2014) has been prepared by Technical Committee CEN/TC 389 "Innovation Management", the secretariat of which is held by AENOR.

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- Part 1: Innovation Management System;
- Part 2: Strategic intelligence management;
- Part 3: Innovation thinking;
- Part 4: Intellectual property management;
- Part 5: Collaboration management;
- Part 6: Creativity management;
- Part 7: Innovation management assessment.

Part 7 is in preparation.

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Introduction

Innovation thinking is a structured approach whereby information, insights and experiences are sought out and employed for the purpose of maximizing opportunities and solving problems which deliver desirable outcomes to the marketplace. This approach can complement other methods used in innovation.

It is a context sensitive approach that develops an evolving knowledge base, which is then used to elicit and sustain change that should have effective and enduring economic, social and/or ecological value according to organizational purpose.

Those who adopt innovation thinking as part of their working dynamic should develop adaptive advantages that will help them become more agile in the marketplace and create more value for their external and internal stakeholders. Case studies are included in Annex A.

1 Scope

This Technical Specification sets out guidance for an approach to innovation thinking. Innovation thinking can be used at all levels within the organization.

This part provides guidance on how to integrate the core values of innovation thinking into any organization. It provides an approach to balancing the risks and the business viability appropriate to the selected opportunity or problem. It provides top management with an approach for the evaluation of possible outcomes and the determination of the "best fit" for the organization's current strategy.

It is suitable for all types and sizes of organizations including SMEs and is intended for broad application. However, those who are responsible for implementing and managing innovation within such organizations may find this document particularly useful.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CEN/TS 16555-1, Innovation Management — Part 1: Innovation Management System

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

innovation thinking

approach to finding opportunities and solving problems which delivers a superior or more desirable outcome with respect to the current offerings

4 Innovation thinking

4.1 General

Innovation thinking is an iterative and interactive approach requiring engagement with a variety of different internal and external types of players. It uses rapid and open learning processes to quickly create a variety of options as well as to identify and eliminate what is dysfunctional early on. It uses both the brain's creative and logical capabilities to explore alternative solutions and combinations with the goal to create a better outcome.

Innovation thinking is derived from the design discipline, design thinking which was traditionally focused on product design. This is a methodology that is built around gaining an in-depth understanding of human needs and the outcomes they require. It involves a creative process of generating possible solutions and iterative testing of these proposed solutions. These actions are linked to available technology and the practical constraints of business. The broader approach of innovation thinking brings the product focused design thinking approach to a wider application to include all forms of innovation: product (services and goods, tangible and intangible), process (production methods, procedures and operation layouts), organizational (governance schemes and work relations), and commercial (marketing, distribution systems and business models). In this application it is holistic and limitless.

The innovation process begins when it becomes clear that a more desirable outcome is possible, but the nature of that outcome is uncertain, the route to a solution is unclear, and the risk of failure to reach a satisfactory objective is part of the process. Thus, when a management task involves risk and uncertainty, the innovation thinking approach has much to offer.

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This approach requires a deep understanding of the specific problem or opportunity, which may be obtained by breaking these down into their core elements. It is also necessary to gain a thorough understanding of all potential user types. Further stages involve integrating and applying user needs around the appropriate technologies and commercial constraints, thus developing outcomes that create value for the targeted users. The innovation thinking approach can be used to support an Innovation Management System, see CEN/TS 16555-1:2013, 11.3.

All innovation carries risks, but tried and tested design methods control that risk by taking informed decisions at a relatively early stage before major commitments to investment are made. This design derived approach is therefore an extremely cost effective process for meeting the needs of the customer (however defined), within the resource constraints of the organization.

See Annex A for case study examples.

4.2 Key drivers

The key drivers of innovation thinking are context, people, enablers and constraints. It is the interaction between these four key drivers and their relative strengths that creates the innovation thinking approach appropriate to the organization.

The key drivers are:

- Context: what is the opportunity or problem setting that the organization is seeking to find and create a new and better outcome? See also CEN/TS 16555-1:2013, Clause 4 for more information on context of the organization.
- People: markets, work force, suppliers: who has the problem and who will benefit or be affected by the solution (i.e. those who directly value the innovation, e.g. users / clients / customers / markets / sectors, work force, suppliers and partners)? See also CEN/TS 16555-1:2013, Clause 4.
- Enablers: who/what will make this opportunity come to fruition. (i.e. "positive" conditions for change, e.g. what behaviours, characteristics, values, approaches, skills are required to make the impossible possible)?
- Constraints: who/what are the barriers that will hinder this opportunity and need to be explored and overcome (i.e. "negative" conditions for change or the realities of the business, e.g. commercial viability, markets, technologies and desirability)?

4.3 Supportive behaviours and competencies

4.3.1 General

To be successful, an innovation thinking environment should develop certain behaviours and competencies which support and shape the approach to discovering, designing, and developing the essential and desired outcomes for the given opportunity. They enable a "user focused" approach, to ensure that the organization gains a deep understanding of the key drivers in the innovation thinking landscape.

4.3.2 Behaviours

The following behaviours provide an environment in which innovation thinking can thrive and which can support the development of suitable outcomes:

 Supportive understanding, demonstrated through leadership, authorization and empowerment of people, providing them with the space, time, support and skill sets which are needed to creatively explore new ways of doing things. A facilitating framework is also necessary, that acknowledges and rewards both success and failure respectively.

- Encouragement of an open mind-set, in order to explore the benefits of collaborations with multiple other experts and different types of organizations.
- Encouragement of an environment where risks and uncertainties are the norm and failures are accepted as feedback for rapid learning.
- Observation and listening skills, in order to gain an in-depth understanding of the outcomes which are desired. Appropriate question sets need to be developed, together with an understanding of how to pose these questions. It is also necessary to observe how people use and do things in the context of the task and outcomes which are to be achieved.
- Fast visualizations, quick mock-ups, prototyping of ideas and potential solutions, at the most basic level, in order to provide the team with the freedom, space and time, to use their imagination, supported appropriately.
- Experimentation, numerous iterations and variations which are needed to develop the team's thinking and to evolve solutions that best match the problem or opportunity identified.
- Pre-launch testing in order to determine market timing and the robustness of the proposed solution.

4.3.3 Competencies

The following are competencies that should to be developed and nurtured at all levels within any organization which seeks to promote a structured approach to innovation thinking:

- understanding and empathizing with all types of users and their needs;
- identifying and synthesizing their problems and opportunities;
- multidisciplinary creative thinking, both with internal and external partners.

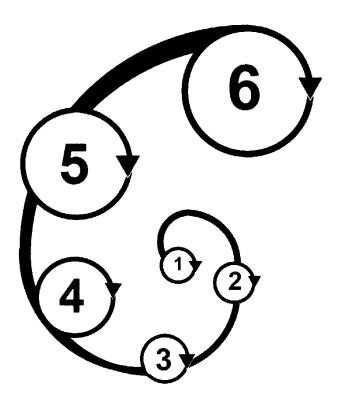
NOTE CEN/TS 16555–5 provides further guidance on collaboration.

5 Innovation thinking – steps involved

5.1 General

There are a number of steps to implementing innovation thinking, as shown in Figure 1.

While each step should be regarded as having an input from the previous step, reference is often required to other preceding steps, as this is an iterative process, designed to grow the knowledge base and hence develop an appropriate and sustainable business outcome.



Key

- 1 information gathering
- 2 generating solutions
- 3 rapid learning
- 4 validation
- 5 synthesis of outputs
- 6 outcomes

Figure 1 — Steps involved in innovation thinking

5.2 Step 1 – Information gathering

The process starts with gathering information relating to the problem and/or opportunities to be addressed, through the application of the key drivers, which are described in 4.2.

This is an exploratory phase which gathers information from all those who interact with the proposed opportunity.

A sufficient number of potential user types should be interviewed to capture the needs of the market, from which the outputs are derived, rather than capturing the views of just of one or two customers. This should validate if the opportunity or problem is worth solving i.e. is it a real market need?

Strategic intelligence management and collaboration may be used to better understand present and future customer and market needs, be they expressed or latent. This applies to Step 1 and all following steps in the innovation thinking approach. See CEN/TS 16555-2 and CEN/TS 16555-5 for more guidance.

5.3 Step 2 - Generating solutions

Creativity is the process of generating new solution ideas through original thinking. Managing creativity requires a different approach to managing other functions within an organization. It involves establishing the conditions necessary to inspire ideas and the subsequent collection, selection and development of outputs.

See also CEN/TS 16555-6 for further information.

It is important to distinguish between creativity and innovation thinking. Whereas creativity is the process of generating solution ideas to identified problems and/or opportunities, innovation thinking is an approach that combines all the key drivers as outlined in 4.2, within a creative environment in order to address a problem or opportunity. It is important at this early stage that all potential solutions are identified and gathered for evaluation as per the subsequent steps below.

CEN/TS 16555-1 is the overall process within which the innovation thinking approach can be applied to any issue where rapid and open learning is needed to quickly create a variety of solutions and to identify and eliminate early on what is dysfunctional. It is important to emphasize that this approach can be applied and outcomes achieved in hours or days.

5.4 Step 3 - Rapid learning

This step uses rapid visualizations, mock-ups, user testing and prototyping to establish what is feasible. This step is about identifying and selecting the fastest, cheapest and most effective way possible to verify the solution hypotheses.

These rapid learning outputs provide important feedback. They may lead to further testing against market expectations which were gathered in Step 1. The timescale for this latter activity should be hours rather than days. A time limit should be set for this entire step and then feedback should once again be gathered.

See 4.3 for supportive competencies and behaviours for innovation thinking.

5.5 Step 4 - Validation

The potential solutions developed in Step 3 should be validated by all those who interact and may be affected by them.

Observation, structured questions sets, focus groups, etc., are some of the methods that can be employed for this step.

The results from this stage should then be transformed into a set of outputs, which are used as inputs into the next step – Step 5 – Synthesis of outputs.

It is important that an intellectual property strategy be developed for any potential solutions. For further quidance please refer to CEN/TS 16555-4 and CEN/TS 16555-5.

5.6 Step 5 - Synthesis of outputs

All the outputs from Step 4 shall be considered in relation to the information gathered in Step 1.

This step integrates the creatively produced outputs with market desirability, technical feasibility and business viability, in order to create knowledge based solutions appropriate to the organization as a whole. This is a process that normally happens in hours or days. It is important that business constraints are not applied before this point, as there is a risk that they would restrict the open-minded approach needed to find the best possible solution. There should be active encouragement to explore different business models that can create and deliver these solutions into the market and are appropriate to the needs of the organization.

5.7 Step 6 – Outcomes

Top management should make a decision as to which of several possible outputs from Step 5 provides the best solution to the problem and/or opportunity, i.e. which outcome best incorporates the identified user needs and aligns with the objectives of the organization.

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If an outcome cannot be found which matches the organization's needs, this should be considered a valid result and then the choice would be either to iterate the process from Steps 1 through 6, or to close down this particular avenue and investigate other opportunities.

Annex A (informative)

Case Studies

A.1 Case study 1: Company A

A.1.1 Introduction

Company A is an online job board for people seeking work in the construction sector. The business is established over 10 years and is managed and operated by its two owners and supported by a subcontracted team.

Following a market collapse which significantly affected their business, Company A took part in a European funded programme to explore new opportunities to create growth.

According to the Managing Director, their agenda for undertaking the programme was:

"...To figure out the best way to operate our business with the limited resources available".

The key drivers were:

- Context: The two owners had used all their cash reserves to sustain the business and now faced a crucial
 decision; if the business was to survive they needed to find new customers fast. This needed to be
 achieved with a limited set of resources.
- People: All the people associated with the business internally and externally were involved in supporting this activity; this included overseas placements, networks and existing customers.
- Enablers: The company had established a strong network, with over 50 000 international website hits per month and ongoing high quality CV submissions to their online jobs board.
- Constraints: Key constraints included limited time and a lack of available funds. The core team (the two
 owners), and their established industry networks and social media channels were their key resources.

An important consideration in this process was setting up the right behaviours and environment to encourage the development of suitable outcomes. This included:

- dividing their roles and responsibilities for this new challenge, with a focus on leveraging off their individual strengths;
- setting ambitious but attainable objectives for the business, identifying their desired outcomes and setting a timeline;
- receiving support from an external mentor (through the European funded programme) who facilitated the company in undertaking a step-by-step process to explore new growth opportunities within the timeline and goals set.

A.1.2 Process

The following six steps were undertaken as part of the innovation thinking process.

A.1.3 Step 1 – Information gathering

Activities were undertaken to gather information on potential client companies; information included identifying where and what these potential clients needed in terms of resources, the number of people and their construction skill sets. Research was also conducted to identify where new construction needs were emerging for example areas affected by the occurrence of natural disasters.

The research was also aimed at determining and understanding what the current skills issues were and what the key criteria for HR departments was in finding the best candidates.

A.1.4 Step 2 - Generating solutions

An internal creativity session was held to explore what they could offer to meet these new and quite demanding needs. These needs had traditionally been met by recruitment agencies, but at a very different price point and support resource level.

A range of ideas were generated, evaluated and then aligned with the objectives set. These were then developed into new potential service solutions.

A.1.5 Step 3 - Rapid learning

Using tools like social networking, email and video conferencing, the owners started contacting and presenting their new online service solutions and gathering feedback on the value of the service, based on the clients' needs and price positioning. This was done in a number of days, using evening and nights to contact different time zones. Speed was crucial as they needed to confirm what worked and what failed to work in this new service.

This was done across three selected international markets, all English speaking, which was enabled by speed of access through social media.

A.1.6 Step 4 – Validation

The new service concept was modified to just include the key features and functions that delivered real value in the eyes of the paying customers.

From this a new business concept emerged that had an aggressive tiered price point and a defined market entry strategy to get potential international clients to convert to and trial their service. This new service included: automated email response, customized filtering of CVs and a fee level linked to the number of vacancies to be filled.

These features were tested through their current website and manually supported. The company did a pilot test and re-contacted all potential clients from steps 1 and 3. This was to get market feedback on the value of the service and products being offered. Outputs from this step were measured in the number of trials that were signed up to.

A.1.7 Step 5 – Synthesis of outputs

The outputs of Step 4 immediately allowed the service solutions to be measured. This gave confidence to the owners to ramp up this activity by targeting the identified new markets systematically, as well as their existing client base.

This involved bringing in experts to robustly build these services onto their existing website.

A.1.8 Step 6 - Outcomes

Within nine months the following outcomes were achieved:

- three new processes and services were developed;
- customer base had increased by 80 %;
- turnover had increased by 120 %;
- exports were responsible for over 80 % of the revenue generated.

"We have recovered a collapsed turnover to levels that both directors can now earn a living from the business. This is mainly due to offering our service to Australian, New Zealand and Middle East construction recruiters". (Managing Director, Company A).

A.2 Case study 2 - Company B

A.2.1 Introduction

Company B is a subcontractor for a multinational computer corporation, who is their main customer. When the multinational company relocated its Irish operation, Company B had an urgent need to establish a new customer base. Other alternatives included developing a new business using the skill sets of those employees of the multinational who chose to remain in Ireland or to scale down its operation and face the possibility of closure.

"We are in a difficult situation right now in that our main client is moving a significant amount of their production to another country, with a consequent reduction in our workforce, unless we apply some innovative thinking and do something about it". (Managing Director, Company B).

The key drivers were:

- Context: The CEO and his senior management team decided that they needed to try and find new customers and/or develop a new replacement business model for their organization or risk losing the work force, skill resource and knowledge that they had developed over the previous 20 years.
- People: All the people associated with the business (ranging from the current work force to associates, suppliers and overseas partners) who were affected by the situation and would gain by a potential solution were included in this activity.
- Enablers: The company had developed a specialized skill set around high speed turnaround in technology fault finding, custom builds and testing on micro electronic parts and sub-assemblies. The skill base and enthusiasm of the work force was a major driver which motivated the senior management team to authorize and apply an innovation thinking approach to explore new business opportunities.
- Constraints: Time and limited capital resources. The business needed an approach that would allow them to explore service, product and business model concepts and at the same time balance the various risks and uncertainties. To achieve this, a robust and facilitated approach for the generation and evaluation of new business concepts and the determination of the 'best fit' for the organization's current strategy was required.

An important consideration in this process was setting up the right behaviours and environment to encourage the development of suitable outcomes. This included:

- setting out the purpose and objectives of undertaking the innovation thinking approach and activity. This
 included gaining CEO authorization and outlining the criteria by which they would evaluate all ideas;
- holding an externally facilitated session regularly over the six week activity to allow information to be gathered and evaluated. This empowered the teams by giving them a set timescale to research; gather information and creatively explore new business concepts and complete quick trials;

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- outlining a six step framework where everyone and every idea was valued. As part of this framework it
 was acknowledged that risks and uncertainties are accepted as part of the process and failures and not
 just success were important feedback from this approach;
- maintaining an open mind-set to encourage collaborations.

A.2.2 Process

The following six steps were undertaken as part of the innovation thinking process:

A.2.3 Step 1 – Information gathering

Activities undertaken initially focused on identifying the skills and inputs that company B had developed through its experience of working with the multinational organization.

In a workshop session teams were requested to:

- identify the core skills, resources, capabilities and technical expertise within the business and describe them in broader and more open terms;
- systematically examine all elements of company B's current business model. This was undertaken to identify the parts of the business model that could be developed and redefined;
- explore the extended network of their current clients in order to identify potential new business opportunities.

A.2.4 Step 2 – Generating solutions

A facilitated creativity activity was undertaken with selected cross functional teams. The outputs and findings from Step 1 were combined to generate new solutions through creative thinking exercises. These were developed in a template format and documented as potential new business opportunities.

The outputs were shared with the groups after which the senior management team undertook an initial evaluation, selection and prioritization of the 'best bets' and 'best fits'. Five teams were then authorized by the senior management team to further investigate these ideas within a set timescale. A champion was appointed to lead each team.

A.2.5 Step 3 - Rapid learning

The teams gathered more specific market information around the concept and adapted it to their current skill base and resource capabilities. As part of this research they explored competitive products and reviewed all competitive options. They then undertook a market trial using visualizations and mock-ups to achieve rapid learning outputs and feedback about what was feasible. These rapid learning outcomes provided the most crucial learning on what worked and what did not work from the market's perspective.

Each team reported back to senior management on their findings and defined how potential solutions addressed the problem including any verification tests taken.

Three concepts were then selected for trial implementation, within a set timescale and budget.

A.2.6 Step 4 – Validation

The three new concepts were trialled in the market place with selected lead customers/clients and through online sales portals. This was undertaken to validate the solutions in the market place and to identify the value of the service and products being offered.

Initial trials were undertaken within a four week period. With measurable criteria identified for each concept.

A.2.7 Step 5 - Synthesis of outputs

The outputs of Step 4 immediately allowed potential solutions to be measured and ranked in terms of:

- market potential;
- the investment required to scale the concept into a sustainable business;
- how the concept could be integrated to create a solution appropriate to the company;
- market desirability;
- technical feasibility;
- business viability.

A.2.8 Step 6 - Outcomes

The senior management team were then able to evaluate all the outputs and make a decision to immediately fund two opportunities which were deemed worthy of further testing. One of the opportunities was aligned closely to the existing business (in terms of skill sets and expertise required), while the second needed new expertise to be brought into the business. The two opportunities were:

- custom built products;
- partnership in the repair, recertification and selling of branded products that fail during their warranty period.

Additionally a longer-term opportunity around medical device manufacturing in cooperation with a regional cluster was identified. However, to pursue this opportunity required new procedures, certification and team upskilling.

The senior management team prioritized the custom built product concept. This opportunity was developed into an online business to business service and was self-sustaining within 12 months.

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