# Chapter 3

# What is an Idea for Innovation?

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**Key takeaways**

1. There is no unified model for what an idea for innovation is.
2. This chapter provides a model for describing the anatomy of an idea and also defines the boundary conditions to be fulfilled for realizing it.
3. An idea is defined as a short contextual narrative consisting of a solution to a certain problem. Ideas have a dual purpose: they provide a description for a certain plan of action, but also trigger new associations and give rise to new ideas. A checklist for managing idea development is provided.
4. This is a conceptual chapter that is relevant for both private and public innovation management practices.
5. This chapter relates to Chapters 2 and 4.

## Introduction

Every innovation starts with an idea. It might be big or small; have a technical or social focus; deal with products, services, processes, or policies; or simply suggest new ways of creating value for an interested party.

But what is an *idea* for innovation? Understanding what an idea is can improve our knowledge about managing idea generation, evaluation, refinement, and selection activities, which are essential in the early phases of the innovation process (Koen *et al.*, 2001). By understanding how an idea is created, constructed, and interpreted, we increase our chances of finding good ideas, and reduce the risk of implementing bad ones.

The purpose of this chapter is to propose a model for the anatomy of an idea for innovation, describing the building blocks, which helps in illuminating potential challenges linked to the innovation process. This is accomplished through a conceptualization of an idea within the innovation context, based on a literature overview of creativity and innovation management, accompanied by a few examples from real innovation management projects. The model can be used as a tool for managers to help create, screen, and develop ideas in an organized manner, and to improve the idea's quality.

## The Front End of Innovation

According to Koen *et al.* (2001), the innovation process consists of four main stages: idea creation (that is, the front end of innovation), development, testing, and launch (see Chapter 2 for further details). The front end of innovation deals with obtaining and selecting ideas for future products, services, and processes. At this early stage of the process, it is still not known what type of innovation the idea will lead to, yet a decision for selecting some promising ideas needs to be made. Upon selecting an idea, the organization will allocate resources to further develop it into a concept or prototype, and then commercialize and try to diffuse it onto a market (or institutionalize it as a practice within or outside of the organization; see Chapter 4 for further details). All organizations want to obtain good ideas, so that their innovations are novel and bring high value to the end user, since this helps in creating an attractive offer and creating competitive advantage, or simply allows an improved use of resources when performing certain functions (Björk and Magnusson, 2009).

Despite the existing body of literature on the front end of innovation, there is surprisingly little written about the definition of an idea; it is only implicitly or indirectly mentioned by researchers (see e.g., Basadur *et al.*, 2000; Osborn, 1957; Florén and Frishammar, 2012). Accordingly, neither researchers nor practitioners have a consensus about how to define an idea. Some refer to ideas as words written on post-it notes or as suggestions spoken out loud during brainstorming (Osborn, 1957), some refer to ideas as developed scenarios in the form of schematic drawings (Onarheim and Christensen, 2012; Kudrowitz and Wallace, 2013), and some refer to ideas as thematic stories (Froehlich *et al.*, 2016). Therefore, this chapter explicitly outlines what an idea is, through an analysis of previous research, and aids researchers and practitioners in their idea management endeavors.



## The Components of an Idea

An idea for innovation is most commonly described as a short narrative created by people who are suggesting an improvement to a certain situation and that leads to a new and useful outcome (Dean *et al.*, 2006; Florén and Frishammar, 2012; Osborn, 1957). Traditionally, the creativity literature has framed idea generation as a session of active problem solving where a group of individuals are asked to find solutions to a stated problem or some sort of challenge (Osborn, 1957). It is also common that participants in idea generation are provided with a certain theme, where they have to identify and redefine different types of problems to solve (Kudrowitz and Wallace, 2013; Dorst and Cross, 2001). In order to identify the problem, the participants have to actively analyze a given environment or situation, and be engaged in the search process of appropriate and realizable solutions that fit the problem (Mumford *et al.*, 1991; Basadur *et al.*, 2000; Florén and Frishammar, 2012; Koen *et al.*, 2001).

Normally, idea generation is followed by idea screening, where participants are asked to rate and select the best ideas by using different criteria. There is, however, a complication with the evaluation that occurs during idea screening. Hatchuel and Weil (2009) describe ideas as objects that are not completely defined. They write that early-stage ideas are fuzzy and incomplete, yet indicate a certain direction for possible improvement. This description implies that substantial efforts are still required to refine ideas into more concrete forms that actually contain a comprehensible problem and solution description, so that an informed decision about the idea can be made (Sukhov, 2018). Sukhov (2018) showed that when ideas

lack explicit descriptions explaining the problem and solution, people perceive them as inferior to those that contain explicit descriptions. People also tend to fill the gaps in the narrative of the idea, which means that the decision regarding idea quality is not always based on the information provided in the description, but rather on people's own interpretations of the problem, and how a solution might work.

## *What is a problem?*

According to Smith (1988), a "problem" is defined as the "disharmony between reality and a person's preferences for the reality." Pounds (1969) describes it as "the difference between some existing situation and some desired situation." These definitions suggest that a problem signifies the dissatisfaction caused by the difference between a certain situation and someone's expectations for that situation. It is also clear that the dissatisfaction is a subjective component; many people may experience the same situation without finding it dissatisfactory or problematic. When explaining the notion of service quality, Parasuraman *et al.* (1988) takes up an example of situations that can be perceived differently by different people in the organization due to their knowledge and understanding of that situation. The upper management can, for instance, be blind to the problems that the customers of a service are experiencing, or not perceive them as problems, due to a lack of user-related knowledge. The presence of use knowledge ("an understanding of users' needs and wants and how service creates value for the customer" in Magnusson (2009, p. 580) has also been identified as a key component in the generation of successful ideas (Lilien *et al.*, 2002).

Dean *et al.* (2006) proposed that an idea should explicitly clarify the contextual background and provide a clear and coherent description of a problem and solution, in order to reduce uncertainty in communication and the evaluation of ideas. Thus, in order to explain a problem, one needs to provide information on What is happening, Who is experiencing it, and Why it is important (Sukhov, 2018; Dean *et al.*, 2006; Frishammar *et al.*, 2011). Magnusson (2009) and Sukhov (2018) suggest that the problem description of an idea closely relates to its use value, that is, how valuable the resolution of a given problem would be for its intended user; this description is also



found to be the dominant predictor of the holistic impression for the idea (Sukhov, 2018). These results imply that if the problem is clearly communicated and considered relevant for the intended user, the perceived overall quality of the idea will be higher.

## *Example 1*

Here is a real example of an idea for a service innovation from a study by Magnusson *et al.* (2016). In the idea, a person who is experiencing a problem is describing an application of mobile telephony to resolve it:

> *When you are riding the train, sub-way or waiting for a flight, you day-dream, sleep or simply not pay attention on where you are. It would be good if a mobile phone could receive a silent SMS; that activates your alarm or puts a direct reminder from e-mail/organizer. A possibility to solve this could be use of NFC (near field communication) that tags the station you would like to get of at, and sets of the alarm automatically.*

In this example, the problem is a commuter missing his stop. The solution is to have a mobile phone automatically sound an alarm to alert the person. The idea is to have the commuter tag his destination and then use NFC to set off the alarm. The problem is shown clearly and shown to be important. Thus, a problem describes a situation and someone's dissatisfaction with that situation. Since a problem is a subjective construct (Smith, 1988), in order to be understood by others there needs to be a clear description of the situation and who experiences it, and an indication of why this situation is important to solve in order to be relevant (Dean *et al.*, 2006).

## *What is a solution?*

A solution is a specification of how a certain problem can be resolved. According to Smith (1988), in order to come up with a solution, the idea creator needs to possess both factual and procedural knowledge related to the problem and the context that are being addressed. This means that a solution can be defined as a description of a method for satisfying a given problem.

Books on engineering design usually focus on the systematic development of solutions to posed and well-defined problems, where designing solutions occurs in stages: identification of the customer needs, translation of the needs into functional requirements, design of parameters that would resolve the functional requirements, and analysis of technical details that are required (Suh, 2001). From this technical perspective, the best and simplest solution design is either (1) the one that contains the least technical uncertainty (identifies unique functional requirements, and seeks out a solution that satisfies as many functional requirements as possible), thus focusing on the simplest method to resolve the problem (the principles of axiomatic design; see Suh (2001) and Liu *et al.* (2014)), or (2) the one that satisfies the problem and its functional requirements through the least amount of resources spent (the Theory of Inventive Problem Solving or TRIZ; see Terninko *et al.* (1998) and Liu *et al.* (2014)).

Another approach to problem solving has been outlined by Hatchuel and Weil (2009) in what they call the C–K theory (C stands for concept, K stands for knowledge) in which knowledge about the problem is used to generate a concept(s) or metaphor(s) that is used in the idea description (K→C). Different types of knowledge adds new properties to the concept and can trigger new associations (C→C′), and subsequently the required knowledge is identified in conjunction with the concept (C′→K′). Thus, this approach focuses on reframing and seeking out the knowledge needed to problem-solve, so that after a number of iterations, a final concept can lead to the creation of new knowledge and solve a problem in a novel way. A key element of this approach is the technological knowledge that is essential for finding a workable solution.

Creating solutions is also associated with handling constraints (Simon, 1996), such as fitting solutions within the cultural and legal boundaries in the social context (e.g., Le Masson and Magnusson, 2002, 2005), and also obeying the laws of physics in the technical context (Hatchuel and Weil, 2009). In contrast to the traditional approaches to engineering design, Simon (1996) introduced a different notion to finding solutions, namely *satisficing*, or accepting an available option as satisfactory, since in real world design situations it may be difficult to find an optimal solution to a well-defined problem. Due to the complexity of a certain problem, or failure to have a highly specific problem definition, sometimes finding



satisfactory solutions is greatly desired. This approach has gained popularity in service design (Dorst, 2011) due to the multifaceted nature of user-related problems. It is also useful when the priority is to shorten the search for a solution, and to rely on the resources at hand instead of identifying and pursuing new knowledge needed for an optimized solution (Simon, 1996; Hatchuel and Weil, 2009).

In order for a solution to be implementable and present a viable market opportunity, an organization must have the ability to create the solution (Holmén *et al.*, 2007); this includes having (1) the necessary resources and (2) the ability to reconfigure the resources into a feasible solution. In addition, the organization must be willing to create the solution. The idea must therefore fit the organization's intentional and strategic scope.

## *An idea's characteristics*

Since ideas are not material entities, in the sense that they are projections of someone's imagination that take the form of early descriptions (Hatchuel and Weil, 2009), they may be interpreted differently by people with different perceptions due to their background knowledge and interpersonal differences (Weick, 1995; Runco and Smith, 1991; Gregan-Paxton and Roedder John, 1997). Ideas are also said to be thematic and highly *contextual* (Froehlich *et al.*, 2016). This means that without the shared knowledge of the situation, it is difficult to interpret the idea in the same way as it was intended by its creator. Although the context relates to the situation that the idea addresses, it also expands beyond this situation and encompasses the social and cultural elements that may be mutually understood by both the creator and the idea judge/interpreter (Liu *et al.*, 2014). Accordingly, if the context is not well outlined and the person reading/listening/seeing the idea has a different perception/experience of the context, a misunderstanding of the idea's intended meaning can result (Yus, 1999).

The context in which an idea is conceived also sets social, cultural, and physical boundaries that are sometimes difficult to overcome during idea generation. Generating new ideas may prove itself difficult if the idea creator is indoctrinated into certain practices and ways-of-doing (see e.g., functional fixedness by Duncker and Lees (1945)). This

phenomenon was also reported by Kristensson and Magnusson (2010) in their investigation of idea generation by ordinary users, guided users, and experts: ordinary users were able to generate highly original ideas, while experts struggled with originality but were able to generate highly producible ideas. Guided users, who were given technical education during the experiment, were able to generate ideas that both were technically producible and carried a high use value. Therefore, the background knowledge of all three groups constrained them into their own interpretative schemes, which reflected on the type of ideas they produced.

An example of breaking these social boundaries to come up with an unconventional but effective solution is given by Weick (1993) in his analysis of the Mann-Gulch disaster. There, in order to survive a huge natural fire, one of the firefighters set fire to the ground he was standing on in order to burn off the grass/fuel before the larger fire approached. At that instant, his fellow firefighters did not understand his act and assumed he had lost his mind, yet his act provided a solution to the very serious problem of the approaching natural fire. Another example of breaking these boundaries is described by Tanggaard (2012) in her paper on socio-material creativity. She emphasizes that creativity could lurk in the symbolic meaning of objects and things in our everyday life, and by reframing, re-contextualizing, and remaking social practices new, novel and useful meanings could be created. Therefore, contact or resistance with the materials with which we work creates a background, understanding, and a trigger for new ideas to arise.

Dorst (2011) writes that frame creation (contextualization) is a core design practice where designers may actively reframe the problem, so that they can search the broader context of the problem for clues when designing a solution. This is also the underlying principle of TRIZ, to (1) view the problem at hand, (2) step away from the physical context and its boundaries in order to figure out the general problem (abstraction), (3) come up with the most effective general solution for the problem, and (4) return to the specific context and develop a specific application given the available resources (Terninko *et al.*, 1998).

Based on the characteristics of an idea mentioned above, an idea has a dual function: it aims to communicate a certain course of action in relation to a specific situation and provide information on how to do that



course of action (which requires that the idea description contains the necessary information to improve its comprehension), but it also triggers associations for the person to whom the idea is communicated (which requires that the person who is interpreting the idea possesses the appropriate background knowledge to help enrich the idea with further information that can improve its quality).

## Conceptual Model

Based on the literature overview, we propose a conceptual model of an idea for innovation (see Figure 1). The model consists of three basic parts: a context in which the idea occurs, a problem that is being experienced by someone, and a solution that proposes a way to resolve this problem. The problem and solution can be further divided into four components: (1) a specific situation, (2) someone's dissatisfaction with the

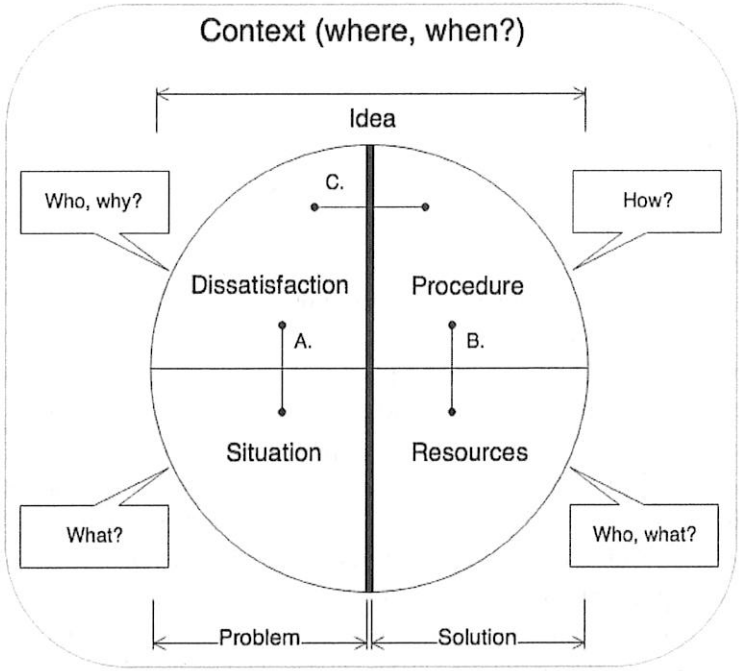


Figure 1. A conceptual model of an idea for innovation.

situation, (3) a procedure or method on how to take action, and (4) the resources required to implement the action. These components represent the dimensions proposed by Dean *et al.* (2006) but also clarify the structure and relation between the what, why, who, where, when, and how of the idea. This model has been used by Sukhov (2018) to classify the information content in ideas and determine their completeness, which influenced the comprehension of the idea content, which in turn had a significant effect on the perception of idea quality.

Since an early idea can be easily misunderstood, we propose that before an idea is evaluated, it needs to explain the relevance of the problem (link A in the model). The situation and dissatisfaction components need to establish a common ground that both the idea creator and the idea assessor can relate to, and explain why the problem is important to resolve. A lack of background description and a failure to indicate who experiences the problem will make it difficult to assess whether this problem is important and has value for the user. Link B illustrates the relationship between the resources needed to resolve the problem and the procedure that describes how to use those resources. This relationship constitutes the solution part of an idea. These components relate to idea readiness. If the idea provides detailed information about what and how a problem can be resolved, it is easier to assess whether the solution is feasible and whether resources are available, or if the solution requires new resources that have to be obtained to implement the idea. Link C in the model illustrates the match between the problem and solution. Since the same problem could be resolved in different ways, there could be different paths toward an efficient (optimal use of resources), effective (optimal resolution of the problem), or simply satisfactory solution depending on the context, resources available, and strategic intent.

According to Figure 1, apart from the idea components, the links (A, B, C) correspond to the motivations that could be outlined in the idea description; that is, Why is this problem important? Are there existing methods to resolve it and resources to do that? Is this solution viable? Is the idea appropriate in a certain social context? Via the links, the model takes into account both the functional characteristics of an idea and their appropriateness. It signifies the subjective components of someone's dissatisfaction and the situation that the idea attempts to improve. The model



also provides practical tools for refining and developing an idea in order to reduce communication gaps and improve its quality. Following is an example of the checklist of questions that can aid in the development of an idea for innovation:

- **Context:** Where? When?
- **Problem:** Situation (What?), Dissatisfaction (Who? Why?)
- **Solution:** Procedure (How?), Resources (Who? What?)

## *Example 2*

The following example describes an idea generated as part of an R&D project from a Swedish telecommunications company (Magnusson *et al.*, 2016).

> ***Approve your Credit Card Shopping's with a SMS.***
>
> *... my girlfriend happened to lose her Credit Card at home. A few weeks later, she received a notification from the Credit Card provider, stating that she had filled her car tank with gas for €1800 during that period. The funny part was that she didn't even have a driving license :-) What if, upon credit card [sic] shopping or withdrawal above a pre-defined limit, [sic] a SMS approval is required. In this case, when you are at home watching TV and you receive an SMS requesting an approval of €1000, you have the opportunity to decline :-). With this service, she could have declined the purchase right from the start.*

The idea provides an explicit background description of where and when a certain situation (what) occurred: a girlfriend lost her credit card and received an invoice for money that she did not spend. This is an example of the unlawful use of the credit card that is the point of dissatisfaction with the existing [at the time] credit card service, and explains why and to whom this is important. The situation is personal but at the same time relatable, since anyone could lose a credit card or have its details stolen; therefore, there is a clear sense of common ground. However, this particular example includes greater personalization due to the specificity of the sum of money taken, making it very clear to whom

the solution in the form of SMS approval is valuable, and what risks the solution can eliminate. The solution is described in terms of the procedure (how), such as the threshold at which additional approval is needed. However, there is no additional explanation on what is required and who can implement this service, which makes this idea's solution implicit and incomplete according to the completeness criteria used by Dean *et al.* (2006) and Sukhov (2018).

Since the idea was submitted into the idea management system of a telecommunications company, where experts with substantial technological knowledge were evaluating ideas, some of the technical aspects of the idea could be implicit without a risk of being misinterpreted and misjudged. Thus, depending on the shared contextual knowledge between the idea creator and the person assessing it, an idea can be more or less explicit in its description. Nevertheless, idea incompleteness can contribute to larger interpretational differences. These differences are desired if the idea's purpose is to trigger new discussions, since increased ambiguity can improve creative output (Luo and Toubia, 2015; Lin and Chen, 2004), but these differences can also reduce the quality of the idea during its evaluation (Sukhov, 2018; Dean *et al.*, 2006).

Based on the existing literature, we define an *idea* for innovation as *a scenario in a specific context that is deemed unsatisfactory by an actor who explains how this scenario can be improved by applying appropriate resources*. In the early stages of an innovation process, an idea is thus a combination of a problem and solution that is communicated as a narrative between the idea creator and the idea assessor.

## Discussion

This chapter describes the anatomy of an idea and illuminates some key components needed for successful management of the front end of innovation activities. The model in Figure 1 presents the idea with two main elements (problem and solution) that exist in a medium (context). The problem element can be broken up into a description of a situation and someone's dissatisfaction with that situation; hence, the definition of a problem is experiential and subjective. Since subjectivity is bounded by someone's existing knowledge, experience, and comprehension of the



situation, it is possible to reinterpret the problem in light of a different perspective, suggesting that the framing of the problem can be changed (Tanggaard, 2012). This changeable framing is one of the main principles of design practice (Dorst, 2011; Dorst and Cross, 2001). This possibility of changeable framing also suggests that in order to understand the problem and evaluate its importance, idea assessors need not only a clear articulation of the situation and the storyline (Dean *et al.*, 2006) but also the appropriate use knowledge (Yus, 1999; von Hippel, 1994).

Solution seeking requires a formulation of a problem since this formulation determines the boundaries and constraints (Suh, 2001); however, if the problem changes, so can the solution in an iterative process (Dorst and Cross, 2001; Hatchuel and Weil, 2009). As identified in the model, a solution requires factual and procedural knowledge that is relevant to the idea's domain. Depending on the knowledge, there may be different types of solution to a given problem, and there may be different approaches to the solution. When it is possible to define the problem, the principles of engineering design suggest ways to find the simplest solutions through reducing the technical uncertainty (axiomatic design) or involving the fewest resources (TRIZ). But, in situations when the problem cannot be fully defined, or a long search process for the solution is conducted, satisficing could be used as a viable approach (Simon, 1996): a solution deemed as acceptably satisfying a problem is appropriate.

The front end of innovation includes different phases for finding new ideas, such as idea generation, idea refinement, and idea screening (Florén and Frishammar, 2012). The phases are not always sequential and have distinct scopes, but it is possible to use the model in Figure 1 to aid managers in these phases.

Idea generation is characterized by creating as many ideas as possible, removing judgement, and encouraging a wide range of ideas (Osborn, 1957; Cooper, 1994, 2014; Diehl and Stroebe, 1987). Generation is all about diversity, so that new thoughts and associations are provoked. Usually the ideas produced during this activity are short and spontaneous (see e.g., Sukhov, 2018). Some of the solutions that are generated can also give rise to new problems, which in turn inspire new associations and new solutions (Dorst and Cross, 2001).

According to Diehl and Stroebe (1987), idea generation is best done first individually and later in a group. This way, it is easier to bring the individual perspective and personal experiences to the table, while the group is more selective and may require some form of consensus, which may hinder the generation of new ideas (Schirr, 2012).

The model in Figure 1 helps us to understand that problems deal with individual experiences and that the same situation may be viewed and experienced differently by different people. The model also proposes the questions that help to better define the context and identify who is the beneficiary, what is going on, and why fixing it is important. Thus, the model acts as a template where problem statements are developed, and initial solutions are proposed.

Idea refinement is about improving ideas through developing missing elements or producing spinoff ideas that may help to align the idea concept. This is done by actively working on improving the idea's completeness, removing uncertainty, and improving its clarity through higher detailing (Florén and Frishammar, 2012), but also recontextualizing/reframing the idea so that a new combination of a problem and solution is formed (Dorst and Cross, 2001; Le Masson and Magnusson, 2002). Refinement can be both a formal and an informal process, as long as it helps the ideas to develop into more specific concepts for innovation (Schulze and Hoegl, 2008). During this phase, the model in Figure 1 is most relevant, since the model helps idea refiners systematically work with ideas and identify key elements and competences so that the narrative in which an idea is presented becomes more communicable.

Idea screening is about deciding which ideas should be further developed into concepts and continue into, for example, the new product development process and commercialization (Koen *et al.*, 2002; Eling *et al.*, 2015). As was observed by a number of researchers, idea screening and evaluation are exposed to cognitive biases (Licuanan *et al.*, 2007; Sukhov, 2018; Moreau *et al.*, 2001; Gregan-Paxton and Roedder John, 1997; Onarheim and Christensen, 2012; Schwarz, 2004). Therefore, in order to make an informed decision, the idea assessor needs to understand the intended meaning of the idea, and possess enough use and technology knowledge to make a decision about whether the idea is good



or bad. The model in Figure 1 could be used to analyze the information content of an idea and see whether it actually contains the description of a method and indication of resources that would be required, but also a contextual description of the idea and its relevance. If the idea does not satisfy the completeness requirements, it could be sent back for further refinement, while at the same time identifying the type of knowledge required to fill in the gaps in its narrative. This way the potential misunderstandings during screening can be minimized, and the flow of ideas in an organization can become more structured.

## Practical Implications

The model (Figure 1) can guide idea development practices. It makes an idea more tangible and assists in tracing its development. Applying the model to an idea helps with analyzing its content and can inform idea managers on whether the idea is complete or is still lacking vital pieces in its description. The model is also useful during the idea refinement stages to direct attention to the parts of the idea that need to be further elaborated. If the problem element is related to use knowledge, and the solution element to technology knowledge, it becomes possible to identify the type of people that could be asked to refine the idea depending on its missing pieces.

Since ideas for service innovation may deal with complex social phenomena and propose ways to create or co-create value, the contextual subjective elements need to be specified in order to understand who the beneficiary of the situation is, and whether the use of resources in the solution is proportional and appropriate to the problem. Thus, the model helps in shaping the narrative in which ideas could be documented in order to reduce ambiguity, consequently improving informed decision making during the selection of new ideas for innovation.

## References

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