Social Labs as Transformative Approach to Implement Responsible Research and Innovation

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1. Introduction

The notion of Responsible Research and Innovation (RRI) reflects the call for improved and transformed science-society relations (cf. Owen et al., 2012; Stilgoe et al., 2014) with an open, inclusive and transparent process regarded as crucial for good scientific practices. Van den Hoven (2013) stresses that real responsible innovations have to reflect moral concerns in their designs. Also van de Poel (2013) describes how values should play an important role in technological innovative designing. However, while the inclusion of societal actors in research processes is becoming more important, the ways *how* stakeholders are included are still in development (Jasanoff, 2003). Innovative and appropriate formats, which allow for real engagement and co-production of knowledge still need to be explored.

The New HoRRIzon project[1], funded by the European Commission, aimed to further integrate RRI in research and innovation systems and processes. It addressed RRI practices by focusing on the 19 funding programme lines of the current research framework programme (Horizon 2020). By bringing together stakeholders from the different fields of the programme lines from all over Europe, the project engaged them in participative processes, through so-called Social Labs (Hassan, 2014). A Social Lab is not a method, but rather an approach which is social, experimental and systemic that opens up space for knowledge sharing, reflection and discussion, developing new ideas and further implementing and assessing them (Timmermans et al., 2020). A Lab thereby consists of a series of workshops, enabling a highly participative process. The diverse stakeholders involved act on an equal and collaborative basis throughout the process of the Social Lab (SL). Each of the Labs allows for an approach of *doing*, rather than just planning, by involving

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[1] https://newhorrizon.eu

most diverse participants in co-creation and prototyping processes to develop ideas for experiments and finally implement the selected ideas in real-life so called *pilot-actions*.

This short paper aims to introduce Social Labs as an approach for working with different stakeholder groups in a specific research and/or innovation field and describes concrete experience with the approach. The paper is structured as follows: after a brief introduction to the overall project, we describe exemplary pilot-actions which were developed in Social Labs as well as roles needed in the SL process, and identified success factors and barriers.

The NewHoRRIzon case

In the context of the New HoRRIzon project, we have adapted the Social Lab approach and used it as a tool to implement public engagement within an RRI process. Each Social Lab has co-designed several pilot-actions that are – with the support of the group – implemented and managed by the participants themselves. In total, the project recruited 15 to 20 participants for each of the 19 labs. The pilot-actions targeted different elements of RRI. Of the 59 pilot-actions produced, by far most of them focused on RRI in general (23), and on improving Public Engagement (26) with some others focusing on Gender Equality (3), Ethics (8), Science Education (10), Open Access (4), Governance (7) and elements such as Responsiveness and Privacy. In terms of functions and means, there were pilot-actions with a focus on changing practices from an RRI perspective (19), pilots delivering concrete implementable designs (15), pilots that focused on raising awareness about RRI (32), that produced communicable output (31), those that focused on changing rules and regulations (10) and finally those that focused on capacity building like trainings (28).

The roles within the labs

Different roles and tasks were assigned in each Lab for the organization of the labs and the implementation of the pilot-actions. Each lab was organized by a *Social Lab manager*, who was part of the project consortium. This person was the main contact person of the lab, responsible for the entire organization of the lab process, including invitations of participants, location, and management and reporting. The series of workshop was prepared and conducted by one or more *lab facilitators* who were not necessarily part of the consortium. Together with the managers, they set up the workshop design and organization. It was important to work with skilled facilitators in each lab as the objectives of the labs and the work with the heterogeneous lab teams was rather demanding.

For implementing the pilot-actions small groups of lab participants, under guidance of the lab facilitator, formed *pilot-action teams*. They collaborated in process and organisational aspects and contributed with their specific expertise or regional perspective. Each pilot-action activity needed to have a driver right from the beginning. This so-called *pilot host* was not only the idea giver of the pilot idea, but also offered the institutional setting in which the activity should be implemented. The hosts thus had a central position and a decisive role in the existence and success of the pilot project.

Pilot-action example

The Green Village pilot-action was organised as part of the Social Lab on "Research Infrastructures", Social Lab no 4 of the New HoRRIzon project. The Green Village is a highly innovative research community on the campus of Delft University of Technology, the Netherlands.

The Green Village itself is a Living Lab for sustainable innovation. It is a kind of an experimental zone on the campus that explores everything from green energy to building construction through different innovative projects. The Faculty of TPM, Values, Technology and Innovations, of TU Delft supported the "Green Village" pilot-action in order to increase the awareness of RRI principles in the university's community and to make it a guiding principle for the development, testing and demonstration of innovation in innovative projects. This was regarded important because TU Delft's mission includes all of the RRI principles. The Safety and Security Section of TPM conducted this pilot-action on exploring, analysing, and implementing the holistic RRI framework in an experimental innovative technical research community. The focus was on societal engagement, one of the four cornerstones of the Green Village mission (Weishut, 2019), in relation to the key principles, ethics, gender equality, open access and governance.

For the Green Village pilot-action two workshops were organised in an interactive manner to discuss and embed Responsible Research and Innovation (RRI) principles in the Green Village innovation projects. The workshops involved three projects; one that aimed at developing a battery that works on water basis (Aqua Battery), one project in which rainwater was collected (Water from Heaven) and processed for drinking and a project on automated driving (RADD). An audience composed of experts on open science, gender and diversity, sustainability management and RRI in general as well as NGO's, lectures, scientists, government authorities and the innovators themselves were present. In the six months between the first and the second workshop the innovative project leaders were asked to implement the RRI aspects with specific attention to its interrelated character and informed the Social Lab facilitators about their progresses. The pilot-action was closed with an extensive evaluation meeting which showed that each of the innovative projects in the pilot-action had benefitted from the activity. All three projects included almost all of the RRI principles in their procedures and governance and in their business strategies: one project in its entire business model, one project in the civil society approach and one mainly in their safety (ethical) approach. All of them could identify aspects in all RRI keys for further improvement.

The Lab process, success factors and barriers

Although each Social Lab was carried out separately, the project team co-created a generic process design, which was then adapted to specific needs (Marschalek et al., 2021). Most of the SLs conducted two-days face to face workshops in a highly interactive character. Applied techniques and facilitation were meant to enforce creative processes, support participants and tackle group dynamics. The method mix comprised many different formats, such as world café, fishbowl discussions, speed-dating sessions, or talking-stick conversations and many more. Innovative workshop techniques, such as for example walkshops, i.e. having guided discussions in groups while walking (Wickson et al., 2015). Additionally many opportunities for informal encounter helped to create a trusting, motivating and benevolent working environment and atmosphere.

To address RRI aspects in each SL (programme line theme), the lab teams initially exercised visions of an ideal world. After these common future visions, they started to work on concrete steps and elaborated pilot-action ideas.

Lab participants were reimbursed on their travel and accommodation to attend the workshops, and also pilot-actions were provided with small budgets (€ 5.000). Still, the participants dedicated much of their time and energy for free. So, the motivation to participate and contribute to a pilot activity was mainly intrinsic. Pilot hosts wanted to promote RRI within their institutions and made use of the

Social Labs for this purpose. It was thus important to emphasise their agency but also to offer them support whenever they got stuck. Although it was necessary that pilot hosts personally took the responsibility for their pilot-action, it was important that they received the backing of their lab teams.

The experimental character of the Lab process and the resulting pilot-actions laid at the core of the Social Labs; experiments in the lab context mean to develop solutions to identified problems without too much planning, but instead with a hands-on approach in real life settings. So, the SLs offered collectives of people working in research and innovation the space and process for experimentation and learning, in which failure was possible. By this, one could say that they offered the space for democratic experimentation, in which groups of people got the freedom to participate in experiments with RRI in their own contexts (Cohen & Gianni, forthcoming; cp. Dewey, 1954). A big lesson learned in achieving this, is that the character of the lab, its objectives and limitations, as well as the roles and task within the labs have to be made clear from the very beginning.

Impact and Reflection on RRI as transformative approach in the labs

   In general

Although most the of pilot activities were carried out within the project duration, many sustainable activities were carried out, which also produced different kinds of materials and tools which are still available, e.g. an open access repository and map for renewable energy in Europe, a RRI career matrix for new positions at universities, different re-usable methodologies and tools for public engagement and policy recommendations for increased attention to RRI in research infrastructures and academic career assessment etc..

The lab processes as such had also effects on institutional and individual level. Many SL participants highlighted their personal experiences, not only in the team collaboration and pilot development, but also by "getting a heart for RRI" meaning that the RRI aspects came more into the minds of researchers and innovators. In such an intensive and long process of a Lab, discussing and reflecting on RRI aspects and ways for implementation leaves traces: "Once you were fed with RRI it becomes part of your personality" (as one of our pilot hosts had put it). In this way, lab participants and pilot hosts created communities of change, and helped to spread the word on RRI and its aspects; they are RRI change agents and ambassadors for life. Perhaps this was best evidenced by the occurrence of many different unintended ripple effects of participants who wrote about their experiences in academic and popular publications, who involved (elements of) RRI in new funding applications and who started new networks and initiatives on RRI beyond the scope of what was directly envisioned at the start of the Social Lab process.

   At the Green Village

The Green Village pilot-action may not impact the Research Infrastructure context as such, but it does provide a showcase on how accessibility of research and innovations can also be increased on the project level. It does so by creating awareness on RRI in the Green Village research community through workshops and reflection sessions and building capacities for RRI on the project level. The results of this pilot-action have been anchored beyond the duration of the NewHoRRIzon project because all three innovation projects are still further working on integrating

the RRI principles in the next stages of their innovative development: Water from Heaven on governance and "Ethics and Integrity" to operate in Africa, Aqua Battery with further implementing the gender perspective in their business development plans and RADD by focusing on involving more civil society and in due time on open access. Furthermore, we have identified the following ripple effects; the three cases are being put in the spotlight in many presentations in the national and international science and innovation communities and Delft University of Technology has created a research position for RRI at the Faculty of TPM.

Conclusion

Based on our personal experiences in the implementation of Social Labs we can state that the approach does work. In terms of potentials for transformative change, RRI is regarded as an integrated, interlinked approach. Guiding principles can help researchers and innovators to reflect and to discuss with others on their work.

However, for carrying out successful lab processes clear outlines and the purpose of the activity as well as related expectations have to be defined beforehand. It is therefore essential to communicate the expectations, goals and aims right from beginning of a lab process. To allow for a common learning experience, flexible structures providing sufficient room for responsiveness according to the needs of the group and the process are required.

The labs have the capacity for transformative change and they could be applied in other contexts as well. The pilot-actions caused many ripple effects on different levels, and mainly within the hosting institutions. Long term impact will only become visible after the project has been completed. Pilot hosts can be regarded as agents of change, who can try out and implement transformative steps in their environment with the help of the lab and the team. Most of the pilot hosts stayed until the end of the process, whereas others whose ideas had been dropped or could not afford the time had left the process.

One open question remains on how to involve the sceptics or those who are not interested in the topic or addressed by the lab theme. The question of how to involve policymakers, businesses and representatives of civil society in particular and how to address them and their issues will need to be explored further in the future.

Acknowledgements

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