Public Engagement Innovations
for Horizon 2020

Guidelines for future context tailoring workshops D3.1

Authors:
Timo Aarrevaara
Luciano d'Andrea
Ian R. Dobson
Maria Pietilä
Mikko Rask
Janne Wikström

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UNIVERSITY OF HELSINKI	UH	University of Helsinki, Finland
TARPTAUTINIS VERSLO MOKYKLA IBS	VU IBS	Vilnius University International Business School, Lithuania
LSC	LSC	Laboratorio di Scienze della Cittadinanza, Italy
UNIVERSITY OF LAPLAND LAPIN YLIOPISTO		University of Lapland, Finland

Contact information: Timo Aarrevaara, University of Lapland
E-mail: timo.aarrevaara@ulapland.fi
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Project co-ordinator: Mikko Rask, Consumer Society Research Centre at the University of Helsinki
E-mail: mikko.rask@helsinki.fi
Project website: www.PE2020.eu

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THE PE2020 PROJECT

The goals of PE2020 are to analyse and refine innovative public engagement (PE) tools and instruments for dynamic governance in the field of Science in Society (SiS). PE2020 presents an analysis of the PE tools and instruments through a systemic and contextual perspective, and thereby contributes to the potential and transferability of new governance innovations. PE2020 is creating new knowledge of the status quo and describing public engagement trends in science, refining existing innovative PE tools and instruments and proposing new ones.

The project will do this by (1) further developing a conceptual model to provide a systemic perspective of the dynamics of public and stakeholder engagement; (2) creating an updated inventory of current and prospective European PE practices; (3) context-tailoring and piloting best practice PE processes related to the grand challenges of the Horizon 2020 programme, and (4) developing an accessible net-based PE design toolkit that helps identify, evaluate and successfully transfer innovative PE practices among European countries.

New tools and instruments for public and societal engagement are necessary to boost the quality, capacity and legitimacy of European STI governance and to solve the looming problems related to the grand societal challenges of the Horizon 2020 programme. In order to ensure practical relevance, the project will work through intensive co-operation between researchers and science policy actors. PE2020 will expand the capacity of European and national science policy actors to integrate societal engagement better by providing easy access to new PE tools and instruments, to be included in the requirements and implementation of research in Horizon 2020 and beyond.

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INTRODUCTION

Work Package three (WP3) has as its objective to design and implement six pilot projects on innovative PE processes. Such projects (or 'pilot initiatives') are being organised in the context of on-going research programmes in Finland and Italy. PE2020 is being funded through the Seventh Framework programme, and it is developing tools and instruments for better societal engagement in Horizon 2020. The pilot initiatives are collectively linked to the six 'Societal Challenges'[1] of the European Commission. To ensure that there is an EU-wide dimension and relevance, three of the pilot initiatives have been conducted in the context of EU joint research programmes, European innovation partnerships or other types of research and innovation activities with a transnational dimension.

The six pilot initiatives have been co-designed and implemented with our target research projects and programmes. The original plan of the PE2020 project was that after a global survey and identification of the most innovative PE processes, two to six of the more interesting public engagement (PE) methods would be transferred and tested in new research policy contexts. Soon, however, it was realised that such a transfer process is far from a straightforward process. On-going research projects and programmes have their own priorities, expectations, quality criteria and cultures of operating; testing and introducing new PE processes need to be adapted to the preconditions of the target programmes.

In order to adapt the pilot initiatives to the particular local contexts, the PE2020 project included 'context tailoring workshops' among the initial steps of the pilot design. As was described in the project plan, the purpose of the context tailoring was 'to consider the factors that precondition successful design and implementation of PE tools and instruments in local contexts.' Contributory and hindering factors were supposed to be identified and discussed by the PE2020 researchers and local STI actors.

The implementation of the pilot initiatives has taken place in two countries with highly different cultures of research and innovation policy and science in society debates: Italy and Finland. While research and innovation have been high on the political agenda in Finland for several decades (until the current recession and government), other political themes have dominated Italian politics. In terms of public engagement, the Nordic approach to policy making has favoured broad stakeholder consultations, whereas direct democracy and national and regional referenda characterise the Italian cultural landscape[2]. Public engagement in both countries is still a new issue and this was very much reflected in the negotiations with those responsible for establishing target programmes.

Considering that the national cultures of policy making and particular research project and programme contexts both have an impact on the design of the pilot initiatives, we decided to adopt a flexible approach to the design of the workshops. Common to both countries, the planning of the workshops preceded a series of informal bilateral negotiations between the PE2020 organisers and the target programmes. The main model of the context tailoring workshop in Finland included a large seminar involving all three pilot initiatives organised in Finland plus an international group of experts giving insight and external perspective on the pilot initiatives. The Italian model relied in one case on a smaller-scale seminar that was organised to scope locally important factors for practical pilot initiative design. In two other cases, context tailoring took place only through bilateral discussions between the project partners and target programmes.

The purpose of this report is to document, describe and reflect on lessons learned from the Finnish and Italian workshops. We have done this in the following way. First, in Section 2, we describe briefly six pilot initiatives in Finland and Italy, as well as the design and targets of the workshops in both countries. In Section 3 we describe the main results of the context tailoring workshops and discuss how they had an impact on the design and implementation of the pilot initiatives. In the fourth and final sections we discuss the pros and cons of the different ways of organising context tailoring workshops, as well as draw some conclusions of future action in this area.[3]

DESCRIPTION OF THE CONTEXT TAILORING WORKSHOPS

The workshops held in Finland and Italy were different from each other, due to the different nature of the pilot initiatives and project contexts. We also observe that there were considerable differences between target programme organisers' preparedness to introduce new types of PE tools and methods into their activities.

In Finland, a context tailoring workshop was organised to help in designing and implementing the following pilot initiatives:

- **BONUS young scientists' initiative** – The first pilot initiative is a scheme for empowering young scientists (doctoral students and postdoctoral researchers) by providing them with skills in the new social media that they can use in communicating their research activities in a recently established, bottom-up structured research website of the BONUS programme. BONUS is the joint Baltic Sea research and development programme for years 2010–2017. It involves European countries from the Baltic Sea region. The initiative is related to the societal challenge on 'food security, sustainable agriculture and forestry, marine and maritime and inland water research, and the bioeconomy'.
- **Global change living lab** – The second pilot initiative aims to co-design global change research priorities and joint projects in collaboration with researchers, other actors in the public and private sectors, and civil society organisations. Whereas co-design ideas have already been used in the innovation context, opening up the processes at an early stage for a wider audience is innovative in the field of academic research. The context of the initiative is a Finnish Global Change living lab network, which is coordinated by Future Earth Finland – National Committee for Global Change Research. The Finnish national committee collaborates with fellow national committees abroad and their regional clusters. The pilot initiative is related to the societal challenge on 'climate action, environment, resource efficiency, and raw materials'.
- **Societal interaction plan (SIP) in research on demographic change** – The third pilot initiative is aimed at analysing the contents of societal interaction plans in distributing academic research funding. Whereas requirements for more societal interaction aspire to balance academic peer review and societal relevance in granting research funding, little is known about the content of such interaction plans in relation to dimensions of public engagement. The context of the initiative is an EU joint programming initiative (JPI) on demographic change: *More Years, Better Lives*. Thirteen European countries support the JPI. The pilot initiative is related to the societal challenge on 'health, demographic change and wellbeing' and the challenge on 'Europe in a changing world - inclusive, innovative and reflective societies'.

There were several reasons why it seemed appropriate to organise one common context tailoring workshop for the three pilot initiatives organised in Finland. First, all of the pilot initiatives proponents were willing to introduce new PE practices into their activities and they were eager to learn more about parallel activities in other programmes. Second, one of the target programmes, BONUS, had a longer tradition in PE activities, which made it possible for its participants to share some of their experiences with the other two programmes just initiating similar activities. Third, all the cases were international in orientation, which made comparative learning more feasible.

The workshop was held at the Aalto University School of Business in Helsinki on 9 April 2015. This event attracted approximately 40 participants from Finland and other countries. The backgrounds of the participants were varied, representing higher education institutions (universities and universities of applied sciences), public research institutes, think tanks, private companies, ministries, the European Union (EU), research funders, and European research programmes.

The target of this context tailoring workshop was to create a shared understanding about the foundational organisational, methodological, and infrastructure challenges of public engagement. The workshop focused particularly on living labs as a public engagement method as this was a central and common interest of PE2020 and CKIR.[4]

Experiences and insights were gathered both from the innovation context and from the academically-oriented context to enable the participants to reflect on the options and challenges in creating and maintaining multi-actor, multidisciplinary living labs in different settings. In the workshop, the participants discussed how living labs are understood broadly as research strategy, and how methodology can help in engaging people, cities, regions, public agencies and firms when solving the major societal challenges of our time. The programme and details of the speakers of the context tailoring workshop can be found in *Appendix 1*.

Overall, the design of the Finnish context tailoring workshop was intended to provide an external perspective and reflection on the opportunities and limitations of public engagement rather than internal advice for projects on how to manage practically the complexities of PE activities.

In Italy, context tailoring activities were organised to support the following pilot initiatives:

- **Empowering young researchers on PE in energy efficiency (Rome)** – The fourth pilot initiative was developed on the basis of an interaction between LSC and ENEA, the Italian National Agency for New Technologies, Energy and Sustainable Economic Development and was conceived as an itinerary aimed at making PE a strategic element in the training programme of the two-week long ENEA Summer School on Energy Efficiency (ESS) targeted at young professionals and researchers. The pilot initiative included the organisation of an internal workshop involving a group of ENEA project managers aimed at developing a common understanding about the ENEA experience in PE, the production of a handout on PE in the energy sector, the organisation of a four-hour training module devoted to PE in the framework of the ESS and the presentation of the results of the module in the ESS final plenary session with the participation of a group of private companies working in the energy sector. The rationale of the pilot project was that of supporting the ENEA project managers in capitalising on their experience for identifying the stock of knowledge to transfer to the ESS trainees on PE theory and practice in the energy sector and then actually implementing such a knowledge

transfer process through the training module included in the ESS. This pilot initiative was related to the challenge 'Secure, clean and efficient energy'.

- **Dialogue Workshop on mobility and transportation (Naples)** – the fifth pilot initiative was developed with the intention of testing a PE approach in connection to one of the grand societal challenges considered by Horizon 2020, i.e. 'Smart, green and integrated transport'. The rationale of the pilot was that of putting PE at the very centre of the debate on mobility and transportation in a given local context so as to improve the development and management of transportation, with special reference to the involvement of citizens, CSOs and stakeholders in orienting research programmes and policy design. The pilot initiative focused on the organisation of an initiative of public dialogue aimed at discussing the present and potential role of PE and participatory mechanisms in the mobility sector.
- **Educating science-society relations and public engagement (Turin)** – the sixth pilot initiative was organised to test the possibility of using PE mechanisms to raise the awareness of and transferring knowledge to young students on the complex and changing relationships existing between science and society. The opportunity to make such a test was given by the Scientific Summer School (SSA), a week-long informal education initiative targeted at high school students that Agorà Scienza organises each year in Turin with the participation of researchers from different universities. The rationale of the pilot project was that of directly involving the researchers concerned with the SSA in a common reflection on their own experiences in science communication and science engagement and their views of science-society (S&S) relationships. This was in order to hear their suggestions on how to raise the awareness and increase the knowledge of students on science-society relationships and to put such suggestions into practice by adopting PE mechanisms in the framework of the 2015 edition of the SSA.

Unlike in Finland, where all three pilot initiatives were discussed in a common context tailoring workshop, the Italian pilot initiatives were planned separately. In the case of pilot projects carried out in Rome, the workshop involved researchers and project managers coming from only one institution, i.e. ENEA. Therefore, an informal approach was considered to be the most appropriate, since, on the one hand, participants were well-known to each other, and on the other hand, the discussion focused much more on the specific experience of the institution on PE-related activities than on the general issue of contextualising PE mechanisms.

In the case of the pilot project conducted in Naples, the situation was more complex. In fact, in order to organise the Dialogue Workshop, a preliminary analysis of the situation on PE and mobility was implemented, in order to frame the pilot project appropriately in the Neapolitan context. In this first step, significant support was given by IDIS-Città della Scienza, which was the partner of LSC in this initiative. Afterwards, it was decided to organise a context tailoring workshop involving representatives from NGOs, university research institutions and local actors. While considerable interest on the initiative was shown, many difficulties have been met in finding a date suitable in which organising the workshop. Therefore, a set of in-depth interviews were held with some of the key stakeholders, focussing on the key problems of mobility and transportation in Naples, past and present experiences of PE in this sector, and possible future developments, i.e., how to integrate PE and participatory mechanisms in mobility and transportation research and policies. The interviews allowed the discussion outline for the Dialogue Workshop to develop, thus serving as a contextualisation

mechanism alternative to the context tailoring workshop. However, the interviews were kept informal, being based on a grid for the interview made up of open-ended questions.

The case of the context tailoring workshop held in Turin was different. It was organised in partnership with Agorà Scienza, an Interuniversity Centre specialised in science communication and public engagement. The workshop, like the pilot initiative, was embedded in the 2015 edition of the Scientific Summer Academy (SSA), an informal education initiative addressed to 50 high school students that Agorà organises each year with the participation of several universities. The aim of the pilot initiative was that of systematically including issues related to Science-in-Society (SiS) and public engagement in the SSA.

Held on 6 May 2015, it involved 15 researchers and SSA promoters. The workshop focused on PE initiatives and experiences in the participants' own research institutions, the main obstacles they met and the ways in which to include PE and science-society issues into SSA. The workshop was prepared through a discussion outline sent to participants before the meeting. In the discussion outline, a set of questions was proposed, including the experiences of participants in communicating science and in promoting PE initiatives, the problems they met and the ways to promote PE in Italy and in their own research institution. The discussion was recorded and its outputs were used to develop a set of recommendations aimed at favouring the inclusion of the issues related to PE and the relationships between science and society in the SSA.

Summing up, a contextualisation process was carried out in all three of the pilot projects. In two cases (Turin and Rome) the process occurred through a context tailoring workshop and in one case (Naples), through individual in-depth interviews. However, we decided to include in this deliverable only the outputs emerging from the context tailoring workshop held in Turin, on the basis of the following considerations:

- In contrast to the context tailoring workshop held in Rome, the Turin workshop brought together participants who did not know each other and coming from several institutions (University of Turin, Polytechnic University of Turin, Turin Astronomical Observatory) and disciplines;
- Also for this reason, its results had an application scope which went beyond the specific context (the SSA), while this was not true in the case of the context tailoring workshop held in Rome, which was mainly focused on the ENEA experience;
- Finally, the use of a discussion outline and the finalisation of the workshop toward the development of a set of recommendations allowed for a more formal approach to be adopted.

These features make the initiative comparable to the context tailoring workshop held in Helsinki.

RESULTS OF THE CONTEXT TAILORING WORKSHOPS

Typical of any participatory activity, the context tailoring workshops resulted in a wide range of outcomes, yet not all of them can be reported here. First, in all cases networking and capacity building were among the main contributions. In Finland, for example, it was a highly empowering process for the stakeholders of the three pilot initiatives to meet each other, share experiences and learn from each other and from an international community of living labs. Some participants had more than 20 years' experience with public and stakeholder engagement activities. Second, new perspectives and

insights were gained on the potential and limitations of public engagement activities, and how they can be implemented in different types of research and innovation contexts. Third, practical tips and advice on how to practically manage innovative PE processes were forthcoming.

Even though networking and capacity building activities are critical for the success of PE activities, it is beyond the scope of this report to explore such activities in depth. Instead, we focus on the main content of the discussions in the two more structurally organised workshops, one in Helsinki, Finland and the other in Turin, Italy.

In this section we review the main themes that were discussed in the two context tailoring workshops, and then discuss the main implications for the design of the pilot initiatives. In the final section we reflect on how the different design of the workshops may have contributed to the different outcomes of the two workshops, and propose some ideas on how to organise context tailoring in future PE pilot processes.

The Finnish case: the potential of PE seen through the lenses of living labs

The discussions in the Finnish workshop were more focused on the 'context' rather than the 'guidelines'. In addition to the three pilot initiatives, the presenters were European experts on living labs and public engagement. As both the speakers and the participants were highly knowledgeable regarding these topics, it was possible to discuss the differences and similarities between the living lab approach and the public engagement perspective. These two landscapes are close to each other, even though debates take place in different contexts.

The workshop contributed to a shared understanding of the main institutional and organisational issues and connections related to use of PE in solving societal challenges in European societies. The participants discussed how living labs as a research strategy and methodology can help in engaging people, cities, regions, public agencies and firms when solving major societal challenges of our time. CKIR and its expert network proved to be a fruitful dialogue partner for the pilot initiatives, as CKIR has a long history in working on PE methodology and developing it further, in the broader context of the European Union's science and innovation policy, including the EU's focus in allocating funding towards societal challenges. Such extensive experience and close collaboration with the EU helped both to introduce relevant questions and lessons of economic and policy relevance of PE activities to the pilot initiatives, as well as to find relevant connections and contacts to international PE actors and institutions.

The main addresses, commentaries and ensuing discussion of the Finnish workshop, highlighting some of the key concepts that characterise the current landscape of European PE activity are reviewed below.

The first invited speaker, **Markku Markkula**, President of the EU Committee of the Regions, linked the Living Lab perspective to user-driven development and modernisation of public administration in the European context of developing cities and regions. Markkula encouraged researchers to spend some time thinking about the crucial groups which could benefit from one's research. Many of the ideas expressed in his presentation – such as developing a bottom-up mind set, focusing on impact, and multidisciplinarity – have also been present when planning the pilot initiatives for the PE2020 project. According to Markkula, cities should accelerate open innovation by broadening inclusion, trust, and

learning ('gardening') in order to create joint regional innovation ecosystems. In the research, development and innovation (RDI) context, synergy could be created by experimenting with real life cases. A new knowledge platform created in collaboration with the Committee of the Regions and the European Commission's DG for Research and Innovation combines the different layers of societal and market needs, enabling technology and fundamental knowledge. The platform emphasises the need to encourage bottom-up initiatives and to focus on the important role of political decision-makers. In the general discussion, it was agreed that in the European context, it is also vital to take diversity and local challenges and solutions into account.

Director of Educore **Hank Kune** presented some of the core ideas of public engagement. He illustrated the different levels of participation, based on the participation ladder. On the lowest step of the ladder the citizen is seen as a consumer, whereas on the higher steps, citizens act as active initiators. The different roles the citizen are connected to different types of participation. Thus, it is important to clarify the level of engagement that is being dealt with in each case. His other recommendations were to clarify which 'public' should be engaged in each case, whether to treat the participants as individuals or as representatives, and the need not to stop at the first superficial level but to go deeper in defining the problem behind the problem. Another issue that calls for decision-making when planning public engagement in practice is whether to go for big data (e.g., online questionnaires) or for 'deep smarts' (e.g., intensive focus groups). Still, the core message was to take the people participating seriously and to avoid merely paying lip service to public engagement. In the discussion that followed, public engagement itself was identified as not being a new idea, but something that actually dates back to the 1970s. This remark makes one wonder why public engagement is still not in broad use and why the same problems come up time after time. It was agreed that the responsiveness of government is important, otherwise public engagement continues to be small-scale and case-based. Public engagement should be seen in the context of power games: at different times, there are powerful actors who are against wide participation.

Secretary General for Future Earth Finland, **Tanja Suni** introduced discussion about the Global Change Living Lab initiative. The role of Future Earth Finland was presented as an intermediary organisation that facilitates collaboration and networking between different actors in the broad field of global change.

Richard Pieper from the 'More Years, Better Lives' joint programming initiative (JPI) presented some initial ideas about the second pilot initiative. For instance, he described the role of the societal advisory board of the JPI as a new way to promote public engagement.

Communication manager **Maija Sirola** from BONUS (the joint Baltic Sea research and development programme) presented the third pilot initiative. She described the background of the programme, including how the processes of public engagement especially related to stakeholder involvement had been developed in the programme. At BONUS, various stakeholders have contributed to the development of the strategic research agenda of the programme by identifying knowledge gaps that should be covered. BONUS is also a good example of a topic area – Baltic Sea protection – which needs input and commitment from actors at different sectors.

Head of research from the think tank Demos **Aleksi Neuvonen** participated in the first pilot panel by commenting on the presentations. He provoked the presenters to think more deeply about whose

behaviour they wish to change with the pilot initiatives and to recognise who the most crucial gatekeepers that should be involved in the initiatives are. Some groups identified by the presenters were policy-makers, local businesses, opinion leaders of the public media, and farmers. Participants were challenged to reflect on what would motivate these groups to become engaged. In addition to a focus on system level factors, there should also be discussion on human factors that may motivate or discourage people to engage.

In the afternoon's reflection panel, **Erkki Ormala,** professor of practice at Aalto University, provided an industry perspective to the discussion on solving societal challenges. Living labs do not happen in a vacuum, and the ecosystems and networks where innovation takes place should be taken into account. Understanding the context is crucial, and this also implies careful analysis of the key stakeholders and ideas about how to get them engaged. As well as identifying crucial gatekeepers, the regulatory environment also has an impact on whether the attempted changes can be implemented or not. Therefore, resources, access to top-level research and access to market are not enough if the regulatory environment is not favourable. In addressing societal challenges, Ormala emphasised the role of system integrators in pushing the messages forward (e.g., if the regulatory framework is not favourable). Thus, it is necessary to identify who is acting as a system operator in each field. Guidelines for using living labs in a business–science landscape were suggested.

Tony Ghaye, director at Reflective Learning-International, shared his personal experiences of working with young people and children. To Ghaye, living lab essentially means something live and vibrant as opposed to 'dead labs'. Ghaye vividly told about his experiences of living labs consisting of young children. As citizens, children are in a vulnerable situation, because they cannot usually create spaces for discussion themselves. Instead, they rely on the resources provided by adults. Still, Ghaye emphasised how it is crucial that we engage children especially in topics that directly affect them, such as health and social services. Key questions in engaging children include how we can create spaces where children can talk about how they feel about certain things, how 'the living' of the lab can be sustained, and how the joy of participation can be ensured.

Timo Hämäläinen from the Finnish Innovation Fund (Sitra) discussed the need to solve complex policy issues in the public sector. Key governance challenges have to do with issues that concern multiple stakeholders, but there is often a lack of shared and holistic understanding of problems, coordination challenges, complexity gaps. Furthermore, many decisions are path dependent. Also, governance solutions could benefit from more cooperation, collective learning, and respect of diversity. New types of combinations of related knowledge domains may result in new innovations.

Pia Erkinheimo, Head of Crowds from Digile Ltd spoke about how open innovation can work in the business sector. She brought up the potential of crowdsourcing and citizen science by emphasising the role of consumers, enthusiasts and hobbyists as valuable resources in the business development. The benefits of crowdsourcing and citizen science include the diversity of opinions that can be reached and opportunities to track the behaviour of humans – crowds can renew value creation by saving time and costs and by diminishing risks.

Edward Andersson, European Associate at Involve UK, also emphasised the benefits of engaging citizens in science and innovation and the potential of *citizen science* in particular. Promising examples of citizen science initiatives include Galaxy Zoo, where citizens help researchers in classifying galaxies.

Science shops are another example where science is used to help local communities. The general discussion focused on the benefits of participation from the citizens' perspective: participation can itself be highly valuable for the participating citizens. Andersson also reminded participants that citizen science should not be merely understood as joint data gathering: citizens can also be involved in setting research questions, or in the follow-up activities of research.

Finally, **Per Mickwitz** from the Finnish Environment Institute and the Chairman of the Strategic Research Council under the Academy of Finland provided his insights on the current Finnish government's initiative about demand-driven publicly funded research. In funding strategic research in Finland, Mickwitz saw two phases where public engagement is relevant. First, it is important in setting the agenda. In that respect, it is important that processes are kept open for different actors. Second, even more relevant is that public engagement takes place at the level of the funded projects. To guarantee user, stakeholder and citizen involvement in the projects, there should be guidelines for the societal interaction that the funded projects have to follow.

Overall, the Finnish context tailoring workshop became a highly reflective seminar on the political, economic and institutional landscape dimensions of current PE activities in Europe. As this discussion was organised around the three pilot cases organised in Finland, it helped both the PE2020 project and the project partners to develop a holistic and reasoned approach to the PE pilot initiatives.

The Italian case: organisational and institutional challenges of PE

The key issues emerging from the Italian workshop are briefly summarised below. Contributions more focused on the development of the pilot project to be held in the context of SSA have been omitted. In order to respect the privacy of the participants, their names have not been reported. Only their gender and specialisation field are mentioned.

Male, genetics. In his contribution, this participant focused on the contents of science communication. According to him, it is not only important to communicate scientific facts, but also to inform the public about how the research system actually works. This also implies providing a picture of the problems affecting the national research system, including the research funding cuts and the difficulties met by young researchers to start their scientific career. Another aspect to focus on is informing the public and especially young people about the links between research and innovation which are often ignored or overlooked. Moreover, in the field of genetics, there is also the need to discuss various specific controversial issues, such as those of an ethical nature related to the use of stem cells. However, to discuss them, a common background of knowledge has to be built up in order to avoid a mere ideological clash.

Female, water treatment engineering. She agreed with the need for discussion, not only about science, but also on the problems and dynamics of research systems. According to her, there is a favourable context for doing it since, on the basis of her experience, she noticed curiosity and interest from the public and the young in particular about how research works. This is particularly important in the case of disciplines connected to environmental issues, where research activities are strongly connected with the solution of actual environmental problems; and presently, the public is particularly sensitive about environmental problems.

Female, neurology. Continuing the reasoning developed by the previous participant, this participant observed that public engagement is more difficult to promote in case of fundamental research. In fact, past experience in science communication and PE suggests that the public is not always able to distinguish the different phases of the research process and tend to be much more interested in innovation than in the results of the fundamental research. This is the reason why her department was more focused on science communication than on public engagement. In fact, public engagement can be developed only on the basis of consolidated knowledge about science shared by the public and all the actors; and at present, at least in Italy, the public is little aware of the functioning and problems of research. It is mainly attracted by technological innovations, but ignores how they have been developed and where they come from. To exemplify the situation, she reported the case of the animal testing. Her department uses animal in laboratory testing and appropriately communicates with the public about this issue. The public is engaged and sensitive, but members of the public tend to assume biased positions on animal testing, ignoring how it actually works, perhaps because of a lack of information. There should be a common information basis about what animal testing really is and how it works, but this common information base is lacking. Therefore, dialogue is very difficult.

Male nuclear physics. In this regard, this participant highlighted the role of education. According to him, the difficulties faced by researchers to ensure the engagement of the public are mainly due to the way in which scientific education is provided at school. Students learn scientific content from different disciplines, but no one teach them how science works, the different steps of the scientific process (from fundamental research to innovation), the connections between research and society, or how science evolves over the time in a historical perspective. Schools should provide the knowledge basis for making public participation possible, but at the moment this is not the case.

Male, astronomy. In his contribution, this participant noted that in the field of astronomy, there have been forms of public engagement in research since the end of nineteenth century. In fact, there are many cases where scientists worked and work with lay people in the observation of the sky. Around 3,000 comets have been discovered by amateurs and many are presently working towards the discovery of new eso-planets. This aspect is often overlooked in the debate on public engagement, i.e., how people may be directly involved in the scientific process (citizen science). Speaking more at a general level, he highlighted that there are no policies and funds for promoting PE. Everything is based on volunteering. However, researchers have no time to develop significant PE initiatives. Moreover, this lack of resources and institutional recognition is presently occurring in a broader frame where investments in science are drastically shrinking. In addition to that, political leaderships evidently lack of a robust scientific culture and are little aware about the consequences of their decisions on science. All that makes public engagement very difficult to practise.

Male, geology. According to him, public engagement should be a factor leading to a 'Copernican revolution' not only in the way in which the public understands science, but also the way that scientists understand their own work. The increasing number of initiatives in public communication (such as 'researchers' nights' or university 'open days') as well as the inclusion of some elements of public engagement among the evaluation criteria adopted for assessing university and research institutions at national level are pushing research departments to do more. However, the great majority of research leaders are focused on science communication and do not understand what public engagement actually is and why it should be promoted. According to the participant, this delay is

mainly due to the fact that public engagement requires that both scientists and civil society are ready to discuss and to change their mind and attitudes. However, this is still not the case. Many scientists are still convinced that public engagement is useless or they simply ignore it. Those scientists who are oriented to promote PE or science communication initiatives are not backed from within their institution and have neither appropriate resources nor time. The public still does not know how research works and ignores the many problems the Italian research systems is presently facing, such as the lack of funds and resources or the ever-increasing obstacles to accessing scientific careers. Thus, a profound change in scientific culture needs to be promoted.

Female, environmental engineering. The lack of information about how science works is a factor feeding stereotypical views of science and technology and wrong or partial representations of their impacts. For example, people fear the presence of incinerators and often protest on the basis of misinterpretations about how the incinerator works. The media also provide misleading information because of the shortage of journalists able to deal appropriately with science-related issues. In addition, politicians often ground their science and technology decisions on the basis of wrong, biased or incomplete information. Public engagement suffers from a lack of reliable information on scientific processes and facts which could serve as a common basis for the dialogue.

Practical lessons to the design of pilot initiatives

Despite the discussions at the Finnish workshop having been rather more general than those from the Italian workshops, some practical lessons can be learned from both workshops. The main lessons are next condensed in the following nine observations:[5]

- First, it is **important to think carefully about the relevant public for each pilot initiative**. As stakeholder participation is often taken for granted in research and innovation, it may be appropriate to try to broaden participation to involve 'ordinary citizens'. According to the presenters, the potential benefits can be wide-ranging. Representation should be inclusive. Balanced representation in science and innovation may also involve groups which are not traditionally taken into account, such as young people and children, or older and elderly people.
- Second, it is important to **acknowledge the context of the pilot initiatives**. The notion of context emphasises identifying the relevant ecosystems, key regulators and regulations at national and international level (e.g., in the EU), the role of cities and regions in promoting or hindering public engagement, and the wider political landscape. Public engagement does not happen in a vacuum. The role of the funding bodies is one of the contextual characters of each pilot initiative. For instance, there might be friction between the interests and criteria at the European programmatic level on one hand and the interests and criteria of national funders on the other hand.
- Third, from an ethical perspective it is important to stress **respectful use of the findings that result from public engagement**. Public engagement should not be glued on top of existing activities. Rather, it should be embedded in the practices of research organisations. From an ethical perspective, it is also important to take into account the accountability that relates to public engagement. Participation should be respected, but the engaged people should also take some responsibility for the decisions they are taking part in.

- Fourth, it is important to take into account the **motivational grounds of participation**. E.g., gatekeeper analysis focuses on identifying possible barriers in bringing change forward. It may be relevant to analyse why certain groups have certain interests and how they could be compromised if it is assessed as necessary to bring forward certain change. However, it is also necessary to acknowledge the different interests involved.
- Fifth, it is necessary to remind oneself that **public engagement may take different forms** and living lab is just one of them. Moreover, these forms are also rapidly changing in the internet era, which also puts more pressure on new interactive forms of participation than traditional forms where citizens are seen as passive informants of research and innovation.
- Sixth, **public engagement necessarily requires a permanent policy effort by research institutions**. In this regard, many participants at the Turin workshop highlighted that their interest and orientation towards PE is hindered by many factors, including the lack of time and resources, the lack of strategies, support and programmes at the university or faculty level or the lack of professional recognition for those who promote PE initiatives. This leads to PE being something more promoted by individuals than by the institution the individuals are part of. This recommendation is in tune with the considerations made at the Helsinki workshop about the still limited diffusion of PE among research institutions and the tendency to promote only small-scale and case-based PE initiatives.
- Seventh, **public engagement has to take into account existing representations of science and technology.** Various participants at the Italian workshop highlighted the presence of many stereotypes and biased representations of science and technology, often reinforced and replicated by the media. These stereotypes and representations often lead the public and even stakeholders seeing science and technology as mainly a source of risk for the community or as something that has little to do with their life. In this sense, they may be a barrier to public engagement even though, quite paradoxically, only practising sound forms of public engagement will allow common views about science and technology to develop.
- Eighth, **there is the need for PE initiatives to focus both on scientific content and products, and on the different phases of the research process**. In this respect, different workshop participants noted that the public has little or no awareness about, how science works, the relationship between fundamental and applied research, the relationship between research and innovation, and so forth. Hence the proposal advanced by some participants was to support PE initiatives with a major effort in science communication facilitating the construction of a common knowledge basis among the different players.
- Ninth, and finally, **public engagement may serve different purposes and identifying the 'right' purposes is not always simple**. Even though PE has been associated with decision making processes, PE is used and is intended as a wide-ranging concept which refers to various aspects of science and technology, many of which are not related to any actual decisions. Moreover, there is a strong tendency not to distinguish clearly between dialogue-based public engagement and top-down science communication. Hence there is a need to develop strategies allowing for decisions about when, why and how to use PE approaches and tools and when, why and how to use science communication formats.

CONCLUSIONS

The experiences from the PE2020 context tailoring workshops in Finland and Italy can be summarised with the following observations. Public engagement tools are always tested in their own context, and the results are at best undetermined. These workshops did not give the exact information for guidelines which would enhance the implementation of the ongoing pilot initiatives. Instead, the pilot initiatives were set in relation to each other on the basis of the information received in the context tailoring workshops.

Based on the workshops, some guidelines can be sketched out for future workshops. First, from a knowledge-sharing perspective, it is beneficial to bring together actors from different sectors to discuss and share information on public engagement methodology and its links to the current science policies and the broader context of building civic capabilities for the citizens in western societies. Workshops are also useful for building new networks that can be utilised in planning future public engagement activities.

Second, such workshops with a wide array of participating actors may also be useful in trying to anticipate possible obstacles in designing and implementing public engagement processes. We argue that wide participation already in the design phase of the research and innovation process is important particularly in the area of trying to solve large-scale societal challenges that transcend the boundaries of multiple policy areas. This highlights the need for context tailoring workshops.

Third, based on the findings at the workshop, organising context tailoring workshops may motivate actors at research organisations to become acquainted with the rationales of public engagement and the span of available methods in that field.

In future workshops, when planning pilot initiatives which are still at an early stage, it might be beneficial to be more oriented to giving feedback on issues at the practical level. There should also be sufficient time for general discussion.

APPENDIX 1. Programme of the context tailoring workshop organised in Finland

Context tailoring workshop on:

Research Strategy and Methodology of Public Engagement

How do Living Labs as research strategy and methodology help in engaging people, cities, regions, public agencies and firms when solving major societal challenges of our time

Time: April 9, 2015 from 8: 30

Place: Aalto University School 30 until 16: of Business, Runeberginkatu 22-24, Helsinki, PWC-Auditorium, Chydenia

It is our pleasure to invite you to the workshop on Research Strategy and Methodology of Public Engagement, 9 April, 2015 at the Aalto University School of Business Helsinki. The workshop is being organised by the Center for Knowledge and Innovation Research (CKIR) at Aalto University and researchers from the HEGOM Research Group and the Consumer Society Research Centre at the University of Helsinki. The researchers from the University of Helsinki are currently working on the EU-funded project Public Engagement Innovations for Horizon 2020 (www.pe2020.eu/). The project initiated this collaborative context tailoring workshop. The aim of the context tailoring workshop is to contextualise and define Living Lab as a public engagement tool.

We have joined forces in order to discuss the research challenges that benefit wide public engagement in research, development and innovation (RDI) and of Living Labs as a research strategy and methodology. The challenges that may need wide experimentation for developing future solutions include (i) ageing societies; (ii) the need to renew welfare services for the wellbeing of people, (iii) climate action and (iv) the need to develop environmentally, culturally and socially sustainable industrial, urban, infrastructural and other activities, (v) structural renewal of our economic and social activities, including (vi) the structural renewal of public services. Even the RDI around (vii) energy systems, including renewable energy, and (viii) urban and rural infrastructures such as intelligent traffic may benefit of wide-scale experimentation that involves citizens and public agencies. The challenges that may benefit from wide RDI participation may also relate to (ix) security, poverty and immigration. The EU research and innovation program Horizon 2020 emphasises – besides creating new jobs and growth – the need to conduct RDI in a way that promotes smart and inclusive development in Europe that strengthens open, human-centric and participative democracy in Europe.

Our workshop will present discussion about issues around public engagement in RDI. Public engagement refers to activities where there is a distinct role for citizens or stakeholder groups in research and innovation processes. Discussion will include Living Labs as a research strategy and methodology that helps to engage citizens, developer communities, public agencies, academia and firms in RDI collaboration for better societies and economies. The goal of the workshop is to create a shared understanding about the foundational organisational, methodological, and infrastructure challenges of public engagement through Living Labs.

We argue that academia should take a stronger role in the development of research strategies and methodologies that are collaborative, engaging, participative, dialogical, communicative, large-scale, and transformative. We may even benefit from participative design methodologies and methodologies of rapid prototyping and scaling up. We may learn of development of large-scale (even big data-based) transformative research methodologies of experimentation. The workshop will include discussion

about these assumptions from the viewpoints of: (i) What does public engagement mean – through the Living Labs approach – as a research (RDI) strategy? (ii) How do we design, manage and organise for this type of research? The challenge is to organise for a collaborative ecosystem or network-based RDI leadership. (iii) How should we design RDI pilot initiatives for experimentation; are there 'generic pilot templates' to start with? (iv) Should we further develop multidisciplinary research methodologies including a set of large-scale participative experimentation? Are there enough methodological experiences in humanities and social sciences to tackle this challenge? (v) Should we learn more of multidisciplinary research that takes advantage of experimentation and learns to combine humanities and social sciences with natural sciences and the development of technology?

The workshop will present discussion on the lessons learned from Living Labs pilots.

The workshop language is to be English.

Program of April 9, 2015

8:30 Registration and coffee

9:00 Welcome, Dr. Petra Turkama, Director of Center for Knowledge and Innovation Research (CKIR), Aalto University

Opening Session

Chair Dr. Seija Kulkki, Founding Director of Center for Knowledge and Innovation Research (CKIR), Aalto University School of Business

9:10-9:30 Goals of the workshop, Prof. Emeritus Markku Mattila, Prof. Timo Aarrevaara, University of Helsinki and Adjunct Prof. Mikko Rask, Consumer Society Research Center at University of Helsinki

9:30-10:30 Regions and Cities Solving Societal Challenges; Markku Markkula, President of the EU Committee of the Regions

10:30-11:00 Creating a Process that Stimulates Engagement; Hank Kune, Director of Educore and Founding Partner of the Future Center Alliance

11:00-12:30 Pilot Panel

Chair, Dr. Mikko Rask, Consumer Society Research Center at University of Helsinki

1. Global Change Living Lab Initiative, Secretary General for Future Earth Finland, Dr. Tanja Suni and Science Secretary for Future Earth Finland, Iina Koskinen

2. JPI More Years Better Lives through a Societal Interaction Plan, senior planning officer, Mira Koivusilta and Prof. Richard Pieper, National Institute for Health and Welfare in Finland (THL)

3. BONUS Empowering Young Scientists Initiative, Communications Manager at BONUS, Maija Sirola

Commentator, Aleksi Neuvonen, Head of Research, Demos Helsinki

12:30-13:30 Lunch

13:30-15:15 Reflection panel

Chair, Dr. Petra Turkama, Director of the Center for Knowledge and Innovation Research (CKIR) at Aalto University

1. An Industry Perspective on Societal Challenges and the Development of Technology, a Reflection on Lessons from Living Labs, Prof. Erkki Ormala, Aalto University School of Business
2. Social Innovation and Reflective Learning through Living Labs, Prof. Tony Ghaye, FRSA, BPS, Director, Reflective Learning - International (RL-INT LTD)
3. Science and Governance for Solving Complex Societal Challenges PhD Timo Hämäläinen, Senior Fellow, the Finnish Innovation Fund (Sitra)
4. Crowds Renewing Value Creation, Pia Erkinheimo, Head of Crowds, Digile Ltd

Break 15:15-15:30

15:30-16:30 Panel for Summary and Conclusions

Chair, Markku Mattila, Prof. Emeritus, University of Helsinki

Potential of Public Engagement in Solving Societal Challenges, Edward Andersson, European Associate for Involve UK

Lessons from the living lab community for context tailoring better public engagement practices, Dr. Mikko Rask, Consumer Society Research Center at University of Helsinki

Prospects of public engagement in the future of Living labs activities, Prof. Seija Kulkki

Role of Public Engagement in Finnish Strategic Research, Research Director, Prof. Per Mickwitz, Strategic Research Council

16:30 Closing

APPENDIX 2. Discussion outline for the context tailoring workshop held in Turin, Italy

Meeting on the pilot project in 2020 PE in the framework of the Summer School Academy 2015

Discussion outline

In the framework the European project *Public Engagement Innovations for Horizon 2020* (PE2020), coordinated by the University of Helsinki, Laboratory of Citizenship Sciences (LSC) – a social research institute based in Rome – is carrying out a **pilot project** in collaboration with Agora Science, to be conducted in the context of the 2015 edition of the **Scientific Summer Academy** (SSA).

The aim of the pilot project is to increase the presence of **public engagement-related issues** and those pertaining to **science-society relationships** in the context of the SSA, obviously with the direct participation of the researchers involved in the SSA.

With this aim in mind, a workshop is planned involving representatives of LSC, those of Agora Science and researchers who support the activities of the SSA in order to deal with how the pilot project could be practically implemented. In preparation to this meeting, in this note we will briefly present the **motivations** at the basis of the pilot project (paragraph 1) and the **issues** that would be discussed during the meeting (paragraph 2).

1. Motivations

Over the last few years, an increasing importance has been given to involve the public, either individually or in organized forms, with scientific and technological research (S&T), thus favouring a shift from the mere **communication of science** to a proactive **engagement of the public** in science and technology.

Summing up somewhat, the reasons usually put at the basis of this move are essentially three.

- The first reason concerns the **social attitude towards S&T**. In fact, science communication did not prove to be effective enough to overcome the widespread distrust or the widespread lack of interest people show towards science and the destiny of scientific research. Involving as far as possible individuals and civil society organizations in the research process and in the management of its results is now considered a necessary step to take for changing such a social attitude.

- The second reason concerns the **productivity of S&T**. Especially at European level, the importance of raising the productivity of research in terms of innovation and social impacts has been often highlighted. Public engagement is seen as one of the main tool to socially "contextualize"
- [6] scientific research, involving the social actors who are involved the most in the different steps of the research process in order to get the most out of it.

- The third reason concerns the so-called **scientific citizenship**. In essence, there is a tendency today to affirm that scientific and technological research has become too important to be handled only

by researchers. Indeed, science and technology offer opportunities for individual and collective growth unimaginable in the past. They, however, can produce risks of various nature, also very serious, which must therefore be identified and managed. Hence the importance of involving citizens in S&T, in a framework of a dynamic democracy able to drive the fundamental decision making processes about, for example, investments on research, use of scientific discoveries and their technological applications or ethical and social implications of S&T.

Switching from scientific communication to public engagement, however, requires that the public is provided with knowledge and information, **not only on science and technology**, but also on the social institution that produces science and technology, which can be referred here as the **scientific and technological research**. In fact, public opinion, but also many sectors of European leaders, know little or nothing on how research is done, what problems it encounters and to which risks it is exposed.

It should also be recalled, in this regard, that the European Union, through the framework program Horizon 2020, is precisely moving in the direction of a strong opening of European research systems to society, proposing a strategy aimed at developing a "**Responsible research and innovation**" (RRI) able to reduce the gap between science and society.

These elements form the background to the pilot project.

The key issue dealt with by the pilot is **whether** and **how to convey** to high school students information and knowledge, not only on **science and technology**, but also on **scientific and technological research**, especially in its relations with society.

The **Scientific Summer Academy is a particularly favourable environment** to address these issues, in part because it is based on the involvement of students in an "immersive" and proactive confrontation with science and, in part, because the previous editions already dealt with these aspects. Obviously, the intent is to improve this learning experience, but not to change or, worse, distort it.

2. Issues of the workshop

The goal of the workshop is **to bring out proposals** to enrich as much as possible the experience of students participating in the SSA, so as to give them knowledge and information on **the scientific and technological research** and also, if possible, **to make them live an experience of public engagement**.

With this in mind, during the workshop you should discuss how to include some of the issues affecting the relations between science and society and public engagement, such as those listed below, obviously in reference to your specific research field.

- **Innovations**. What innovations have been or are being produced in your research field; what are the expected innovations for the future; what are the main key questions in terms, for example, problems to be addressed and solved or social consequences and economic expectations; why should be important for the society to invest in your research field.

- **How research works**. Who is funding the research programmes; how the access to research funds is managed and what problems the researchers usually meet in this regard; how the research groups and research laboratories work; how scientific careers are organised; how the system of publications works in the research field; which problems are faced by women in scientific careers; what is the life of a researcher; which factors may limit or jeopardize research in your research area.

- **Controversial issues**. What risks, ethical issues, themes or social conflicts have emerged or could emerge in the future in relation to the research conducted in your research field; how and where these issues are discussed or addressed; what problems or limitations this produces on your research activity.

- **Social and economic actors**. Who are the social and economic partners, the most active and the most involved players in your research field; how should you interact with these actors and what problems and limits you meet; how this interaction could be strengthened; why and at what stage of the research process this interaction can be done; what are the main public engagement experiences, if any, carried out in your research field; on what issues the public should be called to take a stand, to decide or to participate.

During the meeting, therefore, you are asked to discuss whether, to what extent and how to include these (or other issues) as part of the activities of the SSA and, in particular:

- In the **conferences** made during the mornings;
- in **laboratory activities** conducted in the afternoon;
- through the **development of the posters** by students;
- in the **final poster session**;
- in the context of the **assessment** of the activities of the SSA by students;
- in other **phases** of the SSA.

The results of the discussion will then be summarized in a **set of recommendations** that will be sent to all the researchers involved in the SSA.

Endnotes

[1] This was the number of societal challenges during the time of the design of this project; a seventh challenge was introduced later.
[2] MASIS Report, 2009. Retrieved from https://ec.europa.eu/research/science-society/document_library/pdf_06/the-masis-report_en.pdf
[3] We acknowledge that our conclusions are not based on systematic research but rather on critical reflection of the lessons learned from an on-going pilot activity.
[4] The workshop was designed and implemented with Dr. Seija Kulkki and Dr. Petra Turkama, partners from the Aalto University Centre for Knowledge and Innovation (CKIR).
[5] The first five points reflect the discussions in the Finnish workshop, while the remaining four points were raised during the Italian workshop.
[6] The concept of contextualisation refers to the need of leading (also through a dialogue with external players) the research process towards given application contexts and therefore towards social and economic objectives which are as far as possible shared by society or felt by people as important for them.