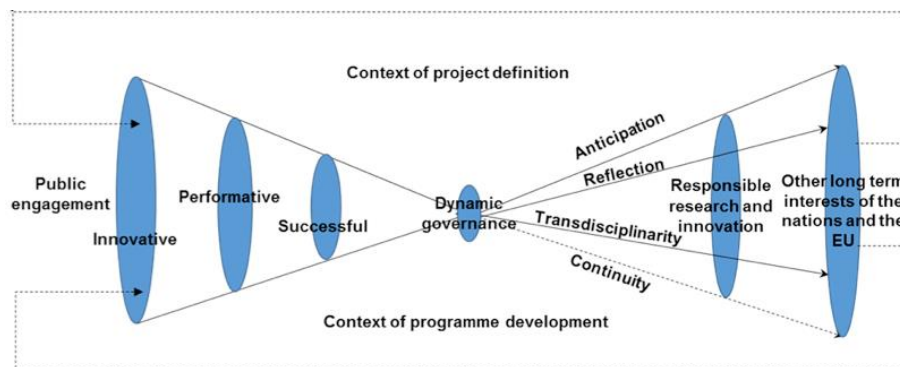## PE2020

Public Engagement Innovations
for Horizon 2020

Summary report on conceptual model of public engagement and factors of participatory performance D2.3

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The PE2020 Project

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The PE2020 project

PE2020 will identify, analyse and refine innovative public engagement (PE) tools and instruments for dynamic governance in the field of Science in Society (SiS). PE2020 analyses the PE tools and instruments through a systemic and contextual perspective, and contributes to the potential and transferability of new governance innovations. PE2020 will create new knowledge of the status quo and trends in the field of public engagement in science, refine innovative PE tools and instruments and propose new ones.

The project will do this by (1) further developing a conceptual model that provides a systemic perspective of the dynamics of public and stakeholder engagement; (2) creating an updated inventory of current and prospective European PE innovations; (3) context-tailoring and piloting best practice PE processes related to the grand challenges of the Horizon 2020 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. 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 better societal engagement by providing an easy access to new PE tools and instruments, to be included in the requirements and implementation of research in Horizon 2020 and beyond.

Acknowledgements

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Contents

1   Introduction

This report summarises the main results of WP2 of the PE2020 project. The general aim of WP2, as stated in the PE2020 proposal, is to refine the conceptual model that will 1) inform and possibly reorient data collection (WP1), 2) provide conceptual categories that are relevant in identifying contextual factors related to the tailoring of best PE practices (WP3), and 3) help to draw generalizable lessons of PE case studies to be used in the development of the PE design toolkit (WP4).

The summary is based on Deliverable 2.1 "A Refined Typology of PE Tools and Instruments" and Deliverable 2.2 "Innovative Public Engagement. A Conceptual Model of Public Engagement in Dynamic and Responsible Governance of Research and Innovation".

Deliverable 2.1 (D2.1) had the following three objectives:
- First, to contribute to a better understanding of 'innovativeness' of PE. Innovative PE practices are at the focus of PE2020 project, and novel participatory approaches can potentially help to develop better governance practices. To support empirical analysis of new PE tools and instruments, we therefore reviewed literature to analyse what constitutes innovativeness in this field. Criteria of innovativeness contributed both to the selection of the most promising PE process for further analysis and to the understanding of what are truly novel PE approaches that may have additional value for science governance.
- Second, to validate the pre-categorization used in the classification of PE practices. WP1 task 1.1 identified hundreds of PE practices in Europe and beyond that were included in a structured inventory. To substantiate the pre-categories used in the classification of the PE practices, we described and critically reflected the conceptual classification and multi-actor coding procedure used in that task.
- Third, to contribute toward a deeper analysis of the 50 most promising and innovative PE practices. To support the analysis of such practices, we reviewed literature to find relevant categories that could enrich the analysis and link it to previous research.

Deliverable 2.2 (D2.2) aimed at elaborating a conceptual framework of PE, where innovativeness, participatory performance and dynamic governance remain the key concerns. This deliverable focused on the following research questions:
- What are the characteristics of innovative PE in a sample of 38 innovative PE processes?
- What are the different participatory performance functions of PE in the sample?
- How can we define and characterise the success of PE?
- What are the obstacles for successful PE?

By answering these questions, Deliverable 2.2 contributed to a 'composite model of participatory performance' that helps understanding how public engagement can contribute to more dynamic and responsible governance of research and innovation. We also crafted a synthetic evaluation framework that can be useful in evaluating the additional value of public engagement both for research governance and civic capacity building also known as 'scientific citizenship'.

In this summary report we review the main findings and point to some emerging issues and approaches that were developed during the research process.

2 New methodological issues and approaches

A central task of WP2 was to validate the pre-categorisation used in the classification of PE practices in Deliverable 1.2, "Public Engagement Innovations – Catalogue of PE initiatives". Resulting from the collaboration of WP1 and WP2, we built a new categorisation of PE methods in five main methodological clusters: public communication, public consultation, public deliberation, public participation and public activism (Figure 1). The categorisation is based on a fusion of two classic models, Arnstein's (1969) 'ladder of participation', which pays attention to the levels that political power assigned to the participants, and Rowe and Frewer's (2005) model, which pays attention to the directions of information flows between sponsors and participants. Both formal (e.g. organised deliberation process) and non-formal (e.g. public activism) PE processes can be included in these categories.

Figure 1 *PE cases by main methodological category*

We found this categorisation to be useful in acknowledging different supportive and functional roles of PE processes in contributing to R&I activities (Figure 1). At the same time, however, we found these five categories to 'leak' in two ways. First, per definition, public communication and public consultation are 'one-way' approaches, while at the same time we found most of the innovative PE processes to be essentially 'two-way' processes. Second, many individual cases were difficult to allocate under one category only. For example, a highly exploratory PE case 'Breaking and Entering' was classified under 'public communication', even though we recognised that this endeavour tried to go beyond the limits of traditional science communication. The implication is, therefore, that in future mapping of PE processes there clearly is room for further conceptual elaboration.

Another central task of WP2 was to analyse a sample of 38 PE cases for the purpose of studying the characteristics and trends of innovative PE and build a conceptual model of PE contributing to dynamic and responsible governance of research and innovation. In this context a new methodological approach was developed for 'footprinting' the inputs and outputs of PE. The footprinting resulted in 'cognitive maps' that describe the most essential features of each PE case. An example is provided in Figure 2.
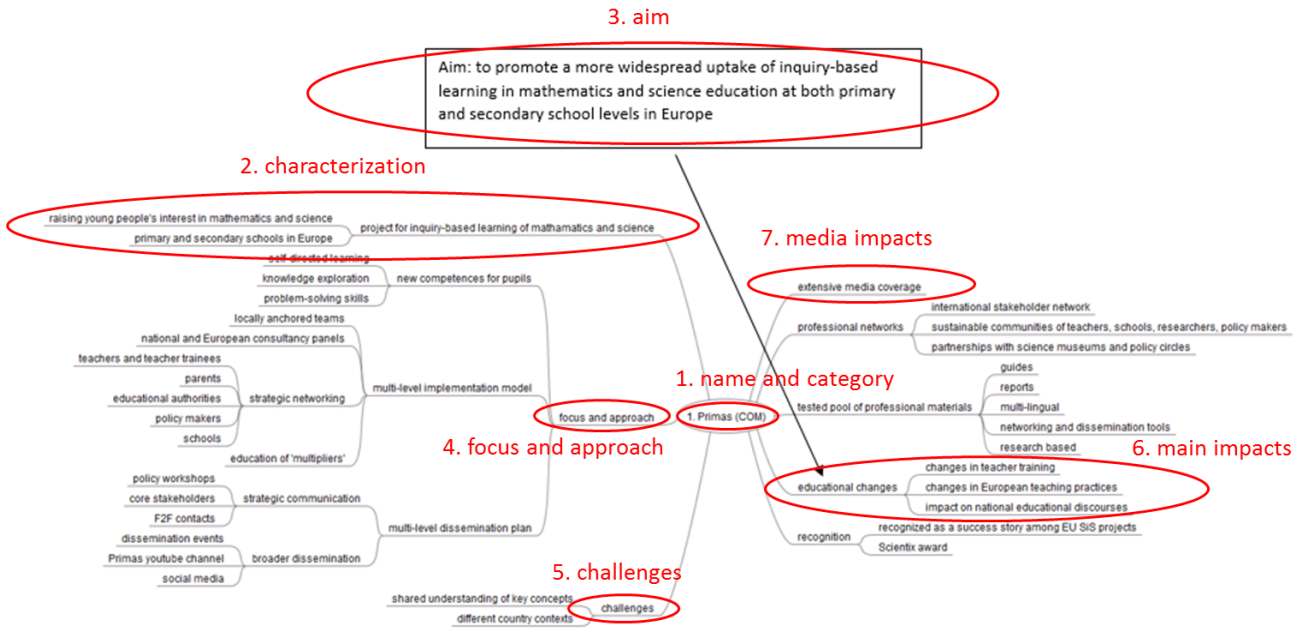
Figure 2 *An exemplary cognitive map*

As PE processes are often heterogeneous processes and therefore difficult to capture and compare, we found the footprinting method to be a useful approach combining both bottom-up and top-down approaches in the analysis. In order to validate the findings, we conducted a parallel statistical analysis of the same cases. Overall, we recommend the footprinting approach to be used in occasions, where there is a need for comparing and analysing highly diffuse processes such as PE activities.

Finally, theorising can be based on different materials, such as conceptual analysis, literature review, statistical generalisations or pure logics. As our purpose was to explore the nature of innovative PE, we found the empirical sample of 38 innovative PE processes to be a highly inspiring basis for drawing more general lessons about the tendencies of innovative PE in Europe and beyond. 'The composite model of participatory performance' resulted mainly from the analysis of different capacities and functions reported in the studied cases; the findings were partly organised around an existing model of 'dynamic governance'. As theory building and innovation activities often are, they are composed of familiar elements that are put in new contexts, such as 'continuity' that emerged as a new capacity of PE that could be needed more and more also in the context of EU's RRI policy.

3 Presentation of main findings

The following section delineates the main findings from deliverables D2.1 "Refined Typology of PE Tools and Instruments" and D2.2 "Innovative Public Engagement. A Conceptual Model of Public Engagement in Dynamic and Responsible Governance of Research and Innovation".

3.1   Reflection on the categories of PE

As we already mentioned, there is a need for further elaboration of the five methodological categories – public communication, consultation, deliberation, participation and activism – that were used in the analysis of PE processes. In D2.1 we did some observation from the reviewed literature that may help going further with such elaboration. Even though we did not end up with a fully new categorisation in D2.1, we would like to pay attention to the following observations that we did about the five categories.

Most literature suggested that **public communication** or spread of information is not effective anymore, but remains an important basis for PE activities (Marks, 2013). Further, we suggested that it is important pay attention to the different ways in which information is shared, including the following channels:

- *Online communication* refers to reading, writing and communication via computers, for example, e-newsletter, blogs, emails, Skype.
- *Social networking* refers to a structure or platform made up of a set of individuals or organisations, for example, Facebook, Twitter, charity organisations.
- *Engagement transfers* refer to technologies or other mechanisms which enables public to become engaged and involved, for example, Apps.
- *Non-ICT-based communication* refers to non-computer based communication (events, traditional media-based communication, etc.).
- *Science education* refers to delivery of PE activities in two-way-flow of information and it relates specifically to higher education institutions, focuses on issues like productive learning and quality. It is tied to formal educational system. First, engaging students in science learning and improving their ability to communicate science to wider audience, and, second, supporting and encouraging researchers to participate in such kind of engagement, for example, science communication subject in a study course.

Most of literature described **public consultation** as a process that elicits 'raw' opinions from the public. A general limitation of public consultation is the lack of political impact. A critical distinction is whether public consultation is *targeted or non-targeted* in regard to specific societal groups, which is often related to the topic of the consultation.

Considering **public deliberation** as one approach can also be questioned on the basis that there can be different sub-types of public deliberation. We found following instances of public deliberation that might be used in a more nuanced classification of PE processes (Embedding Impact Analysis in Research, 2013):

- *Deliberative research* is built on market research mechanisms, for example, citizens' surveys.
- *Deliberative dialogue* is built on communication mechanisms, enabling experts and non-experts to work together, for example, citizens' agenda.
- *Deliberative decision making* is built on partnership mechanisms, enabling public and decision-makers to decide jointly on programme priorities; for example, EC green papers.

Public participation was defined among the strongest ways of public engagement, where the aim is to assign partly or full decision-making power to citizens. We found the following examples of potentially relevant categories of public participation:

- *Multiple-engagement* refers to PE at different times with varying degrees and forms of participation to achieve desired goals, i.e. different segments of population will respond differently to different strategies. In some cases, it might mean Facebook, in other cases, face-to-face communication.

- *Multiple-partnership* is built on partnership with various organisations or states in order to enable them to develop skills for engaging with each other which enables them to work effectively for the same goal, for example partnership between university and museum, cooperation between two or more countries.
- *Multiple-funding* refers to a variety of funding, i.e. co-funding, for example, a programme financed by national foundation and EU programme.

Public activism, can be characterised as a category, where self-determination for PE is emotionally interlinked to individual values and emotions provoking a sense of urgency. For this reason, *public sensitiveness* is an important aspect of public activism.

Overall, public engagement has become an important theme in the development of research and innovation activities in Europe and beyond. Reflecting the interactive and dynamic nature of PE, we can even claim that *PE is the heart and spirit of responsible research and innovation:* it opens practices of research and policy to the public and stakeholders; it involves ethical principles that highlight responsibility, (gender) equality, democracy, as well as effectiveness and efficiency of public decision making; it explores new ways of informing the public about prospects and risks of technoscience, and it mobilises citizens' capacities to address related societal challenges. We would like to emphasise that there has been a shift of PE from traditional models of public communication and consultation, where dialogue between decision makers and the public is narrow and restricted, to public deliberation where such dialogue is intensive and influential and that PE is the major element for successful implementation of responsible research and innovation policy.

3.2 Understanding dynamic governance

Understanding **dynamic governance** and how PE can contribute to it was among the main objectives of WP2. Dynamic governance refers to the ability of policy making to handle issues in a rapidly changing environment requiring continuous adjustment of policies and programmes. In this framework, dynamic governance involves dynamic interactions between scholars, citizens, industry and government as an exploratory, inductive approach in setting performance standards for responsible research and innovation. Following Neo and Chen (2007), we include **anticipation, reflexivity** and **transdisciplinary mobilisation of resources** among the key capacities that help policy makers to manage complex issues dynamically in modern research and innovation policy systems. We also included **continuation** as an additional key capacity for dynamic governance. Continuity is needed to balance accelerated change caused by increasingly dynamic governance actions.

In D2.2 we have tracked activities that contributed to the **four capacities of dynamic governance:[1] anticipation, reflection, transdisciplinarity and continuity.** We also tracked other activities and capacities, and analysed whether they were substantively, practically or normatively oriented. Table 1 summarises this analysis and gives an extensive list of example of how in practice innovative PE can contribute to such capacities that can contribute to more **dynamic and responsible governance of research and innovation**.

Table 1 *Participatory performance functions of innovative PE (blue colour indicates the most densely populated cells)*

	Anticipation	reflection	Transdisciplinarity	continuity	awareness raising	competence building	action initiation
Substantive	exploring impacts of societal change	identifying sustainable consumption choices	conducting transdisciplinary research projects		understanding public opinion	educating democracy	piloting
practical	co-designing new products and services	publicly debating R&I issues	designing trans-disciplinarily educational programmes	expanding PE processes internationally	increasing public awareness of science	developing new competences for students	mobilising citizens to clean their living environments
		increasing visibility of science in media	mobilising societal and financial resources	creating enduring professional networks	increasing public awareness of environmental problems	developing new competences for researchers	introducing new 'science municipal' activities
		articulating public concerns on S&T	testing new models of public-private partnerships		increasing awareness of gender issues in science	developing civic capacities	building consensus and managing conflicts (
		developing new methods for public reflection				expanding possibilities for science education in municipalities empowering youth	
normative	developing future visions and plans	publicly debating regulatory issues	aligning research activities with stakeholders	institutionalising deliberative democracy			improving visibility and perception of women in science
	identifying future research needs	developing government accountability		establishing the use of PE processes in R&I governance			embedding citizens' values in local systems of innovation
	upstream engagement						revitalising democracy
							influencing political processes

3.3   Policy cycle

Using the concept of policy cycle as an organising devise was among the hypotheses of the PE2020 project on how to plan and reflect the relevance of PE activities at different stages of research and innovation activity. Below we make some observations about one particular way of understanding how a modern policy cycle may look like (in WP4 we will apply the concept of policy cycle more practically).

A tradition view of policy cycle is based on the notion that changes in research policy are usually a response to a societal problem or set of problems in different sectors: energy, security, economy, culture, etc. starting with a monitoring and appreciation of these sectors and their contexts. An expectation is that topical societal issues of different political areas are likely to affect the agenda setting and decision making and even implementation processes of research policy.

However, we observed that the process of policy making is more complicated than presumed by the traditional view of policy cycle. The substance, pace and scope of the policy cycle is no longer dependant only

on the leaders of the organisations or from dynamics fully internal to the organisation. Instead, policy making implies networking among different stakeholders. In particular, while **introducing participatory mechanisms into the policy cycle further involves and sustains dynamism in governance activities**. Therefore, a more realistic representation of a policy cycle under the condition of dynamic governance is that of a **chaotic and confusing network** (Figure 3).

Figure 3. Engagement Networks in Policy Cycle (Angeli D, 2014; Welcome Trust)

Observations:

- *Dynamic governance* is not about an event, but sooner about *a continuous process*, where constantly changing situations occur and where different modes of governance may co-exist and interact.
- Policy making is *detemined by decision makers and stakeholders* and the policy *cycle is chaotic and confusing networking*.
- Policy making is strongly *dependent upon the subjective views of the actors*, i.e., how they interpret policy making and how they actually behave in participating in it.
- *PE often tends to increase rather than reduce conflicts and uncertainties* and to make governance dynamics more unpredictable and difficult to properly manage.

3.4   Determining successful and innovative public engagement

An important task of WP2 was to understand the characteristics of successful PE, and propose how success could be evaluated. This process resulted in several evaluation criteria (Table 2) as well as a general definition of successful PE: *Successful PE involves relevant people with appropriate methods and goals, while leaving a big 'footprint' on research, innovation and society.*

Table 2 *A synthetic model of PE evaluation*

Appropriateness

A Appropriate goals

- goals contributing to dynamic and responsible governance of RRI (anticipation, reflection, transdisciplinarity etc.)
- coverage of other relevant goals
- additionality

E Ethical quality

- deliberatively high quality
- democratically legitimate
- open (involves co-design practices)
- scientifically informed
- transparent

KEY COMPONENTS:
Right goals
Right principles

Efficiency of implementation

R Representativeness

- balanced in composition (no particular interests dominate)
- gender balanced
- widely representative of societal perspectives

O Organizational competence

- skills and resources for designing and implementing PE

M Methodological quality

- functional
- interactive
- motivating and rewarding
- practical
- robust (applies knowledge based practices)
- timely

Right people
Right organizations
Right methods

Impact and effectiveness

I Institutional impacts

- cross-pollinating
- embedded
- transformative

P Political relevance

- efficacy increasing
- empowering
- politically influential (e.g. improves policies, increases effectiveness of decision making)
- responsive

Big institutional footprint
Big political footprint

P Practical impacts

- awareness increasing
- capacities developing
- mutually beneficial
- publicity increasing
- resources mobilizing
- satisfactory
- social acceptability increasing
- spin-offs creating
- sustainability increasing
- useful

S Substantial impacts

- conceptually creative
- educative
- ideas generating
- informative

Big practical footprint
Big substantial footprint

Considering that both the definition and the synthetic model of PE evaluation are both based on a systematic study and reflection of different success criteria, they can provide a solid base for any evaluation process focusing on PE.

3.5   Innovativeness

Innovativeness also has been among the key concerns of the PE2020 project. We were interested in studying innovative PE practices, since there is a high potential in them in solving some of the stubborn problems of R&I governance, including societal acceptance of technological solutions, limited democracy of R&I decision making, ineffective mobilisation of resources, limited awareness of technoscientific development and, at worse, irresponsible use of public resources. Innovative PE can be defined as new participatory tools and methods that have the potential to contribute to a more dynamic and responsible governance of R&I.

Innovativeness must be elaborated in relation with the time and context. We distinguished two types of drivers for the changing practice of PE:
- Necessity to find more effective responses to the societal challenges and other problems of governance, such as decreased trust toward decision makers or societal acceptance of technological solutions.
- Emerging opportunities provided by new information and communication technologies that provide new tools for the practice of governance, for example, crowd-sourcing for the formulation of public policies, or citizen science for providing evidence of new phenomena and research issues that are important for the public at large or some local groups of citizens.

According to these highlights, innovativeness of PE refers to the following key points:
- Innovativeness is, in general, a concept receptive of multiple interpretations and therefore difficult to manage.
- Innovativeness of PE should be viewed as a context-sensitive concept that is related to the institutional, organisational and cultural contexts where PE activities are carried out.
- Innovativeness in PE practices can be appreciated only in historical or evolutionary terms, i.e. observing how they change over the time in line with changing contextual conditions.
- There is also a perceptual component of what is innovative and what is not to be taken into account.
- At least two main drivers of innovation can be identified: societal challenges and technological changes.

We found out innovative areas of PE such as 1) institutional hybridity; 2) methodological solutions; 3) levels of representation; 4) impact; 5) responsiveness to societal challenges; 6) groups' involvement; 7) cultural dimension; 8) policy relevance; and 9) communication flows. In addition, we evidenced that 'upstream engagement' (e.g., Joly and Kaufmann, 2008) is an increasingly supported approach among innovative PE processes. Further, we observed that innovative PE has contributed to new capacities that help research actors to address societal challenges and complex governance problems better. In particular, we found innovative PE to be effective in conducting international science diplomacy, creating collaborative efforts and enduring networks that can foster and spread new SiS practices in EU partner countries and beyond**.** Finally, we found that Innovative PE seems to have truly versatile impacts, not only on research and innovation but

also on the environment, society, politics – and individuals. Innovative PE only limitedly contributed to new scientific knowledge.

3.6 Creating a model of participatory performance

Under WP2, we focused on the distinctive abilities of a government underlying the core capacities of dynamic governance. The proposed conceptual models were built on relevant literature and the results of the analysis of 38 innovative cases. 'Participatory performance' was the starting point of the PE2020 project, as was discussed in the introductory section. Participatory performance refers to the functions of PE, and to the scope and intensity of such activities. The domain of PE, however, is broad and complex, for which reason we required a conceptual framework. In WP2 we elaborated two conceptual models, where innovativeness, participatory performance and dynamic governance remain the key concerns. First, we created an analytical model that focused the analysis of the 38 innovative PE cases (Figure 4).
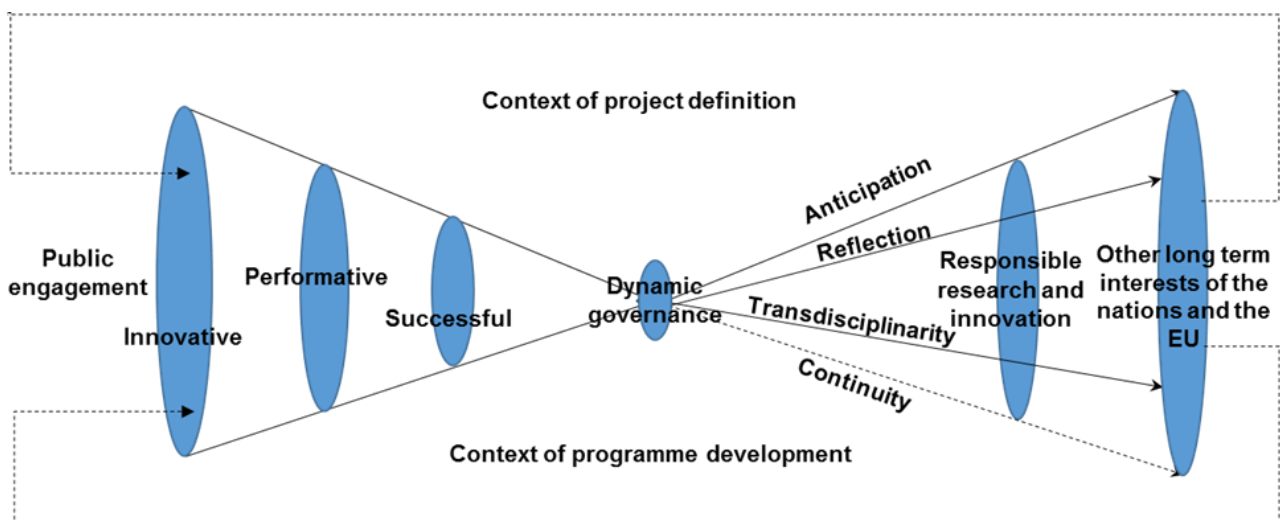

Figure 4 *Analytical framework*

Second, synthetising the main findings of the analysis, we created a 'composite model of participatory performance' (Figure 5) that put PE in the perspective of dynamic and responsible governance of research and innovation. We analysed participatory performance by tracking such activities that contributed to the capacities of dynamic governance, including anticipation, reflection, transdisciplinarity and continuity. The 'composite model of participatory performance' explains how functions and capacities of PE contribute to dynamic and responsible governance of R&I and integrates the various elements and aspects discussed: capacities, linkages between capacities, able people, agile processes and dynamic and responsible R&I policy, as well as policy culture (including not only the EU's strategic priorities related to openness, but also the five thematic pillars underlying the EU's RRI policy – PE, open access, gender, ethics, science education). Underlying this model is Neo and Chen's (2007) framework of dynamic governance that has guided our research since the beginning of the PE2020-project.
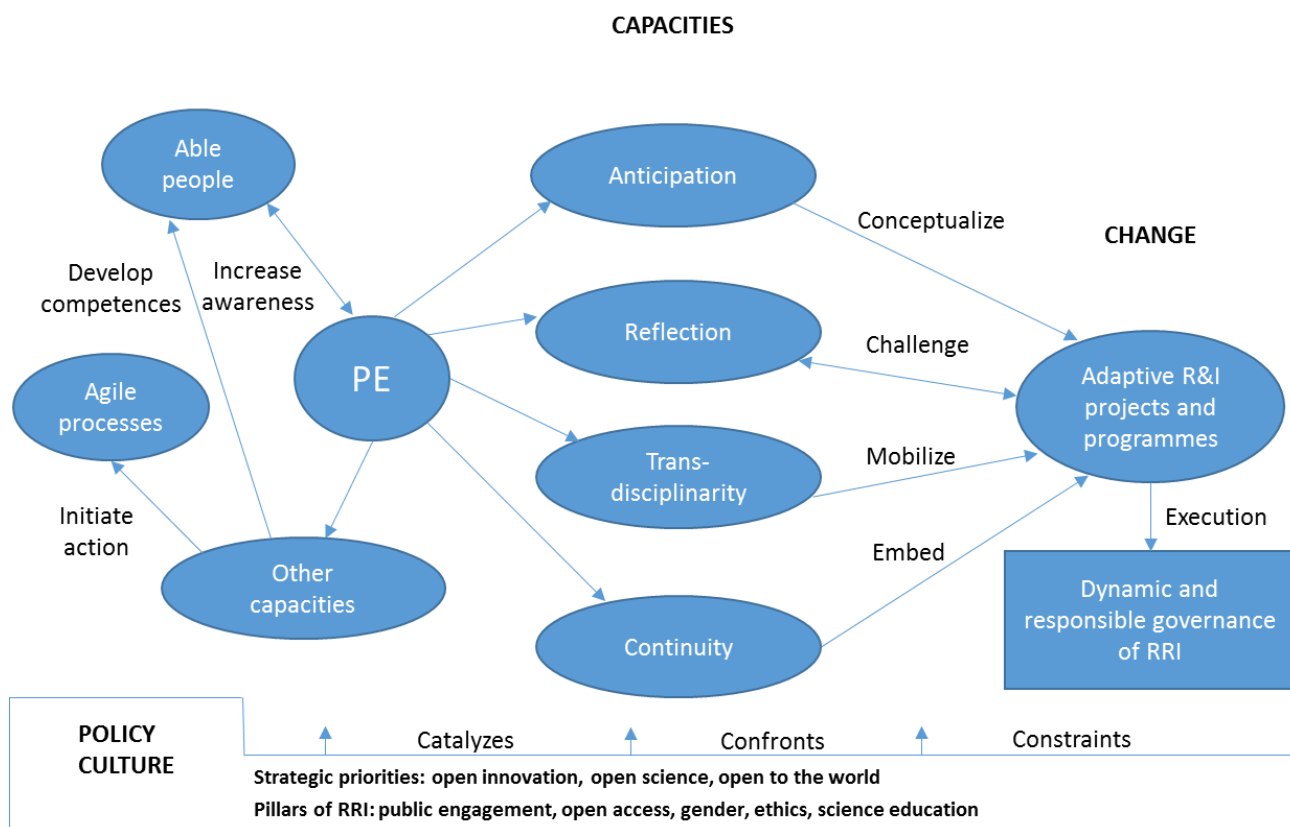
Figure 5 *A composite model of participatory performance*

Considering that the 'Composite model of participatory performance' is based on a systematic analysis of most innovative PE processes globally, this conceptualisation can be used as a topical perspective on how PE can contribute to better governance of R&I in Europe and beyond.

4   Further research and implications

We concluded D2.2 with a discussion by building a 'vision of PE benefitting European R&I activities'. The content of the vision is that **better involvement of actors occurs when the 'right people' are gathered together to address the 'right issues' through the 'right PE tools and methods', which can contribute to a better quality of research and R&I governance**. While there is much support, interest and fresh thinking on how to use PE to develop a more flourishing culture of European R&I activity, we also found several obstacles that make PE currently too weak to redeem its promises of increased societal relevance and high impact of R&I.

We concluded D2.2 by proposing a new research agenda for PE research. Additional research can help understanding some of the perplexities, e.g. why innovative PE in Europe is oriented at policy impacts, while parallel processes in the U.S. are oriented at civic capacity building? Additional research can help to go further in advancing new governance capacities that are needed to better address remaining challenges of responsible research and innovation.

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Note

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[1] Following Neo and Chen (2007), we have adopted a broad definition of these concepts. Anticipation refers to foresight type of activities oriented at anticipating future development; reflection refers to public scrutiny of academic findings or regulatory processes; transdisciplinarity refers to research and planning processes that purposely involve not only researchers from different disciplines but also actors beyond academia; continuity refers to activities that aim at embedding new activities in existing institutions or otherwise building bridges between separate interventions. We have given more specific definitions in later sub-sections. The most remarkable difference to Neo and Chen's (2007) list of key capabilities of dynamic governance is that we replaced their notion of the 'capability to think across' with the notion of 'transdisciplinarity'.