



This is an electronic reprint of the original article. This reprint may differ from the original in pagination and typographic detail.

Please cite the original version: Santonen, T. ; Nevmerzhitskaya, J. ; Purola, A. & Haapaniemi, H. (2019) Open Innovation Camp (OIC) - A Tool For Solving Complex Problems Rapidly. In Proceedings of the OpenLivingLab Days Conference. Co-creating Innovation: Scaling-up from Local to Global. Brussels: European Network of Living Labs, 226-241.

URI: <https://openlivinglabdays.com/2019/08/16/conference-proceedings/>

Open Innovation Camp (Oic) – A Tool for Solving Complex Problems Rapidly

Teemu Santonen^{1*}, Julia Nevmerzhitskaya¹, Aletta Purola¹,
and Harri Haapaniemi¹

* Corresponding author

¹ Laurea University of Applied Sciences, Finland

Category: Innovation Paper

Abstract

This paper proposes Open Innovation Camp (OIC) concept as a novel methodological solution for overcoming the constraints on upscaling Living Lab experiments. OIC is co-creation sprint type of multi-day event grounded on an open innovation 2.0 principles where a group of carefully selected stakeholders having diverse but complimentary expertise creates a common understanding of (a complex societal) challenge and work together to develop in a co-creative manner user centred concepts and solutions to pre-defined challenges in a set timeframe. Based on the experience from the OIC implementation it is suggested that OIC can be an effective tool for overcoming 1) lack of time and financial resources, 2) unbalanced stakeholder representation, 3) silo effect in co-creation activities problems. Based on the feedback analysis of 47 OIC participants, it is suggested that OIC provides the most value, when implemented in the very beginning of a project. How OIC can help to overcome multi-stakeholder engagement constrains in Living Lab setting is discussed.

Keywords: *innovation camp, open innovation 2.0, design sprint, service design, design thinking, complex problem, co-creation, quadruple helix*

1 Introduction

Solving complex problems (Murthy, 2000) – also known as ill structured problems (Simon, 1973) or wicked problems (Navarro et al. 2008) – requires socio-technological environments that bring together people with different, complementary, and often controversial knowledge and skills. Diversity can be associated to any attribute to indicate that another thing, person, group, organization, network or ecosystem is different (adapted from Williams and O'Reilly, 1998). In an innovation process, a novel thinking outside the box can be boosted when diverse people having complimentary skills and knowledge follows open innovation principles (Chesbrough, 2006). However, the participant diversity can also reduce innovation performance due too high level of task conflicts (also known as cognitive conflicts), which can be defined as perceived disagreement among group members relating their opinions and ideas (Simons and Peterson, 2000). In worst case scenario task conflicts are causing relationship conflicts, (or emotional conflicts), between the group members and leading to negative impact on group satisfaction, commitment and decision quality. Thus, effective facilitation and management of the development and innovation efforts is among the key challenges of any open innovation activity which is grounded on a multi-stakeholder collaboration including Living Lab approach.

Service design (SD) (Zomerdiijk & Voss 2010) and design thinking (Brown, 2008) have become a central framework to co-create novel solutions. It is about planning, developing and innovating product, services and concepts through specific iterative development processes while utilizing various methods, techniques and tools. The main purpose of SD is to create a customer-centric experience that meets the needs and demands of the end-customers but also fulfils the business objectives. It is argued that through a SD approach, diverse teams can collaboratively identify needs, ideas, experiences, opportunities and generate fast prototypes to be tested by the real users and customers. SD helps to innovate (create new) or improve (existing) services to make them more useful, usable, desirable for customers and efficient as well as effective for the organization.

1.1 Objective and structure of this study

The goal of this study is to introduce Open Innovation Camp (OIC) concept, which in relatively short-timeframe brings together in a controlled manner a diverse set of actors having complimentary skills to rapidly co-create visions and practical solutions for complex problems, which can further to be developed and tested e.g. in series of Living Lab activities.

The structure of this paper follows a constructive action research paradigm (Cassel and Johnson, 2006) process which is a methodology to develop solutions to a practically relevant problem by applying theoretical knowledge and demonstrating the functioning and innovativeness of the suggested solution in real life (Jaatinen and Lavikka, 2008). The structure follows a process framework originally proposed by Kasanen et. al. (1993) and refined by Oyegoke (2011) as follows:

- 1) Justify the practical relevance of the proposed problem (i.e. the challenge of solving complex problems in section 1),
- 2) Present the theoretical connection (i.e. open innovation 2.0, management of participant diversity and design sprint type of approaches justified in section 2),
- 3) Construct the solution (i.e. OIC-concept description as presented in section 3),
- 4) Demonstrate that the suggested solution is working (i.e. real-life implementation of the OIC and collecting feedback from OIC participants) and
- 5) Present the research contribution including applicability of the solution (i.e. discussion and conclusions of this study as presented in the section 5).

2 Theoretical foundations of Open Innovation Camp (OIC) concept

2.1 OIC as an Open Innovation 2.0 approach

Theoretical foundations of OIC are grounded on Open innovation approach (Chesbrough, 2006). Open innovation provides a generic framework for a distributed innovation process and knowledge flow management across organizational boundaries by using pecuniary and non-pecuniary mechanisms to support organization's business model (Chesbrough and Bogers, 2014). However, OIC as a tool to solve complex problems needs to go beyond facilitating collaboration between individual organizations to achieve its' ambitious goals. Therefore, OIC leans more on the Open Innovation 2.0 (OI2) framework, which emphasis ecosystem centric cross-organizational innovation grounded on the collaboration between quadruple helix actors (Curley & Salmelin 2013). Quadruple Helix model (Carayannis and Campbell, 2009) describes an innovation system where government, industry, academia and civil society work together to co-create the future and drive structural changes far beyond the scope of what any single organization or person could do alone. As a result, OIC provides possibilities to have sufficient capability to successfully integrate the information obtained from the external sources into internal processes which is crucial for open innovation to be effective (Nonaka, 2007).

2.2 Enhancing creativity by managing participant diversity

Careful management and diverse inclusion of complementary stakeholders is an important part of OIC. This suggestion is in-line with stakeholder theory (Freeman, 1984) and stakeholder engagement in an open innovation processes as suggested by Gould (2012). Importantly, successful stakeholder engagement in OIC will go beyond the acquisition of specific information from external experts to "trust and relationship building" and "mutual understanding" among various innovation ecosystem actors.

Participant diversity management in OIC is based on a model proposed by Santonen (2016), which includes cultural, organizational, user-driver, cross-functional, disciplinary and cross-industry diversity as presented in Figure 1.

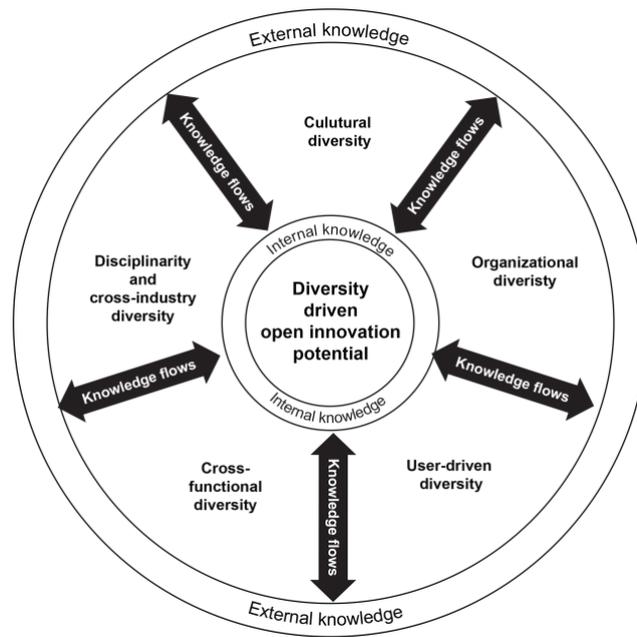


Figure 1: Diversity management model (Santonen, 2016)

Cultural diversity is one of the major challenges in the 21st century, which have a direct impact on the innovation acceptance. In the suggested diversity management model, cultural diversity reference is two folded. Cultural diversity refers to a need to recruit participants from different countries in which the market conditions and code of conduct are differing. Organizational diversity is linked to Quadruple Helix model, which is the foundation of the OI2 approach as suggested by Curley & Salmelin (2013). User-driven diversity highlights the need to understand different kind of end-users, who are expected to use the co-created solutions. Personas derived from service design methodology (Zomerdijk & Voss 2010) are archetypes of actual users and can be successfully used to verify user-driven diversity. Cross-functional diversity is related to an idea of a cross-functional team in which is a group of people with different functional expertise are working toward a common goal (Kahn 1996). Basically, this referrer to making sure that OIC includes persons having different job descriptions such as R&D, marketing or management. Finally, disciplinarity diversity and cross-industry diversity are referring to involving participants from different scientific disciplines or industries.

By considering the above participant diversity dimensions and making consciously decisions who to recruit to OIC, the likelihood of co-creating more radical innovations should increase. Furthermore, the participant recruitment challenges within Living Lab projects have been identified as a major constrain to on upscaling Living Lab experiments (Dijk et al. 2019). Therefore, more systematic stakeholder management is essential for Living Lab success.

2.3 OIC as a design sprint

Methodologically OIC concept belongs to a family of several time-constrained agile development exercises such as hackathon, design sprint, service jam, innovation camp, solution camp and entrepreneurship camp. The definitions of the above terms vary, but typically these approaches can be characterized by following attributes (Halvari et. al 2019): 1) short time-bounded event, 2) intense collaboration, 3) competition, 4) collocation, 5) offline: people meet locally, 6) ideation, experimentation and creativity, 7) teams, 8) pitching/presenting and 9) recognition. **Hackathons** are team-based coding or product development marathons, which originates from the 1960s, but became popular soon after the turn of the millennium (Halvari et. al 2019). Scientific Hackathons can be used for deep data analysis as an agile interdisciplinary collaboration between organizations and researchers (Ghouila, 2018). Hackathons can also be competitive rather than collaborative events (Richterich, 2017). **Design sprints** are co-creation events focusing on testing prototypes. Probably the most popular Design sprint approach is the five-day model which is inherited from the Google (Knapp et. al. 2016) and includes idea, build, and launch and learn stages. **Service jams** are defined as a type of short-term innovation communities (Römer et al, 2011), which usually last 48 to 72 hours and bring together thousands of experts and interested people globally in order to openly work on predefined challenges, problems, or topics. Most known format today is the Global Service Jam (GSJ, 2018), which is a volunteer community of service design experts. **Innovation Camps** can take different forms. For example, the Aalto Camp for Societal Innovation (ACSI) is addressing societal challenges via open-ended challenges while relying on self-organising working approach (Rissola et al, 2018). Innovation camps (also known as solution camps or entrepreneurship camps) can also be used for educational purposes (Bager 2011). In this type of an event students with other stakeholders are co-creating solutions for innovation challenges while learning team building, creativity and innovation skills.

As a result, it is argued that OIC type of events can take many forms depending on the thematic focus of the event. Based on the above theoretical foundation following definition for Open Innovation Camp (OIC) is proposed for purpose of this study:

“Open Innovation Camp (OIC) is co-creation sprint type of multi-day event grounded on an open innovation 2.0 principles where a group of carefully selected stakeholders having diverse but complimentary expertise meet locally and creates a common understanding of (a complex societal) challenge and work together in teams to develop, present and review in a co-creative manner user centred concepts and solutions to pre-defined challenges in a set timeframe”.

3 The key characteristics of Open Innovation Camp concept

3.1 Roles, stakeholders and working groups of the OIC

OIC is a co-creation event, which follows the definition of co-creation as an “act of collective creativity shared between two or more people” (Sanders et al, 2008). It means that planning and implementing OIC requires collective effort of different stakeholders with defined roles. The main roles of OIC are described in Table 1.

Table 2. OIC roles

Role	Definition	Main tasks during the OIC
OIC Orchestrator	The main organizer who is setting the frame of the OIC and acting as a mediator between other involved parties. Similar to Camp Convener role (See Rissola et al, 2017, p.57)	<ul style="list-style-type: none"> - Overall content and outcomes planning, coordination and practical arrangements - Recruitment of challenge owners, facilitators and participants - Being a host and main point of contact during the OIC
Group Owner	Representative of an organization to which the challenge is of a strategic importance, who sets up the scope of a challenge, and who is motivated, direct interest, and means for solving the challenge. Have substantial understanding of the given challenge. Similar to a challenge owner, case owner or product owner used in design sprints.	<ul style="list-style-type: none"> - Create background materials for the challenge - Introduce the challenge to the team during OIC - Help the team to answer content-specific questions during creative process - Experts in the challenge field.
Facilitator	Person who facilitate people's expressions of creativity at all levels (Sanders et al, 2008). Experts in service design and co-creation.	<ul style="list-style-type: none"> - Ensure that creative process is implemented according to the plan - Ensure that the right set of service design tools is used to unleash the co-creation potential of a diverse group of experts - Bring people into the design process in the ways most suitable to their ability to participate
Participant	People taking part in OIC. OIC participants are internationally recognized experts in their field and end-users who have been selected based on the participant diversity management framework presented in section 2.2	<ul style="list-style-type: none"> - To bring the expertise based on the role he/she is representing in the OIC - To share their knowledge with other and co-create new ideas towards solving the challenge

The four defined roles can be further divided into subgroups. For example, the role of an orchestrator can be shared between different stakeholders, one being responsible for practical arrangements and OIC logistics, and another one for content and facilitation. Also, the challenge group owner role in case of a challenge related to a specific business model, or consumer understanding, can be performed by a researcher or a consultant, whereas group owners of sectoral/industry-specific challenges are usually represented by business decision-makers.

During the camp, participants belong to a home group, which composition is defined by following the participant diversity guidelines. The home group composition remains the same during the whole OIC event. Two types of home group are identified: Industry and Thematic home group. Industry group participants represent various industry ecosystem expert roles in the given industry. They have profound knowledge on this specific industry field. Thematic

group member represents experts who have specialized skills in a specific thematic field area, which can be used in multiple industry setting.

3.2 The main OIC phases

The preparation and execution of the OIC follows the three stages described below: the planning phase, the implementation phase, and the communication phase.

PLANNING PHASE: In the planning phase the topics and scope to be addressed during the OIC are first collaboratively defined by the OIC Orchestrator and Group Owners. Once the agreement is achieved, the collection of the background information and preparation of the starting point materials and challenge descriptions can start. The Group Owners have the main responsibility in this process. Based on the OIC scope and availability of the background information, OIC Orchestrator will define the duration and structure of the camp as well as select suitable service design tools for the camp in collaboration with the facilitators. Defining, inviting and recruiting participants based on what complementary expertise is also an essential part of the planning phase.

To ensure the optimal balance of participants, recruitment process includes invitation and application processes. **An invitation** is a process where orchestrator(s) and group owners sends a personal request to an expert to join the OIC. Only those experts who are considered as the “world’s leading experts” within their field and their presence in OIC will provide exceptional value for the camp, receive an invitation. All other participants is suggested to go through **an application process** in which applicants describe their motivation to participate; their relevant expertise, and argue what would be their potential contribution to the open innovation camp. To follow participant diversity management practices described in section 2.2, the desired overall composition of the OIC must be pre-defined before starting the recruitment process. However, the optimal overall composition is always depending on the given challenges of the OIC. Finally, practical event arrangements and budgeting are also carried out in planning phase.

IMPLEMENTATION PHASE includes carrying out the OIC according to predefined plan and making adjustment to camp program and tools if needed during the camp. First, concentrating on creating the team spirit and enabling creative atmosphere. Next managing design thinking workflow, and collaborative decision making on selected concepts to be further developed e.g. in Living Labs. Finally collecting feedback from the participants as well as documenting and analysing the key contributions and impact of the OIC.

COMMUNICATION PHASE is about sharing the final deliverables with the OIC participants and to a wider audience. The hopefully positive OIC experience aims to further engagement of the participants into follow-up activities such R&D, testing and demonstrations in Living Labs. Also maintaining established relationships with OIC participants by inviting them into external advisory group of the possible follow up project.

3.3 OIC content structure and daily program

The OIC structure is designed taking into consideration the complexity and diversity of the challenges to be addressed by a high number of experts who are not familiar with each other and the context of the challenges. Regardless of the challenge, the daily programme follows the basic structure presented in Figure 2.

Open Innovation Camp process

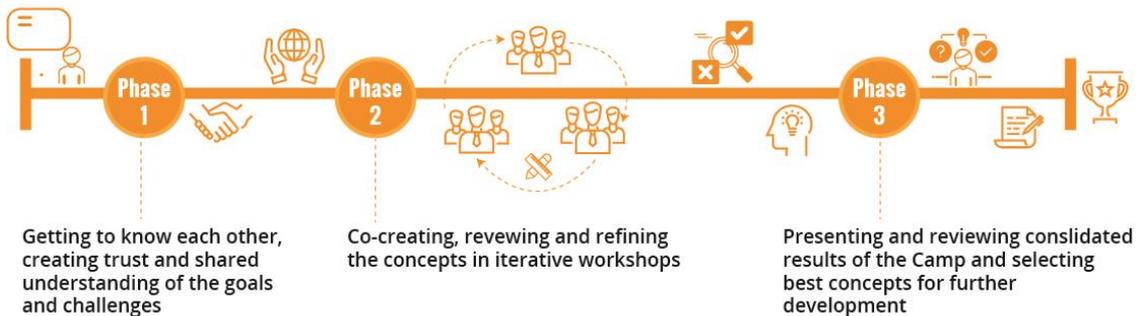


Figure 2. OIC daily structure

PHASE 1: Creating shared understanding and trust: The first day of the OIC is designated to getting to know each other and building trust among the participants, in order to generate a secure creative open innovation culture. These activities include a series of ice breakers and facilitated introductions among participants (Preziosi, 2006). Alongside getting to know each other, a shared understanding of the OIC goals, outcomes and vision is co-created which together are forming the foundation for the shared commitment. The shared understanding will be used as a benchmarking tool for reviewing the generated ideas during the final day of OIC as well as later on during follow up Living Lab activities.

PHASE 2 (to max day 4): The day 2 to until the day 4 (depending on the duration of the OIC), are grounded on the series of short-term design thinking workshops in which various working groups are collectively and iteratively developing solutions for the defined challenges. During the workshop's participants work in cross-group teams to co-create and refine the concepts and practical solutions which are expected to solve the defined challenges. The facilitated workshop are all about sharing the knowledge and learning from each other while also critically reviewing the suggested ideas against the shared commitment. The mixed teams are benefitting from complimentary expertise of diverse stakeholders.

PHASE 3 (day 3 to day 5): The first part of the final day (day 3 to 5 depending on the duration of OIC) includes fine-tuning, documenting and presenting the outcome deliverables of the camp to all camp participants. In this process the original home group compositions can be changed, to dedicate resources where they are mostly needed. Based on the presentations, a collaborative reviewing of the developed solutions is conducted via crowd voting system. The group

assessment helps to selected and make decisions which concepts should be further developed after the OIC. Collective selection process also aims to lowers the resistance in the OIC follow up stages.

A daily program example based on real-life OIC implementation is presented in Appendix 1. The example consolidates collaboration processes between the within home groups and between mixed groups and shows how the iterative co-creation process is evolving during the OIC.

4 Feedback on real-life OIC experiment

As a part of European Commission's H2020 circular economy programme funded project, OIC camp developing Circular Economy (CE) solutions for four different industries and including 80 participants was implemented in Autumn 2018. After the camp, online feedback survey was sent to all participants resulting 58.6 % response rate (47/80).

The feedback received from the OIC participants supports our assumption that an OIC is an excellent tool for rapid stakeholder engagement when addressing complex societal challenges such as circular economy. Nearly ninety percent (89.4%) of all respondent had found new contacts initiated by the OIC. All respondents gained new insights and knowledge while over half of them gained to great or to very great extent (51.1%). Over third of the respondents (36.2%) could apply the new knowledge to great or to very great extent to their work. OIC participants were willing to recommend the camp for others. At the time of the data collection, eleven respondents (23.4%) had already done it and twenty (42.5%) would definitely do that. Fifteen respondents (31.9%) would probably recommend and only one participant said that he/she probably would not recommend. Astonishing 95.7 percent of respondents would probably or definitely attend OIC again.

5 Discussion

Based on the experience from the OIC, we believe that it can solve a number of constrains related to multi-stakeholder engagement in innovation and development processes. For the discussion purpose we adopted the constrains to Living Labs identified in SmarterLabs project (Dijk et al, 2019) and clustered them in 4 major groups, each followed by a suggestion how OIC can address the constrain.

Lack of time and financial resources problem: OIC helps to address the issue related to lack of time and financial resources of stakeholders and users to participate in open innovation process and Living Lab activities. This lack of resources often creates an issue of certain stakeholder group not participating in the Living Lab activities. OIC is a from 3 to 5 days event which gathers in one place diverse stakeholders, thus allowing participants to use the time efficiently to address complex problems which otherwise require substantial amount of time. Considered that the participants are located in the same hotel during the Camp and OIC includes also social activities during the evening time allowing un-formal discussion in relaxed atmosphere to discuss further bilateral cooperation

opportunities. Since the participation in the OIC is pro bono, but the travel and accommodation expenses are covered by the OIC organizers, such events offer a greater return on investment (time spent in the Camp) than traditional brokerage events or co-creation activities.

Unbalanced stakeholder representation: This constrain cluster includes a number of issues. First, some of the relevant stakeholders do not share the urgency to discuss the issues at stake and take actions, and hence they are often left out from the Living Lab activities. Second, often happens so that some stakeholders, such as academic partners or Living Lab experts, are often given more weight than other participants in the co-creation activities. OIC can solve the issues by identifying relevant target groups based on the participant diversity management approach and make sure that as proper representation of stakeholders is achieved. Selection and recruitment of these stakeholders are crucial to the success of an OIC.

Silo effect in co-creation activities: Stakeholders participating in co-creation activities, are often highly fragmented, which results in so-called silo effects and lack of cooperation between different types of stakeholders. Also, indirect stakeholders are excluded from co-creation activities, for example, representatives of different industry sectors. The matrix structure of an OIC daily program emphasises close interactions among diverse stakeholders enabling a seamless workflow between different subgroups, and making sure that stakeholders from different ecosystems interact with each other. Furthermore, the cross-group review and reflections are making different stakeholders' needs and requirements visible. Finally, the professional facilitators and purposefully selected co-creations tools enhance the co-creation productivity.

Co-creation is a process not an event: Often co-creation activities are organized as separate steps in service design process. Experiences and ideas from stakeholders who participated in earlier stages of co-creation are often overlooked. Using OIC in the very beginning of the Living Lab planning process allows for systematic engagement of diverse stakeholders also later in the Living Lab activities, as OIC creates a feeling of shared understanding and joint responsibility towards solving the challenges. Towards the end of Living Labs OIC can be used as a validation tool for developed solutions. It is important to keep in mind that an OIC is a part of a process, not a separate tool.

6 Conclusions and Recommendations

To conclude, OIC is proposed as a tool to rapidly establish new collaboration relationships, discover new insights by sharing knowledge and co-creating novel solutions by diverse set of actors who can apply outcomes of to their work. Thus, OIC is recommended as a tool especially when there is a need to establish new innovation and knowledge sharing networks in a situation when actors do not know each other before hand. However, selecting suitable participants of OIC and defining fluent workflow across subgroups during the OIC days is demanding task, which requires careful planning but also flexibility to change plans based on the daily deliverables if needed. The following recommendations are offered for

replicating and upscaling the OIC concept to other types of complex societal challenges:

OIC is a good tool for solving complex societal challenges rapidly while providing economic value, however, the tool alone is not efficient without supporting Living Lab processes. We recommend to use OIC in the very beginning of a project, to create a sense of shared responsibility among different stakeholders, and a common understanding of a challenge and possible solutions, and at the end of a project, as a validation tool for developed solutions.

When using OIC at the very beginning of a living lab project, it has the greatest likelihood to provide economic value. The early phase of innovation process (Cooper, 1988) also known as a fuzzy front end (FFE) of innovation (Smith and Reinertsen, 1991) is important since quality, costs, and timings of the innovative solution are mostly defined during this stage (Herstatt and Verworn, 2004). According to Cambridge dictionary, economic value can be defined as the value of an asset calculated according to its ability to produce income in the future. Furthermore, Bowman and Ambrosini (2000) referred to multiple resource-based theory studies and argued that resources in general are assumed to be valuable and especially if they 1) enable customer needs to be better satisfied, or 2) satisfy customer needs at lower costs than competitors or 3) enable a firm to conceive of or implement strategies that improve its efficiency and effectiveness. As stated in the discussion section, OIC can address multiple the living lab constrains including 1) lack of time and financial resources problem by using pro bono as well as short and intensive time period approaches to engage world class experts with lower costs than operating e.g. via paid consulting contracts, 2) overcoming unbalanced stakeholder representation and silo effect by applying participant diversity approach, thus increasing the likelihood for better satisfying the customer needs by enriching the co-creation process with multiple viewpoints.

OIC offers an efficient solution for engaging stakeholders who do not know each other. In this sense OIC concept is addressing initiation of new relationships in complex ecosystems. However, maintaining this relationship is a different challenge which can be addressed by systematic engagement of an OIC participants into Living Lab activities and validation process which takes place after the OIC. This is especially important since among network theorists of innovation (e.g. Snehota and Hakansson, 1995), organizations are rarely capable to innovate independently. Some even argue that networks are the main source of innovation (Von Hippel, 2007). Networks and knowledge as the key components of the knowledge and networked society are indisputably the core components of the any business success. Thus, the findings that most of the OIC respondent had found new contacts initiated by the OIC as well as participants were able to apply their new insights to their own work, provides strong tools for knowledge and network driven innovation processes.

OIC is based on pre-defined structure and carefully planned group interaction between complimentary actors. The success of an OIC is dependent on creating the matrix structure which enables systematic co-creation process, when results of one subgroup interaction are reflected and further developed by the following

subgroups. Therefore, designing OIC structure that is easy to implement but also allows seamless interactions between all challenge groups is crucial.

Acknowledgements

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No [776503] for A circular economy approach for lifecycles of products and services – project (CIRC4Life). For more information see www.circ4life.eu. The authors gratefully acknowledge this support and present also our gratitude and appreciation to CIRC4Life project partners and innovation camp participants.

References

- Bager, T., 2011. The camp model for entrepreneurship teaching. *International Entrepreneurship and Management Journal*, 7(2), pp.279-296.
- Beaulieu, Luce & van Durne, Gabrielle & Arpin, Ml. (2016). *Circular Economy: A Critical Literature Review of Concepts*.
- Bowman, C. and Ambrosini, V., 2000. Value creation versus value capture: towards a coherent definition of value in strategy. *British journal of management*, 11(1), pp.1-15
- British Design Council, 2015, *Design methods for developing services*, retrieved from <https://www.designcouncil.org.uk/sites/default/files/asset/document/Design%20methods%20for%20developing%20services.pdf>
- Brown, T. (2008). *Design thinking*. *Harvard business review*, 86(6), 84.
- Carayannis, Elias G., and David FJ Campbell, (2009) 'Mode 3'and'Quadruple Helix': toward a 21st century fractal innovation ecosystem. *International Journal of Technology Management* 46.3, 201-234.
- Cassell, C. & Johnson, P., (2006), *Action research: Explaining the diversity*, *Human Relations*; Vol. 59, 6; 783-814.
- Chesbrough, H., Bogers, M., (2014) *Explicating open innovation: clarifying an emerg-ing paradigm for understanding innovation*. In: Chesbrough, H., Vanhaverbeke,W., West, J. (Eds.), *New Frontiers in Open Innovation*. (Oxford University Press,Oxford,
- Chesbrough, H.W., 2006. *Open innovation: The new imperative for creating and profiting from technology*. Harvard Business Press.
- Chesbrough, Henry. (2012). *Open Innovation: Where We've Been and Where We're Going*. *Research-Technology Management*. 55.
- Cooper, R.G. (1988), *Predevelopment activities determine new product success*, in: *Industrial Marketing Management*,Vol.17, No 2,pp. 237-248
- Curley, Martin & Salmelin, Bror (2013) *Open Innovation 2.O: A New Paradigm*.
- Dijk, M., da Schio, N., Diethart, M., Höflechner, T., Wlasak, P., Castri, R., Cellina, F., Boussauw, K., Cassiers, T., Chemin, L., Cörvers, R., de Kraker, J.,

- Kemp, R., van Heur, B. (2019). How to anticipate constraints on upscaling inclusive Living Lab experiments, SmarterLabs project 2016-2019, JPI Urban Europe
- European Commission, 2018, Open Innovation 2.0, retrieved from <https://ec.europa.eu/digital-single-market/en/open-innovation-20>
- Freeman, R.E. (1984). Strategic Management: A Stakeholder Approach. Pitman, Boston.
- Ghouila, A., Siwo, G., Entfellner, G., Domelevo, J., Panji, S., Button-Simons, K., Davis, S., Fadlemola, F., Ferdig, M., Mulder, N. (2018), Hackathons as a means of accelerating scientific discoveries and knowledge transfer, April 2018, Genome Research 28(5).
- Gould, R (2012) Open Innovation and Stakeholder Engagement, Journal of Technology Management and Innovation 7(3):1-11
- G SJ, 2018, Global Service Jam: About, retrieved from <http://planet.globalservicejam.org/content/about>
- Herstatt, C. and Verworn, B., 2004. The 'fuzzy front end' of innovation. In Bringing technology and innovation into the boardroom (pp. 347-372). Palgrave Macmillan, London.
- Halvari, S., Suominen, A.H., Jussila, J., Jonsson, V., Bäckman, J., (2019) Conceptualization of hackathon for innovation management, in the the proceedings of The XXX ISPIIM INNOVATION CONFERENCE - Celebrating Innovation - 500 Years Since Da Vinci - 16-19 June 2019 - Florence, Italy, (EDS.) Bitran, I., Conn; S., Gernreich; C., Heber; M., Huizingh; K.R.E., Kokshagina; O., Torkkeli; M., Tynnhammar, M., Tutkimusraportit – Research Reports
- Jaatinen, M., Lavikka, R., (2008), Common Understanding as a Basis for Coordination, Corporate Communications: An International Journal, Vol. 13 No2., pp.147-167
- Kahn, K.B. (1996). "Interdepartmental Integration: A Definition with Implications for Product Development Performance, Journal of Product Innovation Management, 13 (2), 137–51.
- Kalmykova, Y., Sadagopan, M., Rosado, L., (2018), Circular economy – From review of theories and practices to development of implementation tools. Resources, Conservation and Recycling, Volume 135, 2018, pp. 190-201
- Kasanen, E., & Lukka, K. (1993). The constructive approach in management accounting research. Journal of management accounting research, (5), pp. 243-264.
- Kirchherr, J., Reike, D. and Hekkert, M., 2017. Conceptualizing the circular economy: An analysis of 114 definitions. Resources, Conservation and Recycling, 127, pp.221-232.
- Knapp, J., Zeratsky, J., & Kowitz, B. (2016). Sprint: How to solve big problems and test new ideas in just five days. Simon and Schuster.

- Miaskiewicz, T., & Kozar, K. A. (2011). Personas and user-centered design: How can personas benefit product design processes?. *Design studies*, 32(5), 417-430.
- Murthy, P. N. (2000). Complex societal problem solving: A possible set of methodological criteria. *Systems Research and Behavioral Science*, 17(1), pp. 73-73.
- Navarro, J., Hayward, P., & Voros, J. (2008). How to solve a wicked problem? furniture foresight case study. *Foresight: The Journal of Futures Studies, Strategic Thinking and Policy*, 10(2), pp. 11-29.
- Nonaka, I. (2007). The knowledge creating company. *Harvard Business Review*, 85(7/8), 162-171.
- Oyegoke, A., 2011. The constructive research approach in project management research. *International Journal of Managing Projects in Business*, 4(4), pp.573-595.
- Preziosi, R. C. (2006). Icebreakers. *American Society for Training and Development*.
- Richterich, A. (2017). Hacking events: Project development practices and technology use at hackathons. *Convergence: The International Journal of Research into New Media Technologies* 1–27.
- Rissola, Gabriel & Kune, Hank & Martinez, Paolo, 2017. "Innovation Camps Methodology Handbook: Realising the potential of the Entrepreneurial Discovery Process for Territorial Innovation and Development"
- Römer, M., Thallmaier, S., Horneß M, Lawrence, A, Habicht, A, 2011, Jams as emerging practice of innovation communities: The case of the Global Service Jam 2011, user.tu-berlin.de
- Sanders, Elizabeth B.-N. & Stappers, Pieter Jan (2008) Co-creation and the new landscapes of design, *CoDesign*, 4:1, 5-18, DOI: 10.1080/15710880701875068
- Santonen, T. (2016). Management of diversity in open innovation processes. In *Open Innovation: A Multifaceted Perspective: Part II* (pp. 631-658).
- Simon, H.A., (1973), The structure of ill structured problems. *Artificial intelligence*, Vol. 4. pp. 181-201.
- Simons, T.L. and Peterson, R.S., (2000) Task conflict and relationship conflict in top management teams: The pivotal role of intragroup trust. *Journal of applied psychology*, 85(1), p.102.
- Smith, P.G. & Reinertsen, D.G. (1991). *Developing Products in Half the Time*. NY: Van Nostrand Reinhold
- Snehota, I., and Hakansson, H. (Eds.). *Developing relationships in business networks*. (Londres: Routledge, 1995).
- Williams, K. Y., and O'Reilly, C. A. (1998) Demography and diversity in organizations: A review of 40 years of research. *Research in organizational behavior*, 20, 77-140.

Von Hippel, E. (2007) The sources of innovation (111-120). Gabler.

Zomerdijk, L.G. and Voss, C.A., 2010. Service design for experience-centric services. *Journal of Service Research*, 13(1), pp.67-82.

Appendix 1: OPEN INNOVATION CAMP (OIC) program example for Circular Economy

