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Chapter 5: SBM ideation and development of early ideas for SBM

- Analyzing a new tool facilitating the ideation process

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Introduction

With the requirements for more sustainable innovations and businesses, in the future, research and business teams will need to create new, innovative ideas that are innately sustainable solutions instead of merely adding superficial sustainability fixes to current non-sustainable solutions (Bocken et al. 2014). How to facilitate sustainable business model development is a contemporary challenge in the fields of e.g. business and product management. Sustainable business model creation is inherently multidisciplinary and requires input from various different kinds of stakeholders.

To increase and extend the toolkit in the field of sustainable business, this chapter introduces a novel tool that facilitates the ideation process of sustainable business models. We have developed and validated a tool called the Impact Canvas® tool (IC tool) that enables

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cooperation in multidisciplinary teams. The Impact Canvas® tool has a registered trademark. The general version of the tool template is included in the Appendix and can be used under a Creative Commons Attribution-ShareAlike 4.0 International License. The IC tool has been used in workshops in the university and business environment since 2015; and based on user feedback, it can be considered a user-friendly and practical tool for research and business teams developing ideas in the early ideation phase. The IC tool has been designed for teams that are developing new, innovative and sustainable research and business ideas and business models. With its visual user interface, the IC tool supports creativity among and communication between team members with different backgrounds. The IC tool supports the formation of teams comprising people from different disciplines, both from academia and business, which enables the development of ideas from scratch without restricting boundaries or guidelines from existing organizations. The IC tool helps team members share their knowledge and together develop new, innovative research and business ideas with a clear vision of the impact of the solution. The ideation of sustainable research and business ideas must consider a wider perspective than the economic viability of the idea; in addition, environmental and social perspectives need to be incorporated into the idea. The wider perspective must also be supported by the tool used in the ideation process, which should help team members to create a common strategic business vision.

The first section of this chapter describes on a general level the situation and challenges that teams may face when developing early ideas for sustainable business ideas and models. The second section discusses the literature on the use of tools for creating and developing innovative ideas and sustainable business. In the third section, the background, the development team, and iteration cycles of the IC tool are described. Then, the requirements for

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interdisciplinary communication and tools supporting multidisciplinary teams are discussed. The IC tool has been tested by various development teams in association with workshops arranged by the authors, and the results are presented. The final section of this chapter describes the future development plans for the tool so that it can better support the needs of multidisciplinary teams innovating new sustainable ideas and business models that account for the social, environmental, and economic challenges in the world.

The Development of Early Ideas into Sustainable Business Ideas and Models

We start by discussing the particular methods and tools that can be applied when developing sustainable business ideas. Research has elaborated teaching and training practices, interaction methods (e.g., between industry and university), learning methods, and the use of tools (Doganova and Eyquem-Renault 2009; Hixson and Paretto 2014; John, Gregor and Sun 2016). There are a set of well-known tools used for business modeling, such as the Business Model Canvas (Osterwalder and Pigneur 2010), to increase innovative business ideas and entrepreneurial activities in society. There is even an extended version of the Business Model Canvas (BMC) with a triple-layered approach (cf. triple-layered business model canvas by Joyce and Pacquin 2016) that can help yield a more holistic view of existing business models in organizations. This canvas, however, was developed for business modeling and therefore does not necessarily help in the early ideation phase. When working with the BMC, the team concentrates on practical business development by formulating actual business strategies with offerings, customer needs, infrastructure, and finances (Osterwalder and Pigneur 2010). The BMC does not examine the challenges that exist in the very early-phase development of ideas

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aimed at rendering research or innovative ideas into business ideas, nor does the BMC consider sustainability aspects from societal and environmental perspectives.

The development of sustainable business ideas is not a simple and straightforward process, especially when there is uncertainty about novel technologies and possible future markets do not yet exist for the solution (Kokshagina et al. 2016). The exploration phase of ideas in the early ideation phase may require a tool that can help the team to develop their ideas more effectively (Kokshagina et al. 2016; Heising 2012). The methods used to develop business ideas and technical solutions for novel markets are important in the early phases of the ideation, and there has been a call for studies on creative design methodology, especially for innovations based on scientific findings (Gillier and Piat 2011). In order for research findings to have a positive and sustainable impact for society and the environment, the developers of both research and business ideas must share a vision that is meaningful and long-lasting (Sarewitz 2016). In the early ideation phase, special attention should be paid to the vision statement of the business (cf. Reid and de Brentani 2012).

Different Perspectives from Multiple Stakeholders are Required in the Development of Sustainable Business Models

Sustainable business models (SBMs) include a triple bottom-line approach and account for the interests of multiple kinds of stakeholders representing society and the environment. The vision and purpose of a team or organization that aims to develop sustainable business or research ideas needs to be considered from the triple bottom-line dimensions, i.e., *social*, *environmental*, and *economic* perspectives, and sustainable organizations are those that pursue economic profit

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alongside the fulfillment of the other two dimensions (Stubbs and Cocklin 2008). SBMs aim at driving and implementing innovation for sustainability, and they embed sustainability in the business strategy and processes of companies (Bocken et al. 2014). When working on developing a sustainable business model, it is crucial to engage and collaborate with stakeholders, and sustainable organizations are those that understand that in order to be successful, they must consider their stakeholders (Stubbs and Cocklin 2008). Teams working on new ideas need to make an effort to always increase societal and environmental benefits in addition to the economic gain achieved by the business (Bocken et al. 2014). Business model innovations for sustainability have been defined by Bocken et al. (2014) as:

“Innovations that create significant positive and/or significantly reduced negative impacts for the environment and/or society, through changes in the way the organisation and its value-network create, deliver value and capture value (i.e. create economic value) or change their value propositions.”

The development of sustainable business ideas and models based on academic research findings can still be challenging for researchers, entrepreneurs, and business people in the early idea development phase. Especially, the societal and environmental impacts of novel business ideas should be considered from many perspectives: academically from several disciplines and, in the business environment, from many types of stakeholders. Business and customer value cannot be created by companies independently; instead, collaboration with various stakeholders has become more critical for companies (Bocken et al. 2014), and many organizations are already listening to their stakeholders and trying to take their views into account in their development initiatives (Rauter et al. 2017).

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Universities and companies are expected to deliver new, more sustainable solutions to the markets. Research results should also have a societal impact and solve real problems in the world (Sarewitz 2016). The current demand for more sustainable businesses and technologies on the markets has also placed higher expectations on researchers and businesses to cooperate more closely and bring forth positive results for investments in research projects (Edler and James 2015; McNie et al. 2016).

The Important Role of Teamwork in the Development of Sustainable Business Models

Organizations are formed by teams that play an important role in the ideation and development of business and research initiatives for the organization (DeChurch and Mesmer-Magnus 2010), and complex societal and environmental problems require sustainable solutions that must be developed by multidisciplinary teams. Teams are increasingly working on the development of solutions for global problems and ideas for new innovations to ensure the competitiveness of the organization, and this requires a multidisciplinary approach in the team (Kay, Kay, and Tuininga 2018).

In multidisciplinary teams, however, challenges can arise when they need to cooperate, as the team members may have different perspectives and backgrounds for solving problems and creating new solutions, and it may be hard for the team to communicate as a result (Cronin and Weingart 2007). Teams developing sustainable solutions and business ideas are often multidisciplinary, and in many organizations teams consist of members from different functions and departments; in this sense, the approach can even be called transdisciplinary

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(Kay, Kay, and Tuininga 2018). Multidisciplinary teams working on sustainability-related topics have been shown to be strongly committed to their team mission in university contexts, especially teams consisting of university students; working in a multidisciplinary team has been demonstrated to offer a beneficial way to develop new skillsets and experiences among students (Kay, Kay, and Tuininga 2018).

The early ideation phase is critical for the outcome of the innovation process and business development, and it can be considered part of the market-visioning phase in which new business opportunities are sought (Markides 2006). When creating a business vision, the team must be motivated and possess understanding and knowledge for analyzing a business opportunity and for elaborating a business solution for the markets, which requires several iterations to produce the solutions to the key questions (O'Connor and Veryzer 2001). In the New Product Development (NPD) process, the personal competencies of the individual team members to communicate and network is critical for the formulation of a market vision that enables the launch of a sustainable business solution on the markets (Reid and de Brentani 2012). The business and market vision needs to be strategically clear so that it can guide the innovation process in the correct direction (Reid and de Brentani 2012), which requires a methodological approach for the teamwork.

Introducing a Novel Tool Designed Particularly for Early Idea Development: The Impact Canvas

The Impact Canvas (IC) tool is an early-phase idea-testing tool that enables the involvement of many stakeholders and enables cross-boundary collaboration for ideation and innovation,

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both of which are increasingly needed (Reypens et al. 2016; Aarikka-Stenroos et al. 2017). The IC tool has been developed with the aim to enable ideation and business idea development by involving many stakeholders and accounting for various perspectives, which often emerge in the very early stages of the development of a business idea and business model. When working with the IC tool, researchers and business people can together form a start-up team and cover the most critical factors for a business opportunity, i.e., formulate a business vision, collect initial customer requirements, analyze possible competition on the markets, look for initial resourcing sources, thus developing an initial idea for a sustainable business solution that has a place on the markets (Impact Canvas® tool 2016; Aarikka-Stenroos et al. 2016).

To both ensure and emphasize the use of the IC tool in an interactive way, it features a built-in iteration. We discovered that the iteration potential and aspect were important features for the involvement of different stakeholders as well as their perspectives. The tangible benefit of the built-in iteration arises from the fact that our tool poses questions not only with an interactive tone, but also with a visual reminder for the interaction on the canvas itself. The user is more or less obliged to think and implement testing and/or actions per every section of the canvas. We have used both the questions on each of the content elements and the label of “Status – Target – TestandDo” for enabling the visible, even tangible, iteration.

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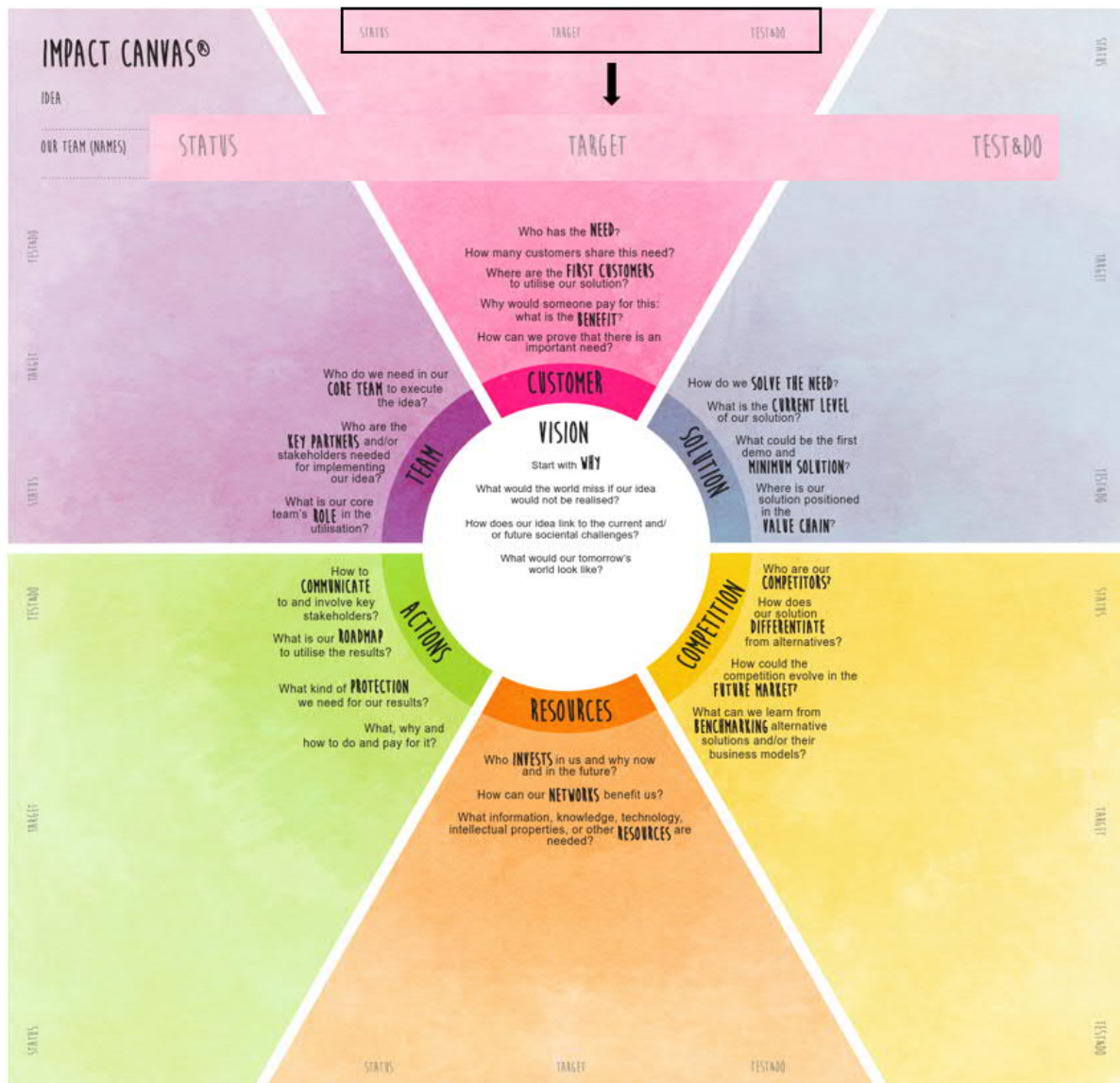


Figure 1. Impact Canvas tool and a built-in iteration with Status – Target – TestandDo for each section of the canvas.

The interactive tone in the content elements of the canvas can be seen in the sections and questions below.

- **Vision:** How does our idea link to current and/or future societal challenges?

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- **Customer:** All the questions have a tone that determines the interaction; e.g., Why would someone pay for this: What is the need? How can we prove that there is an important need?
- **Solution:** Where is our solution positioned in the value chain?
- **Competition:** What can we learn from benchmarking the alternative solutions and/or their business models?
- **Resources:** Who invests in us and why—now and in the future? How can our networks benefit us?
- **Actions:** How do we communicate with and involve key stakeholders?
- **Team:** Who are the key partners and/or stakeholders needed for implementing our idea?

Tools Approach for Creating and Developing Innovative and Sustainable Business Ideas

In this section, we discuss how a tool can assist a team in the early ideation phase. We particularly address tools that enable the development of novel sustainable (business) ideas. The role of such tools is discussed in the field of business development as well as in innovation management and entrepreneurship. Next, we discuss in more detail what the different literature streams have said thus far about such tools.

First, in the field of business development and start-ups, there are tools for identifying and developing new businesses and business ideas. Such tools focus on the structured design and development of business. The most established tool in this field is the Business Model Canvas

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(BMC) developed by Osterwalder (e.g., Osterwalder and Pigneur 2010; Osterwalder et al. 2014), which was created to design, analyze, and define value propositions and key principles of business by the focal firm. The BMC is a visual template comprising sections describing a firm's or product's value proposition, customers, finances, and infrastructure for developing new or describing prevailing business models. As a tool, the BMC can also be applied as a large outline so that team members can cooperatively sketch, iterate, and discuss the elements of the business model or as a web-based software format. As a tool, it can be used to foster understanding, learning, discussion, creativity, and analysis.

There are many other canvas tools that can facilitate business development, such as the Lean Canvas and the Value Proposition Canvas. The Lean Canvas is particularly designed for startups (Maurya 2012). The Value Proposition Canvas focuses more on value creation and business ideas that can be derived from the value creation potential. These canvasses serve as tools that highlight the most important elements of business, but they also enable the presentation of the most critical elements in a simple and communicative form. For example, Eppler et al. (2011) conducted a study whereby the team processes of managers innovating business models were compared. The teams utilized different kinds of artefacts (business model templates, physical sketched objects, or PowerPoint templates). They found that using a template tool significantly improved perceived collaboration but decreased perceived creativity, which is an indication that tools can have a distinctive impact on collaborative teamwork in particular for business model development.

Second, as ideation is part of creative thinking and is thereby helpful, one literature stream has examined tools that aim to increase creativity. The widely cited work by Shneiderman (2007)

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underlines that research on and the development of creativity support tools concentrate on tasks that aid discovery in sciences, exploration in design, innovation in engineering, and imagination in arts. The focus of studies in the field of tools for supporting collaborative creativity has been on digitalized tools (Warr and O'Neill 2007; Shneiderman 2007), not on canvas-like tools. This field, however, increases our understanding of how diverse canvases, templates, and devices can serve as Individual, Group, and Social Creativity Support Tools. Shneiderman (2007) suggested, based on his work, that creativity support tools should be user-friendly for novices, yet provide ambitious functionality for experts.

Creativity brings forth innovation; so accordingly, there is also a set of studies that have discussed the role and contribution of tools for innovation. This approach highlights practical tools and methods that drive new ideas to emerge and lead to innovation (Markman and Wood 2009; O'Brien 2010; Hidalgo and Albers 2008). Such tools can address the development of a design or product, creativity in general, or business or market intelligence (see full review in Hidalgo and Albers 2008). When tools are used to drive innovation, they can motivate participants and support collaboration for open innovation, thereby enabling very diverse actors to join in (Antikainen et al. 2010).

Third, ideation and communication should happen in collaboration between different stakeholders. Antikainen et al. (2010) stressed that it is fundamental for tools and toolkits to support communication between different stakeholders. Information gaps can arise from the asymmetrical distribution of information in a team, and therefore it is important that the tool enables knowledge representation and that team members can communicate with others who have different backgrounds and levels of knowledge. Antikainen and colleagues argued that

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tools should make the differences between collaborating team members and stakeholders transparent and help team members to transform their varying contributions into a format or language that the whole team understands.

Fourth, one stream has discussed tools as boundary objects that enable communication over boundaries, different actors, and stakeholders—the relevant aspect for sustainable business. For example, a widely cited work by Carlile (2002) noted, based on extensive observations, that there are different boundary objects, such as drawings, prototypes, and process maps, that in cross-functional settings are useful for communication and knowledge transformation. Here, canvas tools can be conceptualized as boundary objects that enable discussions over boundaries. Carlile (2002) identified three characteristics of such boundary object tools that make them useful in joint problem solving and ideation.

A boundary object comprises a common language for individuals to share their knowledge. A useful boundary object offers a practical way for individuals to define and learn how their views differ while allowing them to specify their knowledge and concerns as concretely as possible with regard to the problem at hand. A boundary object offers a standardized model, method, and map that together enable diverse stakeholders and actors to specify their specialized concerns. This feature of boundary objects typically pushes a cross-functional team to address critical values and priorities, as well as their consequences for individuals. Here, the concreteness of the tool is the key, as Carlile (2002) put it:

“For example, a ‘process model’ is certainly less concrete than a physical part, but when it is used to represent and learn about the sources of a design ‘bottleneck’ in a complex

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product development process, its particular ‘concrete’ means suit the nature of the problem faced. Of course, once this specifying and learning of differences and dependencies has taken place, we are often left with negative consequences that must be resolved.”

Furthermore, an effective boundary object enables individuals to jointly build upon their knowledge. If negative aspects are identified, then the individuals should have the opportunity to change, negotiate, or modify the boundary object. In agreement with these characteristics of an effective boundary object, according to Carlile (2002), *“individuals must be able to draw on, alter, or manipulate the content of a boundary object to apply what they know and transform the current knowledge used at the boundary. -- Further, the knowledge transformed and created through the use of objects, models, and maps can then be used to enhance the content of shared repositories and the use of standardized forms and methods.”* Here, summing briefly, diverse tools, such as canvases, models, and maps, support transforming and archiving knowledge among multiple actors. A boundary object can represent individual team members’ knowledge, helping them learn about the differences in the team as well as dependencies, thereby cooperatively converting knowledge toward solving the challenges and problems introduced in the team. Canvases can serve as boundary objects that function as “integrating devices” (Lawrence and Lorsch 1969)—not only tools, but also methods and standardized forms for formulating and learning about the differences and dependencies identified in the team. Applying this approach, the canvas can facilitate a process of building on common knowledge as team members learn, discuss, and modify their current knowledge base and create novel knowledge to solve the identified issues (see also Teece et al. 1999).

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A boundary object also facilitates communication between various stakeholders representing different professions. This is relevant, as contemporary professional work (science, business, and technology design) is heterogeneous insofar as it involves multiple actors representing different professional cultures (Engeström et al. 1995; Akkerman and Bakker 2011), and therefore learning is not only about being or becoming an expert in a particular expertise domain, but also about cooperating across boundaries. The term *boundary crossing* refers to how professionals may need to enter into an unfamiliar territory and “*face the challenge of negotiating and combining ingredients from different contexts to achieve hybrid situations*” (Engeström et al. 1995, p. 319; see Akkerman and Bakker 2011). Here, the concept of boundary object evokes how canvases as tools can bridge overlapping practices in different fields and disciplines. Developing new innovative business ideas, communicating them to others, and elaborating the ideas further are not easy tasks, particularly for professionals with no background in innovation or business.

Fifth, canvases can also be considered as tools for education and for learning business perspectives. Several studies in the field of innovation education and coaching have considered business model tools as “innovation devices” (Doganova and Eyquem-Renault 2009) and “tools that support innovation” (Hixson and Paretto 2014; John, Gregor and Sun 2016), which are therefore beneficial for education. Here the focus has been on diverse teaching models and learning processes (e.g., Fayolle and Gailly 2008). A recent study by Harms (2015) examined self-regulated learning and team learning in a lean start-up environment. All these studies emphasized that innovation and entrepreneurship education and coaching can apply diverse tools and methods that enable both individual and team-based learning and facilitate dynamic iteration. These studies, however, focused on the use of tools, and did not therefore provide

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any theoretical or practical insights into how new tools and canvases are generated for sustainable business model development.

Background and Development of the Impact Canvas® Tool

To respond to the need for a novel tool to assist multidisciplinary teams in the early ideation phase, practitioners at the Tampere University of Technology (TUT), University of Tampere (UTA), and Tampere University of Applied Sciences (TAMK) jointly developed an ideation tool, the Impact Canvas® (IC) tool (Aarikka-Stenroos et al. 2016). The IC tool has been designed for testing and developing ideas in the very early phases of research and business idea development.

At best, business and research aim for impacts on society and economy. Professionals challenged with ever shorter innovation cycles must accelerate ideation and engage with users already in the early idea development phase. The need for speed and societal solutions are the demands business developers must satisfy to ensure timely impact of their ideas. The need for speed to reduce time-to-market calls for pivoting and fail-fast testing of ideas against the actual needs of real customers. The development of solutions for societal challenges requires knowledge generation by interdisciplinary teams. Likewise, need-driven or use-driven research embarks from a user perspective. The resource-demanding process of getting ideas to the user requires a clear vision and a diverse team.

At the Research and Innovation Services of the University of Tampere and Tampere University of Technology, professionals advising pre-start-up and research teams on impact development

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acted on the need for novel tools to structure ideation. There was a clear need to increase open dialogue within teams and increase the expected impact of ideas. To this end, these peers met during November 2014 in a workshop to review and discuss the tools they used to facilitate the identification and description of the expected impact of research ideas during the research funding acquisition phase. As an outcome of the meeting, three advisors decided to team up and develop a new tool differing extensively from existing checklists aimed to ensure impact.

The development team set out to design a tool to visualize the ideation process, raise awareness of customers' needs, and foster collaborative idea development. One team member made the others aware of the BMC, a visual chart comprising elements describing a firm's or product's value proposition, infrastructure, customers, and finances. During the workshop, a first version of the new tool was sketched, including five elements, i.e., four fields enclosing one element in the center. Already at this stage of the tool development, the center element included the question "Why?" The four outer elements included as topics: Current versus foreseen framework changes, Transfer of results, Customer, Team, and Stakeholders. In the beginning, this new tool was referred to as Exploitation/Impact/Utilization Canvas.

In 2015, the initial team of three advisors continued the unfunded voluntary tool development and invited peers to join the effort. The next important contribution was the integration of the NABC (Need, Approach, Benefit, and Competition) model promoted by Tekes, the national innovation funding agency in Finland, to effectively present a solution to others. Thus, in January 2015, the design of the canvas was altered to include the NABC model and six elements around the central element "Why?" In March 2015, the idea to gamify the canvas was sparked and the elements' content was continuously refined. The team developed game rules

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to guide users of the tool and to generate a playful user experience. In May, the six outer elements were color coded. Tests of the gamified canvas during summer and early autumn 2015 indicated that the framework of the game did not increase usability. The game's demand of having a start and an end did not support the team's aim for lean iterations. The given questions in the canvas were sufficiently self-guiding such that game rules would not be required. Emphasis was kept on promoting sharing between different groups developing their business or research ideas with the canvas. In autumn 2015, the tool's layout was refined to its current form, and later the name "Impact Canvas" was added to the canvas. In November 2015, after abandoning its gamified use, the tool was supplemented with a brief usage instruction and a selected example of supporting tools, like the Blue Ocean Canvas. The IC was repeatedly tested with different groups, and its content was continuously refined.

During 2016 and 2017, development and commercialization of the tool was financially supported by two national co-funded projects. In relation to the national projects, peers from the Tampere University of Applied Science joined the development team. Feedback collected during tests added to the collaborative, iterative development of most suitable wording for different target groups. In February 2016, the usage instruction was omitted altogether while keeping a supplementary right-hand explanatory field. In the next version, even the explanatory field was omitted. The IC was disseminated in various national and international events as well as online. The online pdf-version includes fill-in text boxes. In May 2016, "Status-Target-to-do" notes were added to the six outer elements to enhance lean iteration. In March 2017, the development team decided to share the tool under a Creative Commons Attribution-ShareAlike 4.0 International License. The "Impact Canvas" is protected as a European trademark. In late

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2017, a version of the IC including only keywords was tested, and the idea resulted in further reduction of the text on the canvas and the highlighting of keywords.

Development of the new tool through a collaborative, iterative process by a diverse group of practitioners lasted three years and resulted in an acknowledged tool for early ideation, testing, and development of ideas. The tool has been designed to visualize the ideation process, raise awareness of customers' needs, and foster collaborative idea development. The tool development and testing has been studied, and the results have been published (cf. Aarikka-Stenroos et al. 2016; Saari et al. 2017).

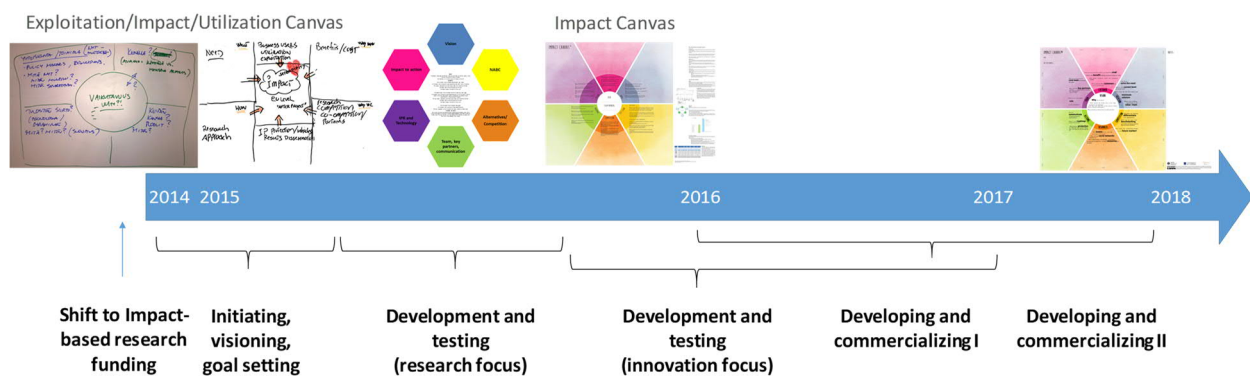


Figure 2. The development timeline and iteration cycles of the Impact Canvas tool.

The IC is visual, self-explanatory, easily approachable, and adaptable to suit diverse user communities. These features make it distinctive from other business model tools. The focus lies on the impact of the business solution in society and on the environment while also addressing customer needs in detail. It is suitable for existing businesses as well as pre-start-ups and research teams.

Reference: Saari, U.A., Aarikka-Stenroos, L., Köppä, L., & Langwaldt, J., Boedeker, S., Mäkinen, S.J. (2019). Sustainable Business Model Ideation and Development of Early Ideas for Sustainable Business Models: Analyzing a New Tool Facilitating the Ideation Process. In *Sustainable Business Model Innovation*. Aagaard, A.(ed.) Palgrave Macmillan

The IC satisfies the need of coaches and professionals for flexible tools to facilitate ideation toward responsible solutions matching real needs of customers and society. From the beginning of the development, the tool centered around the question “WHY” and “VISION” to motivate the user(s) to reflect on underlying motives and ambitions. The two aspects aim at an open dialogue, especially in diverse teams, to better communicate why they do what they do. The IC aims to trigger discussions and collaborative learning between users.

The organization of the content elements is open in the sense that the user can select where to start. The tool is oriented toward testing and follow-up actions (Status – Target – TestandDo) and enables a circular, iterative process. Open questions foster collaborative working and deeper reflection on the idea. The tool does not require a minimum set of proven facts and figures to start with and uses common terminologies to minimize barriers toward its usage. The IC in its current format is an easy-to-use tool in the earliest phases of idea development by teams with representatives with different backgrounds in different disciplines; this has been proven from the results of several tests among researchers, research facilitators, research grant applicants, and students (Aarikka-Stenroos et al. 2016), as well as among senior researchers and professors who also have experience in the industry and business (Saari et al. 2017).

Means to Facilitate Communication over Boundaries in Multidisciplinary Teams for SBM

The IC tool benefits multidisciplinary teams that need to communicate, explore, and develop innovative and viable business ideas and models based on the different knowledge backgrounds

Reference: Saari, U.A., Aarikka-Stenroos, L., Köppä, L., & Langwaldt, J., Boedeker, S., Mäkinen, S.J. (2019). Sustainable Business Model Ideation and Development of Early Ideas for Sustainable Business Models: Analyzing a New Tool Facilitating the Ideation Process. In *Sustainable Business Model Innovation*. Aagaard, A.(ed.) Palgrave Macmillan

of the individual team members. Each content element of the tool offers an important aspect that needs to be explored and developed in the ideation phase. The vision statement is surrounded on the template by six elements: Customer, Solution, Competition, Resources, Actions, and Team. Together, the content elements form a holistic basis for further action planning to implement the research or business idea. In addition to being a tool, the IC is also a boundary object that facilitates communication between team members and thus helps to explore different perspectives based on the different backgrounds of the multidisciplinary team. As the tool template includes guiding questions tailored based on the background and disciplines of the team members, the threshold to start using the tool is very low.

The visual content elements and layout of the IC tool facilitate the discussion and exploration of different kinds of innovative research and business ideas that can help to create a sustainable business model in a later phase. The different content elements help the development team members cover the essential requirements and topics for developing a new research or business idea. The content elements are interconnected and can be discussed in whatever order is most suitable for the team. The vision element of the IC tool is the focal point that guides the team to consider their strategy and drivers for business development, the impact on society, and the environment as well. The formulation of a vision statement helps the team members to consider sustainability and share more comprehensive strategies that also account for the impact of the research or business idea on the environment and society at large. The following guiding questions for the vision element have been used in the general version of the IC tool: Why do we exist?, What would the world miss if our idea was not realized?, How does our idea link to current and/or future societal challenges?, What would our tomorrow's world look like? What is the value of this research from the industry point of view?

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When scientists apply for research funding, they encounter substantial funding programs, such as the EU Horizon 2020 framework program (2014–2020), which identifies societal challenges and calls for multidisciplinary projects to solve them. Multidisciplinary projects funded by EU framework programs need to spend time defining the key concepts of the research project (e.g., computer sciences, language studies, psychology, cognition science, engineering, and marketing). Multidisciplinary projects rehearse interdisciplinary communication in these situations. The ones that take part in proposal preparation must come to an understanding of the shared research plan. In the kick-off meeting and during the first year, the multidisciplinary teams need to learn to understand and even speak a common language. When members of the same consortium collaborate, they can detect the parts and terms they need to clarify together.

Some of the issues in the general version of the tool were caused by the terminology, and some of the terms were modified for another field of science. When working in a multidisciplinary team, the general version of the IC tool is used. The decisive requirement for an interdisciplinary tool is “Are the researchers willing to make an effort to develop interdisciplinary communication in order to build multidisciplinary projects?” The ones who want to compete for H2020 funding or find creative ideas are those most likely to be willing, especially when multidisciplinary becomes one of the evaluation criteria for the funding applications. The ones who feel safe and unthreatened by other disciplines may act as pioneers and break through the unproductive silos between disciplines, thereby building an academic ecosystem wherein all parts of the system are necessary and interdisciplinary communication is a benefit. Multidisciplinary is the avenue to both innovation and originality.

Reference: Saari, U.A., Aarikka-Stenroos, L., Köppä, L., & Langwaldt, J., Boedeker, S., Mäkinen, S.J. (2019). Sustainable Business Model Ideation and Development of Early Ideas for Sustainable Business Models: Analyzing a New Tool Facilitating the Ideation Process. In *Sustainable Business Model Innovation*. Aagaard, A.(ed.) Palgrave Macmillan

Feedback from the Users of the Impact Canvas Tool

The concept of the IC tool resulted from several development iterations, during which we collected feedback from workshops where the tool was introduced and utilized for teamwork. As a result of the iterations and further development of the IC tool based on user feedback, it has been found to, for example, support teamwork and boost the creativity of individuals in the team. The benefits of using the IC tool in the early ideation phase also include the following: It allows multidisciplinary teams to collaborate by sharing their knowledge and developing upon a common basis for their ideas; the tool offers a structured approach for proceeding through the required areas for developing a business or research idea further in practice; and the tool guides the team to form a strategic vision that accounts for a broader perspective on their idea, including the social and environmental sustainability perspectives in addition to the economic perspective.

Method and Data

The IC tool has been introduced by some of the IC tool development team members in workshops with participants from different fields and with different levels of education and business experience. After the workshops, the participants were asked to fill in a survey on their perceptions and experiences of using the tool for the first time.

Several training sessions were held on the IC tool at different universities and during some conferences in 2017. Feedback was collected and analyzed from training sessions held at different Finnish universities, the Brunel University London, the EARMA conference (European Association of Research Managers and Administrators), and a workshop for

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research support staff at universities in Denmark and Germany. In addition, the tool has been used for student project work and workshops with industry representatives on circular economy facilitated by coaches from the Tampere University of Technology.

The training sessions on the use of the IC tool were arranged in a similar fashion by the same group of trainers at all the locations. None of the participants had earlier been in contact with the tool, as it was still novel. After the IC tool was introduced to the participants, they had the opportunity to try it out and develop an idea in a group. The instructors offered support in the use of the guiding content elements on the IC when developing the idea. After the training, the participants shared their ideas and experiences on the use of the tool with the rest of the group. In the survey distributed immediately after the session, the participants were asked to evaluate their experience of the tool, concentrating on usability, content elements in general, collaborative and motivational aspects, as well as the look and feel of the tool. The responses were given on a 5-point Likert scale (ranging from strongly disagree = 1 to strongly agree = 5).

The analyzed sample included 110 respondents to the first version of the survey and 24 respondents to the second version. The respondents were mostly from Finland (43%); however, we also received feedback from Germany (10%) and other European countries (27%), while some respondents did not list their country of origin (14%). From the respondents, 60% were female, 33% male, and 7% did not respond to this question. The respondents represented the following age groups: 25% were 18–24 years (representing the students involved in the workshops), 12% were 25–34 years (representing younger researchers and company representatives), 29% were 35–44 years (representing more senior researchers and company

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representatives), 26% were 45–54 years, and 4% were over 55 years; 4% of the respondents did not report their age.

There were experienced academic researchers among the respondents, with doctoral degrees and a minimum of 10 years of experience from research work ($n = 46$). These participants had various roles, e.g., research coordinator, advisor, researcher manager or director, and professor. Most of the experienced researchers had worked in academia (85%), but some respondents had worked in companies in the private sector, either as employees (15%) or entrepreneurs (11%). In addition, a large number of respondents were experienced research advisors and coaches, who represent a demanding user group.

Results from the Surveys

Based on the surveys conducted after the workshops, it was first verified that the visual presentation of the tool was appealing to the workshop participants. The use of different colors to differentiate the content elements also helped the users visually differentiate various aspects of the idea that needed to be developed. Based on the feedback, we verified that the majority of the users thought the “The Impact Canvas is aesthetically pleasing” and “The layout of the Impact Canvas is logical and can be quickly understood.” Next, the development team wanted to ensure that the tool was user-friendly and could be used immediately by the teams after a short introduction. Based on the feedback from the users, we verified that most of the users thought the “The Impact Canvas is easy to use” and that “The guiding questions on the Impact Canvas are easy to understand.”

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To ensure that the IC tool truly enabled users to explore innovative ideas in the very early stages of their development, we collected feedback from the participants at idea development workshops regarding this aspect. The majority of the respondents thought that “The Impact Canvas serves its purpose very well and helps with the early idea development.” In addition, the development team wanted the tool to help users collaborate with other team members with varying backgrounds. To ensure that the IC tool indeed helped in this respect, we asked the users to explain whether “The Impact Canvas helps me to involve my team members in the idea development.”

In the survey, the workshop participants were also asked how the tool helped them to individually contribute to the teamwork. The responses to the statements, “The tool boosts their creativity on an individual level,” “The impact Canvas inspires me to work on an idea,” and “The Impact Canvas boosts my creativity” indicated that on the individual level, the participants for the most part felt that the tool helped them get inspired and create ideas in the team.

Table 1. Results from the first version of the feedback survey focusing on the user-friendliness and usefulness of the tool in multidisciplinary teams.

Survey statement	Mean	SD
The Impact Canvas is aesthetically pleasing	3.77	.860
The layout of the Impact Canvas is logical and can be quickly understood	3.76	.860
The Impact Canvas is easy to use	3.78	.759
The guiding questions on the Impact Canvas are easy to understand	3.73	.744
The Impact Canvas serves its purpose very well and helps with the early idea development	3.83	.848

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The Impact Canvas helps me to involve my team members in the idea development	3.87	.743
The impact Canvas inspires me to work on an idea	3.82	.747
The Impact Canvas boosts my creativity	3.68	.834
The Impact Canvas improves my understanding of the required elements to develop an idea into a realistic plan for a business or a project.	3.84	.711

SD = standard deviation

Response scale: strongly disagree = 1 to strongly agree = 5

Neither the level of education nor the age of the respondents had a significant influence on the way the respondents perceived the usefulness of the tool, as there were no significant differences when comparing the means with the ANOVA method (analysis of variance). The only question on which these two factors had an impact was the question about how well the “The Impact Canvas helps to discuss an idea with others outside my team.” Those respondents with a master’s degree (mean = 4.04; $n = 27$) or a doctoral degree (mean = 3.96; $n = 46$) evaluated this statement significantly higher. Also, the over 35–44 age group (mean = 4.19; $n = 32$) scored this statement higher.

As the feedback from the first survey version focusing on the initial use and perceptions of the tool was so positive, we wanted to focus next on the actual content elements of the tool. The feedback survey was modified in the next phase so that it concentrated more on collecting respondents’ views on the actual content elements and the guiding questions in each individual item. Feedback was collected from two different workshops for this part. One workshop was held in Finland, and it focused on developing business ideas for the circular economy. The other workshop was held in Denmark for research funding experts and applicants, in which the use of the IC tool for developing research and business ideas was explored.

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Based on the second survey, we received further confirmation that the content elements and guiding questions within them also gave the users a good overview of the required perspectives that need to be considered in the early ideation development phase. The respondents considered that the individual content elements and their guiding questions helped in the teamwork (Table 2).

Table 2. Results from the second version of the feedback survey focusing on the content elements.

Survey statement	Mean	SD
I think that idea and business development tools (e.g., Impact Canvas, Business Model Canvas) are very useful and help to discuss topics in groups.	4.08	.929
The VISION element and its guiding questions were important for the overall discussion.	4.00	.722
The CUSTOMER element and its guiding questions were important for the overall discussion.	3.96	.751
The SOLUTION element and its guiding questions were important for the overall discussion.	4.21	.588
The TEAM element and its guiding questions were important for the overall discussion.	3.79	.588
The COMPETITION element and its guiding questions were important for the overall discussion.	3.96	.624
The RESOURCES element and its guiding questions were important for the overall discussion.	3.92	.717
The ACTIONS element and its guiding questions were important for the overall discussion.	3.96	.690

SD = standard deviation

Response scale: strongly disagree = 1 to strongly agree = 5

The results from the second survey completed at two workshops give a strong indication that the tool has elements and guiding questions that are meaningful to the users. As the number of

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respondents was very small for the second feedback survey, we will need to continue collecting more feedback on the content elements as the IC tool is developed further.

Future Development of the Tool – The Impact Canvas® Tool as a Platform

Next we discuss how the IC tool will be further developed so that it can better serve in sustainable business idea and model development. The IC tool works as a stand-alone model and forms a cooperation platform that enables a great variety of activities to be built upon it. The aim is to facilitate the best possible benefit from these prospects for multiple different kinds of usage in the future. The tool and the platform can be used for developing different kinds of ideas, ranging from business to research funding, as well as in various kinds of situations. For instance, an idea can be a research, business, or service idea or concept, and it can be utilized in an early phase of the development when, e.g., looking for the most suitable utilization path. The tool can be applied by different teams and people on their own. The tool can be used with support from a coach or a facilitator. Furthermore, the tool can be applied as a platform and the basis for coaching programs for separate teams with facilitated collaboration and mutual learning.

We, the development team members of the IC tool¹, have been and will be actively developing and testing different ways to utilize the tool in its current format as a template as well as a platform for teamwork. The vision is to create a platform that:

- is adaptable to different kinds of coaching and conceptualizing sessions,
- can be modified for special use cases,

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- enables self-learning and lean experimenting of different kinds of ideas.

In early 2017, we initiated a coaching and conceptualizing concept that is adaptable to different contexts. This way, the execution possibilities of the Impact Canvas® tool were broadened. The concept is based on the seven aspects of the IC tool and includes a carefully considered package of facilitation methods, coaching tools, and processes. The concept and the coaching methods are flexible for different kinds of business environments and research contexts. The concept also includes intensive working sessions facilitated by coaches for developing ideas. This enables the processing of an idea with a variety of perspectives that can help to clarify the larger picture and context of an idea on a wider scale. Intensive and facilitated work with an idea from a variety of perspectives makes it possible to test the assumptions of the development team quickly and efficiently. This can, and usually will, generate re-thinking and re-framing of an idea rapidly and with minimal resources.

The IC tool is useful as it creates a common language and understanding in the development team for different aspects of the impact of the idea. The tool permits the development of ideas with a flexible and iterative process, which is the most important part of our concept. When the IC tool is used in ideation workshops, it ties the sessions together and can be used as a platform and as an iteration tool. The challenge and mission for the team is to trust the ideation process, which is also enhanced with coaching and facilitating methods and tools provided by the IC tool development team.

One example of the adaptability of the IC tool to different contexts is the collaboration the development team has had with a national research program that supports research ideas from

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life science and health technology. The program is designed to support research ideas from these fields in their very early phases, when both commercial and scientific applications for research findings are being developed. In spring 2018, the team started a coaching program arranged for nine research teams from the research fields of life science and health technology. Most of the people in these teams are researchers from Finnish universities. Some of the teams also have members from companies and business developers from these special fields. Intensive workshops will be arranged for these teams to develop the impact aspect of their research ideas and results. The concept will be implemented in the form of workshops and homework for the teams between the coaching sessions. As the participants are researchers mainly from the same field, they already have a common language and lexicon for the relevant theoretical and technological point of views. Our tool and the concept, however, also create a common language and understanding gradually in the process, even though the team members would not have a similar background. The collaboration and sharing of ideas and information is implemented step by step with discussions, sharing of ideas, and getting to know the other participants. The underlying way of working is to develop ideas with a creative mindset that concentrates on lean thinking, doing, and experimenting.

The IC tool can be modified to serve different kinds of needs from various kinds of user groups and disciplines. The tool is a platform and represents a philosophy upon which different modifications, applications, and trials can be built. The development team has tested the platform and its philosophy by tailoring the guiding questions in the different content elements of the tool for specific situations and special targets. The tailoring of the tool was done, for example, in autumn 2017 for the specific needs for the stakeholder workshop sessions in a circular economy project. In addition, at the University of Tampere, the IC tool was modified

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to coach researchers from Social Sciences and Humanities and Medical Sciences. Afterward, a modified version was created and tested for the Social Sciences and Humanities (IC SSH). Thereafter, a combination of the two versions was used to create a version for the Medical Sciences (IC MED).

Another example of the modification of the tool according to the target group is the development of the discussion and networking method for collaboration between researchers and industry and business representatives. The tailored questions for this particular purpose have been modified by our team of two experts and coaches, one from business and industry collaboration services and the other from innovation and entrepreneurship services. The collaboration has ensured that the needed special requirements have been considered. The target user group will be researchers who are interacting with industry and business people. The specified target is to clarify the value of their research from the industry point of view.

In early 2018, a team of two experts with different knowledge bases made a simplified version of the IC tool with the same content elements but fewer questions per section. This version of the tool is intended for networking between researchers and business representatives and will still be tested. The IC tool has been simplified as there is a limited time frame for the facilitated networking. The testing will be completed in a lean manner at an event called TechBites, which is organized in collaboration with the university and the business sector of the city of Tampere. The working method in the event includes two interconnected parts. The first session is called PitchandCatch, where the researchers have a chance to present their case briefly, i.e., pitch, to the participants of the event. The participants will then choose two of the pitchers they want to talk to further. The pitches have been designed especially for the purpose of clarifying and

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creating interaction, and they have been created with the help of the framework of the specially tailored IC tool. The second part of the TechBites event is a facilitated networking session called the Science Playground. In this phase, the focus is on networking and team building. The IC tool is used for this, and the participants can ask questions or make suggestions on the different content elements of the tool for a further meeting. We believe that the methods and tools used in such idea development sessions can be developed even further so that the collaboration event is inspiring, relaxed, and fun despite the differing backgrounds of the participants and stakeholders.

The idea of lean process thinking and doing is utilized in both our concepts and teamwork. The development team's aim is to develop our activities in the same way as we coach and facilitate the ideation processes of our customers and users. Self-learning and coaching are key concepts for our way of working. The lean way of developing ideas and testing them with users and customers as soon as possible has been the approach in our development work since the beginning. We have developed new aspects and features to be included in the tool in close interaction with our customers, users, and networks, and the development work will continue.

The IC tool is one example of a tool that can support early-phase ideation and SBM. It supports learning, sharing, peer-to-peer discussions, and dialogue that together comprise the backbone of team activities, help to develop new ideas, and account for different perspectives when developing sustainable business ideas and sustainable business models.

Reference: Saari, U.A., Aarikka-Stenroos, L., Köppä, L., & Langwaldt, J., Boedeker, S., Mäkinen, S.J. (2019). Sustainable Business Model Ideation and Development of Early Ideas for Sustainable Business Models: Analyzing a New Tool Facilitating the Ideation Process. In *Sustainable Business Model Innovation*. Aagaard, A.(ed.) Palgrave Macmillan

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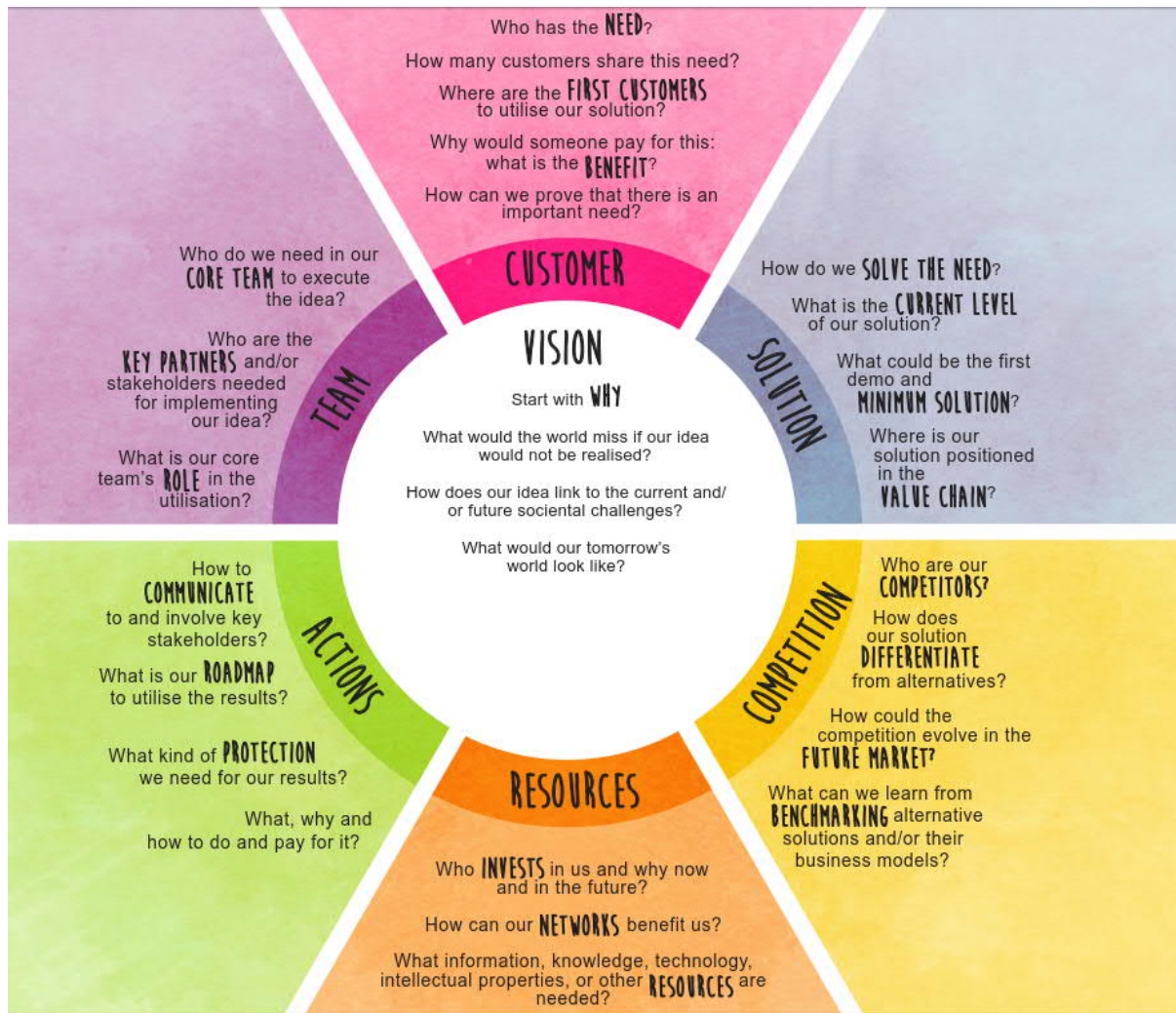
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Appendix. General version of the tool template that can be used under a Creative Commons

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The latest version of the Impact Canvas tool can be downloaded from <http://y-kampus.fi/en/y-tools/impact-canvas/>. For premium versions of the tool and additional training and coaching workshops, please contact Leena Köppä, leena.koppa@tut.fi.

Notes

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Leena Köppä, is a Coach for Entrepreneurship and Impact at the Innovation Services/Y-kampus, Tampere University of Technology. She is an experienced coach with a demonstrated history of working in the university, business and municipality environment in close connection with entrepreneurial-minded people and entrepreneurs. Skilled in innovation

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management, coaching and new business development, Leena's passion is to coach and support lean experiments and meetings with different talents and experts. Her mission is to coach researchers to see the impact of their research on society and to make them aware of the possibility of commercialization of their research results.

Jörg Langwaldt, Dr. Tech., is a Research Liaison Officer at the Research Services at the Tampere University of Technology. He has more than 20 years'experience in acquisition of external funding and writing of research proposals. His focus on provided services to researchers lies on strengthening communication of the foreseen impact of research and innovations actions. He has an interest in the benchmarking of pre-award support services at universities and research organisations.

Stina Boedeker, M.Soc.Sc., BBA, is a Research Funding Specialist at the University of Tampere. She has a background in world-leading international business. In academia, her passion is Human-Computer Interaction (HCI), where she has proved her ability to receive EU Framework Programme funding. For ten years, she has coordinated European and global project funding initiatives. Her present commitment is to share her expertise in strategic proposal preparations, where research from any field of science can make a difference.

Saku J. Mäkinen, Dr.Tech., is Vice Dean of Research and professor of Industrial Management at the Tampere University of Technology (TUT), Finland, and Research Director at University of Helsinki/CERN, Switzerland. Previously Mäkinen has also been with the Columbia University at the City of New York, USA, the University of New South Wales, Australia, and the National University of Singapore. His research has appeared in leading journals, including *Technological Forecasting and Social Change*, *Journal of Product Innovation Management*,

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