

Experimenting a digital collaborative platform for supporting social innovation in multiple settings ^{*}

Thomas Vilarinho¹, Ilias O. Pappas³, Simone Mora³, Inès Dinant², Jacqueline Floch¹, Manuel Oliveira¹, and Letizia Jaccheri³

¹ SINTEF, Trondheim, Norway,

{thomas.vilarinho | jacqueline.floch | manuel.oliveira}@sintef.no

² Farapi, San Sebastian, Spain

ines@farapi.com

³ Norwegian University of Science and Technology, Trondheim, Norway

{ ilpappas | simone.mora | letizia.jaccheri}@ntnu.no

Abstract. Social Innovation is gaining popularity as an approach to address societal challenges. Governments, charities, NGOS and organizations are taking up the role of facilitating citizens participation into social innovation initiatives. Digital collaborative platforms have a great potential for enabling and supporting the social innovation process as it facilitates knowledge sharing, cooperative work and networking. In this work, we experimented using a digital social innovation platform and associated methodology for supporting citizens to do social innovation in three different pilots settings: an university course, a contest/hackathon and an "in the wild" scenario. We reflect on the participants usage and experience with the platform for understanding its added value and uncovering important considerations for designing and implementing this type of platform. The analysis of the experiments highlights 1) the value of facilitating collaboration with beneficiaries and across different backgrounds, 2) the importance of actively engaging participants on process and 3) the needs of adapting the platform for handling complexities risen from the social innovation process on real settings.

Keywords: social innovation, collaborative platforms, crowdsourcing

1 Introduction

Social innovation refers to the development and implementation of innovations (new products, services and/or models) creating value primarily to society, making social impact and solving a societal challenge. It does so in an inclusive way, having the society, represented by citizens and beneficiaries, playing the role of

^{*} This is a post-peer-review, pre-copyedit version of an article published in Innovations for Community Services. I4CS 2018. Communications in Computer and Information Science, vol 863. The final authenticated version is available online at: https://doi.org/10.1007/978-3-319-93408-2_11

innovators [20]. Social Innovations are not restricted to NGOs and social organizations, they can be led by individuals, entrepreneurs, SMEs, governmental bodies or any kind of organization willing to make social impact. Existing Social Innovation methodologies and definitions anchor the Social Innovation Process (SIP) into the collaboration and participation of various stakeholders [16, 14].

Digital platforms are promising tools to support the SIP due to their capabilities in facilitating collaborative and crowd-based cooperation, knowledge sharing and networking. Collaborative digital platforms have had success in mobilizing crowds of users for different purposes such as outsourcing (crowdsourcing[12]), collectively funding entrepreneurial initiatives (crowdfunding[15]), or sharing items and services (collaborative consumption[4]). The establishment of the Collaborative Awareness Platforms for Sustainability and Social Innovation (CAPS)[24] program in Horizon 2020 highlights the expectations of ICT platforms to effectively support social innovation as well.

Collaborative digital platforms have been used for supporting the innovation process within companies [5, 23] and the SIP along a wider audience [2, 1]. However, there are very few studies analyzing the effects of using those platforms in the context of social innovation. The studies we found have been rather indirect by relying on the evaluation of experts that did not participated on the SIP facilitated by the platform [11] or solely on data that was recorded in the platform [19, 9, 3, 10].

Hajiamiri and Korkut [11] breaks down the value of platforms to support innovation through crowd-based design in the following values: supportiveness, collectiveness, appreciativeness, responsiveness, trustworthiness, and tangibility of outcome; where the first three are interrelated. Paulini et al. [19] identifies, among the 3 collaborative ICT platforms they have studied, a few mechanisms to produce successful innovations: 1) supporting communication, in special during ideation and evaluation, for strengthening ideas, 2) clarifying tasks and roles of those who would assume those tasks and 3) structuring the process. Fuge and Agogino [9] uncovers that in OpenIdeo, a digital platform supporting social innovation, the majority of the users would partake into one social innovation initiative facilitated by the platform, but cease to participate after such initiative is finished instead of joining or contributing to other initiatives. They suggest that the active role of community managers to engage participants together with spacing initiatives in time could help to retain users participation. Finally, Ahmed and Fuge [3] analyzed the winning ideas in OpenIdeo and noticed that they were the ones with the highest community engagement and uptake of community feedback into the ideas concepts.

While the above analysis are valuable, they do not uncover what is the value for the participants in using such platforms for doing social innovation neither how the elements supporting the SIP are used by users in practice and how those affect the SIP. Therefore, in this paper, we focus on users of a digital platform to support social innovation, SOCRATIC [22], for analyzing its effect on the SIP. We investigate the following Research Questions (RQs):

RQ1) How do people use the SOCRATIC platform and methodology in practice?

- RQ2) What value do people get from SOCRATIC for conducting the SIP?
RQ3) What makes SOCRATIC attractive, useful and efficient?

The remaining of this paper is structured as follows: Section 2 introduces the social innovation platform and methodology investigated in this research; Section 3 presents the research methodology used to investigate the platform; Section 4 describes the pilot scenarios where the platform was used; Section 5 analyzes the results of the different pilots in conjunction; Finally Section 6 concludes and suggests directions of further work based on the results found.

2 The SOCRATIC platform and methodology

The baseline for performing this research is SOCRATIC, a digital platform and methodology ensemble to support social innovation. SOCRATIC is intended to be applicable to different domains and different types of organizations willing to facilitate the SIP. SOCRATIC was developed based on the needs and practices along the SIP of two distinct organizations, Cibervoluntarios (Cib) and NTNU, for achieving the desired flexibility and applicability [8].

The SOCRATIC Methodology [25] presents a SIP heavily inspired by The Open Book of Social Innovation [17]. The SOCRATIC SIP steps which have been covered in the experiments are the following ones:

- Preparation: this step marks the set-up of the social innovation environment. It is when Coordinators, representatives of organizations facilitating the SIP, define their curated spaces. Coordinators introduce their vision, specific guidelines and how they are able to support the SIP.
- Prompts: this step consists in identifying and understanding the societal problem to be solved. The step is lead by a Challenge Owner (CO), an individual or organization deeply interested in solving the societal challenge and who is willing to support innovators solving it.
- Ideation: this step is about the generation and development of ideas by Challenge Solvers (CSs) for addressing the societal challenge.
- Prototyping: this step concentrates on iteratively materializing the idea, in a lean approach, so that the materialized concepts can be assessed early and refined.

The SOCRATIC platform supports the methodology by providing a digital meeting place connecting the different stakeholders and facilitating communication and knowledge sharing. The platform features and user interaction flow were designed to guide users through the SIP steps and to include beneficiaries in the underlying activities of each step. Including the beneficiaries in the process is a key aspect of the SIP. The Preparation step has been carried out outside of the platform in our pilots by having the pilot organizations setting up their platform instances and the context for social innovation. The remaining steps (Prompts, Ideation and Prototyping) are directly supported in the platform as described in the next paragraphs.

In the platform, the SIP is driven by a logic flow where: first, Challenges are defined by a CO describing the societal problem and enabling participants to discuss it, and refine the understanding of the challenge. Then, when the Challenge is well-defined, the CO starts the Ideation step. During the Ideation, participants can play a role of Challenge Solver Leaders (CSLs) by creating ideas in the platform that others can contribute to, becoming Challenge Solvers (CSs). The definition of both Challenge and Ideas are done via specific Challenge and Idea templates, while the contributions are done via commenting (as illustrated in Fig.1). The CO and CSL can edit the challenge and idea, respectively, in order to incorporate the feedback given in the comments.

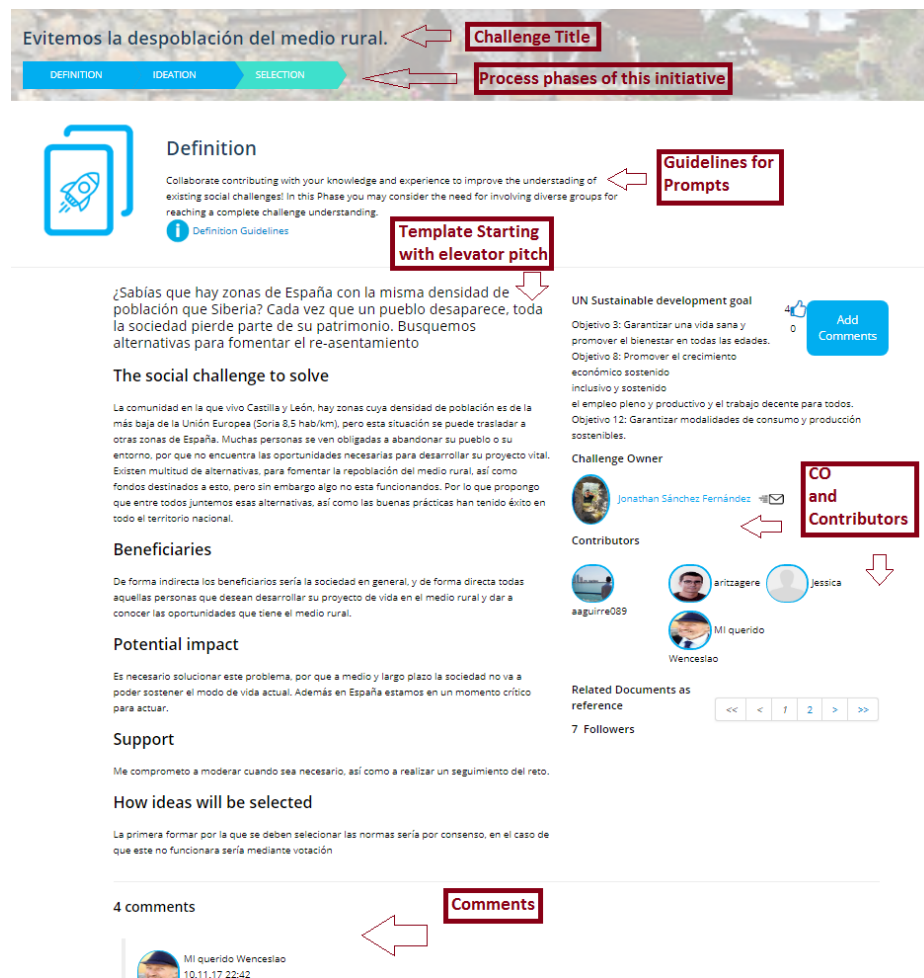


Fig. 1. Example of a Challenge from the CiB pilot (UI elements highlighted in red)

At a pre-defined deadline, the CO stops the Ideation and selects the best ideas. They can open up the ideas for voting in order to get feedback from the SOCRATIC community, the platform users, on the feasibility and impact of the ideas. The CSLs of the selected ideas can, then, convert them to projects. Projects are represented in the platform through a Project page. The platform automatically suggests the CSL to invite the contributors to join the project and helps finding possible team members within the community, by searching through the community based on skills and interests. In addition, the platform allows the team to plan prototyping iterations and define their business model. The prototyping iterations, business models and project description are made available to the community for feedback and discussion.

Some features of the platform provide orthogonal support to all different SIP steps such as: definition of user profile including skills and interests, recommendation of initiatives (challenges, ideas and projects) based on skills and interests matching, possibility to invite internal and external users to join an initiative, messaging, possibility to "like" initiatives and share them on social media, and, finally, it enables COs and CSLs to create "call-to-actions" where they explicitly request for a specific support to their initiative. Along with that, the different SIP steps supported by the platform are illustrated with guidelines coming from the SOCRATIC Methodology. At last, the platform presents an illustrative video and a link to the SOCRATIC Handbook. The Handbook describes the SOCRATIC SIP through an easy-to-understand approach in order to educate newcomers to contribute to social innovation using SOCRATIC.

3 Research Methodology

We have experimented with SOCRATIC in the context of three pilots: 1) the Experts in Teams course, 2) a Social Innovation Contest and 3) an "in the wild scenario". The different nature of the pilots allowed us to test SOCRATIC along multiple factors such as with/without strong coordination, among younger and older participants and with different extrinsic motivators involved.

Our research approach was structured on a set of methods belonging to real-world research [21] and involved primarily five steps: (i) the elicitation of the RQs, (ii) running the pilot scenarios, (iii) collecting data, (iv) analyzing the data for each pilot and (v) aggregating findings from all the pilots and discussing the similarities and differences between the results.

We used several methods for gathering pilot data: observations during physical gatherings promoted by the pilots, analysis of the data registered by the participants in the platform and semi-structured interviews with participants. Observations have been used in qualitative research for gathering data about participants, their interactions, cultures and processes [13]. All the three pilots counted with physical sessions that served to introduce SOCRATIC, trigger collaboration and support the pilots' participants. During those sessions, the authors of this article or key informants, acted as neutral observers noting aspects relevant to the session such as: the participants understanding of the platform

and the SIP, the participants interaction during the sessions and the constraints that could have affected the session. The platform data analysis consisted in going through the public registries of users communication and participation during the SIP of the innovations started in the platform. For the semi-structured interviews, we defined an interview protocol aligned with the RQs, described in Section 1, and including questions about the participants involvement on the different steps of the SIP, the support given by the platform in those steps and the cooperation patterns between participants.

Although the data collection strategy and methods were the same in the three pilots, their implementation was adjusted to suit their different characteristics and scope. The semi-structured interviews, for example, were adapted to cover the level of usage of the platform and progress achieved in the SIP by the participants. The observations were tailored accordingly with the goal of the physical session: introduction workshop, facilitation of dialogue with beneficiaries, idea selection, etc.

The collected data were reviewed using thematic analysis. Thematic analysis is a method for analyzing qualitative data according to existing themes and patterns within the data corpus [6]. Themes were defined inductively and iteratively influenced by both the RQs and the final structure of the interviews and observations. Overall, this is how the analysis was performed:

1. Observers transcribed the observation notes from the physical sessions, and interviews were recorded.
2. Interviews were listened again and coded. The researchers did that by noting data items (interviewee statement or observation) relevant to the research and setting a code to it. A code is a word or short text that express the data feature of interest for the analysis [6]. At least two different researchers were involved in this step.
3. Codes were grouped into common themes that explains or formulates evidences related to the RQs.
4. Finally, the datasets were analyzed together within the themes for generating generalized propositions helping to answer the RQs.

4 The Pilot Scenarios

In this section we describe each pilot scenario and their key results. Table 1 summarizes the pilots.

4.1 Experts in Team

Experts in Teamwork (EiT) is a MSc course taught at NTNU in which students develop interdisciplinary teamwork skills. Students work in interdisciplinary teams and establish a project to solve a real-world problem. During the spring of 2016 the EiT course was given having as theme “ICT-enabled Social Innovation for Social Good” and having participants using SOCRATIC to follow

Table 1. Pilots Overview

| | EiT | SIC | Ciberplus |
|-------------------------------------|--|--|--|
| Organizer | NTNU | NTNU | Cib |
| Context | University Course | Contest and Hackathon | “in the wild” |
| Coordinating actions | Lectures, facilitating access to COs and on-site support | Talks, facilitating access to COs and support at the hackathon | platform and SIP presentation and triggering the process |
| COs | Autism Society | Autism Society | drawn among workshop participants |
| Duration | 4 weeks | 6 weeks | 4 months |
| Nb of challenges, ideas, prototypes | 5, 15, 5 | 5, 4, 2 | 87, 9, 0 |
| Nb of CSs and interviewees | 26, 26 | 12, 10 | 270, 10 |

the SIP. The course focused on the Ideation and Prototyping steps of the SIP, although the SOCRATIC platform only supported the Ideation at that time.

The course staff acted as Coordinators and adapted the course structure to use the SOCRATIC platform and methodology as in the Preparation step. They provided short lectures about the SIP and interdisciplinary work during the course and were available to support the students. The Autism Association of Trondheim (Norway) acted as COs, where 5 people from the association actively collaborated in all the process, inclusively bringing 10 beneficiaries to comment and feedback on the initiatives. The COs described 5 Challenges in the platform after discussing them, as per the Prompts step, with the Coordinators.

The students, CSs, were involved from the Ideation phase. A total of 26 students from all different academic backgrounds participated in the course. Despite being held in Norway, the course was in English and 62% of the students were foreigners. The Coordinators grouped students as to mix nationalities and education background at the beginning of the course. There were a total of 6 groups, each containing 5-6 students. Groups were responsible for describing ideas towards the challenges defined by the COs and for prototyping a selected idea. They had five days to go through the Ideation step and ten for the prototyping.

Results. The pilot generated a total of 15 ideas and 5 prototypes. There was a lot of interaction between COs and CSs and also among CSs during the process. Not all interactions were recorded in the platform since participants worked both physically together and on-line. Still, all ideas received comments, on average four per idea. Even if there was no incentive for groups to comment and feedback other group’s ideas, they did so. The COs were positively impressed with all the developed prototypes.

Both students and COs found the process and templates helpful in guiding them and defining the initiatives. They highlighted that the process fostered

reflection and improvement of the ideas by supporting collaboration. The results of this pilot are further explored in [18].

4.2 Social Innovation Contest

The second pilot happened in a contest setting, the Social Innovation Contest (SIC), in the middle of 2017. The pilot was led by NTNU who was interested in observing how SOCRATIC would perform in a different context and towards a different audience. The Preparation step consisted in developing the concept and timeline of the contest, inviting participants and planning two facilitating events: a on-boarding workshop and a Hackathon. The same NTNU personnel which acted as Coordinators in the EiT pilot coordinated the SIC. They invited experts in social innovation to present talks during the workshop and support the participants during the Hackathon. Six members of the Autism Association of Trondheim played the role of COs defining the challenges and involving beneficiaries in the process. CSs were recruited by advertising the SIC in social media and different innovation hubs in city of Trondheim. Finally, twelve participants joined as CSs. They came from different backgrounds and from ages ranging from 20 to 60 years old.

As in the EiT pilot, COs worked together with beneficiaries and Coordinators to define the challenges. They discussed and refined them in the platform before the SIC officially started. The SIC started with the on-boarding workshop where Coordinators, experts and COs presented the SIP, the platform and the challenges. CSs were divided in three groups of four participants and started the Ideation. The Ideation continued after the workshop for two weeks, where participants used the platform to refine ideas. Then, they met again for a two-day Hackathon. The Hackathon started with the selection of the best idea of each group so they would work on it intensively for two days. During those two days, they developed early prototypes, along with business canvas and plans on how to make their solutions sustainable. The best solution was elected by COs and experts and awarded a prize of 10.000NOK (1.200EUR) cash to be used to further developing it into a social startup.

Results. CSs focused on two of the five challenges and elaborated 4 ideas. The ideas came up during the workshops, but were largely developed via the platform during the time participants were not collocated. The groups used other collaborative tools (such as google-drive) for collaborating among themselves; and the platform, via editing and commenting the Idea, for collaborating with beneficiaries and COs. The ideas got between five and ten comments each. The prototypes were built through digital and physical mockups during the Hackathon, supported by a business model canvas. Experts and beneficiaries were available in periods of the Hackathon for giving feedback to the CSs. The final resulting prototypes were rated, by both CSs and COs, as very successful and of high relevance to the beneficiaries.

Since the COs were the same as in the EiT pilot their experience with the Prompts was straight-forward and similar to the previous pilot. CSs found that

SOCRATIC helped them going through the SIP and fostered collaboration, in special the close contact with beneficiaries helped improving the Ideation outcomes. Yet, lack of time and features to support groupwork impacted on participants experience.

4.3 Ciberplus

Ciberplus was a pilot led by Cibervoluntarios (Cib). Cib is a spanish non-for-profit organization engaging volunteers on using ICT for social good and social innovation. Today, Cibs volunteers deliver punctual social good actions such as training, courses and online campaigns helping populations with little technology literacy. Cib would like to use SOCRATIC for supporting their volunteers and interested participants for going beyond punctual actions, by doing social innovation. Within its current organizational model, Cib has a severe workload contacting parties and facilitating the actions to happen. They would like, with SOCRATIC, participants to be able to go through the process more independently, relying less on their role as Coordinators and more on other participants. Therefore, they opted to run a more “in the wild” [7] pilot with limited intervention from Coordinators and no rules set towards the participants except for the boundaries defined on the platform itself. Moreover, differently from the other pilots, there was no extrinsic reward incentive for participation such as grades at a course or a prize for winning a contest.

For the Preparation step, Cib adapted the platform and introduced it to the participants through a series of workshops. The platform adaptation consisted in translating it to Spanish and adapting the look-and-feel to match Cibs’ visual image. In addition, the platform was on continuous development during the pilot period, allowing bug fixes and introduction of new features. The pilot started in October 2017 and lasted about four months. Cib carried out 13 workshops spread along those months, reaching out 141 participants.

The workshops worked as a mean to recruit users to the platform, introduce SOCRATIC and trigger the usage of the platform. The workshops were led and moderated by Cib volunteers which were trained on how to use the platform and which used a common baseline presentation. Cib approached universities, high schools, NGOs and companies for hosting and taking part in the workshops. Those in the academia were the most interested in participating, therefore the majority of Cib workshops were held in universities and high schools. In addition, one workshop was held together with NGOs representatives.

During the workshops, the moderator asked the audience if they had a societal challenge they were keen to work on collectively using SOCRATIC. Participants who had a challenge in mind shared it and the other participants decided which challenge to join. The group of participants working on the challenge used the remaining time of the workshop to describe the challenge in the platform and, ideally, would keep using the platform later on. In that sense, any workshop attendant could become a CO, CSL and CS.

Results. Participants of the Ciberplus pilot mainly used the platform during the workshops. Half of the participants we interviewed said that they did not use it further because the platform was not mature enough, while the others had each one different reasons such as lack of time, perceived lack of a critical mass of users in the platform for obtaining expected support, etc. As a result, the pilot produced many challenges, 87, but very little participants interaction. Challenges received none or up to three comments and the COs did not interact with those who commented. Consequently, most of the initiatives stopped in the challenge definition. Seven cases went as far as the Ideation step: in two cases both challenge and idea were defined during a workshop and in the other cases the ideas were provided by participants out of the workshops. At the end of the pilot, the platform counted with 270 users registered in contrast to the 141 directly reached in the workshops.

Many of the challenges definition provided by the Ciberplus pilot participants were actually ideas aiming to tackle a societal challenge. Participants described their idea using the Elevator Pitch section of the Societal Challenge template, instead of describing the challenge and waiting until the Ideation phase to describe their idea. It is a bit unclear whether participants did not understand the concept behind the Prompts phase or if they wanted to shortcut the process and start from their idea. However, through the interviews, we learned that some of those participants had come to the workshop with existing projects or very well elaborated ideas in mind.

5 Discussion

In this section, we present the findings of the thematic analysis of the three pilots under five main themes. The themes' links to the RQs are illustrated on Table 2.

Table 2. Mapping between thematic analysis themes and the RQs

| Theme | RQ1 | RQ2 | RQ3 |
|---|-----|-----|-----|
| The overall value of digitally supporting the SIP | | X | X |
| Value of specific platform components towards the SIP | | X | X |
| Process and flexibility | X | | X |
| The importance of facilitators | X | | X |
| Physical presence | X | | X |

5.1 The overall value of digitally supporting the SIP

In the EiT and SIC pilots, CSs collaborated directly with beneficiaries and COs along the process and, consequently, explicitly valued the **beneficiaries participation**: *“It was really helpful to have someone [referring to a beneficiary]*

there so we can ask him how he felt [about the ideas].”. As another participant points, hearing the challenge from a beneficiary was more meaningful than reading it from an unpersonalized source: *“There’s one thing reading about autism in school papers but actually hearing about it from people who meet the challenges every day was really useful.”*. The participants also experienced that the beneficiaries were very interested on their initiatives and eager to help: *“They [the beneficiaries] are really good at responding when we make contact with them.”*, *“We got our feedback from at least three persons [challenge owners]. They were constructive critiques or constructive thoughts, so they were helpful.”*.

As participants from the Ciberplus pilot did not go far along the SIP, we investigated the value of the platform by asking them about the potential value of the platform and the value they got from SOCRATIC during the workshops. The interviewees understood the main value of the platform as the crowd-based collective intelligence enabling gathering feedback and support from others with different ideas and skills. More specifically, they had interest on the following possibilities: 1) finding collaborators to supply the human resource need of a project; 2) finding expertise able to handle specific tasks; 3) getting feedback from those of different backgrounds for improving and further building the initiative; 4) raising awareness about the initiative and 5) measuring the community support and appreciation of the initiative. Participants leading initiatives valued the **feedback from others with different perspectives** during the workshops as one of them highlights: *“they helped me express it (the challenge) the best way possible, so that people like them, which were not familiar with the goal, could understand it quickly”*.

The value expected by the Ciberplus participants and experienced in the workshops was confirmed in the other pilots where participants had further interaction with the platform. Interviewees from those pilots thought that the **collaboration with participants from different backgrounds** was very positive, as one points out: *“The fact that it is supposed to be an event for people from different backgrounds is really good. I think it was quite effective and I like that people were willing to contribute with their own skills and in a very iterative process.”*. Besides direct collaboration, ideas shared and described in the platform helped inspiring participants to come up and assess ideas as suggested by those two participants statements: *“It was easy to find inspiration in other ideas, you might combine some ideas and make a completely new edit!”* and *“to see that some had the same idea that we had, made us reassured that we were on the right track”*.

The values of supportiveness, collectiveness, responsiveness and appreciativeness identified in [11] are confirmed during our experiments, though it is worth mentioning that participants specially valued that the contributions were coming from real beneficiaries and people with different backgrounds.

5.2 Value of specific platform components towards the SIP

Participants from the three pilots found the templates useful for describing challenges and ideas. Some participants highlighted that they triggered reflection: *“I*

think to force myself to look at the challenge from different point of views.”, while others thought that they helped more clearly describing the initiative. A participant claimed that by using the description of her challenge as in the template for explaining it to her parents they understood it immediately, while, previously, she has not been able to explain them. On the other hand, some participants thought that enabling the inclusion of other description elements such as videos would help even further describing the initiatives: *“I think the template is good [...] I just would have liked it if it was another way than just text, [...] if I could have visuals or maybe even video, I think presenting the idea and getting others to understand the idea could be easier.”*.

The template fields offered limited space for describing each aspect of the challenge or idea. That design choice triggered mixed feelings between a few participants. While a participant said it was too restrictive and did not correspond to the level of description he wanted to provide, another thought that it was ideal to describe the most essential aspects of the idea. He saw the description to be provided within the templates as a trigger to gather interest. Therefore, he considered that it needed to be short as people have limited time to read. Just after others are involved, he would then feel that it is important to describe it deeper: *“The idea of [the template] being short is good, so that people understand it easily, by reading it quickly. After there is interest, then, it would be worth detailing more.”*.

Two interviewees highlighted the platform feature of recommending initiatives based on the matching of skills and interests. One of them suggested it being further integrated by allowing CSLs explicitly describing expertise, skills and resources needed by the initiative and keep track of them through the platform. Participants suggested integrating further real-time communication into the platform: *“if people would be online at the same time, it would be good to have a chat possibility, where if you see somebody’s already working in an idea, you can establish a messaging communication. That would be very interesting.”*.

Some of the interviewees mentioned that it would be interesting to provide additional numbers related to the initiatives in the platform, such as: how many people have read the challenge/idea/project, the percentage of viewers per user profile and the level of activity in an initiative. Those were suggested both as to enable initiative leaders to identify where to further promote the initiative and to provide additional metrics to motivate participants. Related to motivation, the participants of the EiT pilot saw the voting and selection of ideas at the end of the Ideation step as a competition which raised their motivation: *“I think it was a competition. I don’t know if the other groups took it as a competition. We were really triggered by it. We immediately wanted to win as a team.”*.

The features highlighted by the participants are in line with what was identified as the overall value of the platform. They relate to creating awareness about the challenge and the innovation, helping reach out participants of different profiles and facilitating the collaboration between users.

5.3 Process and flexibility

The SIP as implemented in the platform brought some constraints that were not necessarily part of the process. For example, some participants of the Ciberplus pilot came to the workshop with an existing social innovation idea or project, and by using the platform, they were confronted with the need to describe the societal challenge first. In these cases, participants described their idea or project using the challenge template instead. During the interviews, we learned that those were people with a strong drive to take action and who felt to some extent constrained by a well-structured process. Although it is important to have CSs reflecting on the challenge before trying to solve it, the Ciberplus pilot showed that there will be moments where users may start with an existing idea or project. It is important to find ways to enable them starting from a later SIP step, but, at the same time, to ensure that they have covered important aspects of the previous steps (such as identifying root causes of the challenge in the Prompts or verifying an Idea feasibility and relevance in the Ideation).

Another constraint introduced by the platform was that the leading of initiatives, and consequently editing rights, was personal and non-transferable. Such constraint finally hindered the co-editing of challenges and ideas description forcing the participants to use collaborative tools such as google docs in addition to the platform. It also did not represent the reality, as most of the initiatives that came out of the pilots were led by more than one person and most of the groups of EiT and the SIC adopted a flat hierarchy as one of them states: *“We have a quite flat structure. We dont have any leaders.”*

Still, related to ownership, there were cases where those describing a challenge or idea did not want to take a leading role, but rather thought of his elicitation as contribution itself. They thought that the elicitation could inspire others or eventually be embraced by people willing to take ownership of it. Such role of “seeding” an inspiration was not foreseen and implemented in the platform, as passion and drive are crucial for bringing social innovations forward. However, providing some support for the “seeding” concept could foster a wider participation. It can, as well, serve as a basis for a supplementary Ideation format, resembling brainstorming, where wild ideas, that may not be feasible, are encouraged to serve as inspiration to others.

5.4 The importance of facilitators

One of the biggest differences between the pilots led by NTNU and the one led by Cib was the level of active engagement of Coordinators in steering and supporting the process. In the NTNU pilots, Coordinators worked with COs to insert the SIP into a “specific context” (the course or SIC) with a defined timing for each of the SIP steps and activities to support the steps. Those activities were done in conjunction with the SIP support provided in the platform, as to strengthen it. For example: NTNU would bring COs and CSs together physically for presenting the challenge posted in the platform, which would increase the empathy between COs and CSs and introduce themselves personally. After that,

CSs were comfortable to contact COs and further discuss the challenge and ideas. Another example was when Coordinators taught and exemplified the usage of offline tools described in the SOCRATIC methodology, such as brainstorming for Ideation, and, as a result, CSs used the tools and uploaded their results into the platform. Meanwhile, in Ciberplus, Coordinators simply organized workshops where they presented the platform to interested groups and expected COs and CSs to emerge, self-organize and cooperate autonomously. Although the platform offers features for self-organization, Ciberplus users did not take advantage of those features. COs did not see or answer to comments to their challenges and participants did not come forward to invite others to contribute to the process.

The results were that despite having more users joining the platform and creating initiatives in Ciberplus pilot, the level of development of the Social innovation initiatives and collaboration during both EiT and SIC pilots was much superior. That influenced the understanding of the platform, the SIP and how much guidance the participants experienced. During the NTNU pilots, the process happened as expected and participants noted the synergy of the platform with the process as two of the participants points: *“I think that when you use the platform, you are defining the way you are going to do the process”* and *“the platforms really help so instead of just having ideas here and there and you compare them”*. Meanwhile, participants from Ciberplus used the Prompts step to describe ideas or projects rather than reflect on the challenge. Moreover, some Ciberplus participants ended up not understanding the platform and the SIP flow on it as one of the interviewees mentioned, and as an observer from one of the workshops noted: *“(the understanding) varied according to the user profile.”*

One of the Ciberplus interviewees pointed that he missed having example projects that illustrated the SIP, which showed how participants effectively used the platform and the tools to support the SIP. In fact many of the Ciberplus COs confirmed looking at other challenges as examples before writing their own.

Those results sustain the conclusions from [9] regarding the importance on the active role of facilitation in order to successfully foster the SIP. That seems specially crucial at the beginning when users are still learning about the process, platform and social innovation. In long term, it may perhaps be possible to achieve a more self-managed community by having the coordination roles naturally spread among community members and illustrated by a significant amount of success stories in the platform.

5.5 Physical presence

All the pilots included physical meetings. In Ciberplus it happened as an onboarding workshop, while, at the EiT and SIC, participants worked together collocated during different periods. During the interviews when physical presence was discussed, participants thought that it was essential to meet at least a few times in order to properly cooperate and work together. One of the SIC participants, for example, believes that they would not have been able to come up with the same quality of a result without meeting physically: *“I think the*

platform helps but I don't think it's a good fix. If we didn't have the meetings before, in the beginning or in the end, I don't think we could have come up with as good of idea. I don't think you can replace the physicality". While a Ciberplus participant pointed that further collaboration requires mutual trust and that trust is more easily established when people know each other physically.

Indeed collocation of CSs may be crucial for many of the initiatives. Including a location field in the users profile in the platform could facilitate users living next to each other to self-organize, as an interviewee noticed. Besides that, Coordinators should facilitate physical events as they did in the pilot and engage initiative leaders to do the same.

6 Conclusion and Future Work

The pilots show clearly the value of such digital social innovation platform in gathering feedback from different types of users and strengthening the innovations. However for establishing further participants cooperation and enabling them to effectively work together, Coordinators need to actively support and engage them in the process. Besides that, co-location seems to be an important determinant of success. At last, this study identified prospect design variations of the platform and pilots: supporting group ownership and enabling innovation "seeding". Directions of future work include testing those variations besides running longer pilots and pilots in different contexts.

Acknowledgments

The work behind this study was possible thanks to the support from the EU-funded H2020 SOCRATIC project OPTET under grant agreement ref.688228, the Marie Skłodowska-Curie grant agreement No 751550 and the "Sharing Neighborhoods" project funded by the Research Council of Norway under the program BYFORSK (contract 270737). Furthermore, we thank the participants of the pilots, and the project partners for the collaboration during participant recruitment and discussion of the results.

References

1. MakeSense, <https://www.makesense.org>, accessed: 2017-10-06
2. OpenIDEO, <https://openideo.com/>, accessed: 2017-10-06
3. Ahmed, F., Fuge, M.: Capturing winning ideas in online design communities. In: Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing. pp. 1675–1687. ACM (2017)
4. Botsman, R., Rogers, R.: What's mine is yours: The rise of collaborative consumption, 2010 (2010)
5. Boudreau, K.J., Lakhani, K.R.: Using the crowd as an innovation partner. Harvard business review 91(4), 60–9 (2013)

6. Braun, V., Clarke, V.: Using thematic analysis in psychology. *Qualitative research in psychology* 3(2), 77–101 (2006)
7. Chamberlain, A., Crabtree, A., Rodden, T., Jones, M., Rogers, Y.: Research in the wild: understanding in the wild approaches to design and development. In: *Proceedings of the Designing Interactive Systems Conference*. pp. 795–796. ACM (2012)
8. Dinant, I., Floch, J., Vilarinho, T., Oliveira, M.: Designing a digital social innovation platform: From case studies to concepts. In: *International Conference on Internet Science*. pp. 101–118. Springer (2017)
9. Fuge, M., Agogino, A.: How online design communities evolve over time: the birth and growth of openideo. In: *ASME 2014 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*. pp. V007T07A038–V007T07A038. American Society of Mechanical Engineers (2014)
10. Gordon, P., Fuge, M., Agogino, A.: Examining design for development online: An hcd analysis of openideo using hcd/ucd metrics. In: *ASME 2014 International Mechanical Engineering Congress and Exposition*. pp. V011T14A017–V011T14A017. American Society of Mechanical Engineers (2014)
11. Hajiamiri, M., Korkut, F.: Perceived values of web-based collective design platforms from the perspective of industrial designers in reference to quirky and openideo. A—Z *ITU Journal of the Faculty of Architecture* 12(1), 147–159 (2015)
12. Howe, J.: The rise of crowdsourcing. *Wired magazine* 14(6), 1–4 (2006)
13. Kawulich, B.B.: Participant observation as a data collection method. In: *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research*. vol. 6 (2005)
14. Martinelli, F.: Social innovation or social exclusion? innovating social services in the context of a retrenching welfare state. In: *Challenge Social Innovation*, pp. 169–180. Springer (2012)
15. Mollick, E.: The dynamics of crowdfunding: An exploratory study. *Journal of business venturing* 29(1), 1–16 (2014)
16. Mulgan, G.: The process of social innovation. *Innovations: technology, governance, globalization* 1(2), 145–162 (2006)
17. Murray, R., Caulier-Grice, J., Mulgan, G.: *The open book of social innovation. National endowment for science, technology and the art* London (2010)
18. Pappas, I.O., Mora, S., Jaccheri, L., Mikalef, P.: Empowering social innovators through collaborative and experiential learning (2018), to be presented at EDUCON2018 IEEE Global Engineering Education Conference, Tenerife, Spain
19. Paulini, M., Murty, P., Maher, M.L.: Design processes in collective innovation communities: a study of communication. *CoDesign* 9(2), 90–112 (2013)
20. *Regional, DG and Policy, Urban: Guide to social innovation*. Brussels: European Commission (2013)
21. Robson, C., McCartan, K.: *Real world research*. John Wiley & Sons (2016)
22. Romero, I., Rueda, Y., Fumero, A., Vilarinho, T., Floch, J., Oliveira, M., Dinant, I., Consortium, S., et al.: Socratic, the place where social innovation happens. In: *International Conference on Internet Science*. pp. 89–96. Springer (2016)
23. Sawhney, M., Verona, G., Prandelli, E.: Collaborating to create: The internet as a platform for customer engagement in product innovation. *Journal of interactive marketing* 19(4), 4–17 (2005)
24. Sestini, F.: Collective awareness platforms: engines for sustainability and ethics. *IEEE Technology and Society Magazine* 31(4), 54–62 (2012)
25. Vilarinho, T., Floch, J., Oliveira, M., Dinant, I., Pappas, I.O., Mora, S.: Developing a social innovation methodology in the web 2.0 era. In: *International Conference on Internet Science*. pp. 168–183. Springer (2017)