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Blended Stakeholder Participation for Responsible Information Systems Research

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Abstract:

Researchers often conduct information systems (IS) research under the assumption that technology use leads to positive outcomes for different stakeholders. However, many IS studies demonstrate limited evidence of having engaged with the stakeholders that they claim benefit and speak on behalf of. Therefore, we can unsurprisingly find many examples in which technology use failed to make the world a better place or, worse still, contributed towards unintended negative outcomes. Given these concerns, calls have recently emerged for responsible research and innovation (RRI) studies in IS to understand how different stakeholder groups can have a voice in complex socio-technical issues. In this paper, we take steps towards addressing this call by presenting case study findings from a responsible IS research project that combined “blended” face-to-face and online participatory techniques. The case study relates to a large-scale consultation in a 24-month European project that involved 30 countries. The project engaged over 1,500 stakeholders in co-creating future research agendas for the European Union. We discuss case study findings using Stilgoe, Owen, and Macnaghten’s (2013) framework and reflect on lessons learned for responsible IS research going forward.

Keywords: Citizen Participation, Stakeholder Engagement, Co-creation, Delphi Study, Foresight, Scenario Planning, IT Ethics, Responsible Research and Innovation, Unintended Consequences.

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1 Introduction

> "It takes two of us to discover the truth: one to utter it and one to understand it."
>
> —Kahlil Gibran

Technology use has the potential to contribute towards positive economic, social, personal, and environmental outcomes for different stakeholder groups (see Davison, Hardin, Majchrzak, & Ravishankar, 2019; Turel, Serenko, & Bontis, 2011; Walsham, 2012). Previous studies have shown how technology use can open up new communication channels and give a "voice" to marginalized social groups (Ortiz et al., 2019), improve healthcare quality (Damberg et al., 2009), and drive process innovation (Bilgeri, Gebauer, Fleisch, & Wortmann, 2019). However, for each success story, contrasting cases in which technology use has also led to negative outcomes exist, such as smartphone addiction (Busch & McCarthy, 2018), increased social control through monitoring employee data (Howcroft & Trauth, 2005), and reduced citizen privacy through surveillance capitalism (Zuboff, 2015). These latter examples call into question the assumption that technology use always benefits society and illuminate IT outcomes that can instead negatively impact different stakeholders' quality of life.

In order to understand both the positive and negative consequences that arise from technology use, the literature asserts the need for IS researchers to engage in dialogue with diverse stakeholder groups early in the system-development process to explore technology use's direct and indirect effects (Markus & Mentzer, 2014; Poser, Küstermann, & Bittner, 2019). For instance, Markus and Mentzer (2014) noted that, while IT professionals rarely intend negative consequences, IS researchers can predict them using analysis techniques before system building begins. To do so, they require targeted methods that allow them to constructively engage with stakeholders and gather first-hand insights into how technology might impact their daily lives. However, to date, IS researchers have largely demonstrated limited evidence that they have engaged with the stakeholders that they claim to benefit and speak on behalf of in their studies (see Peticca-Harris, deGama, & Ravishankar, 2019). Considering these concerns, IS scholars have recently called for new approaches that enable different stakeholder groups to express their opinion on complex socio-technical issues (Davison et al., 2019). Such approaches can potentially help IS researchers maximize technology use's positive consequences while adhering to ethical principles that minimize its potential negative consequences (Markus & Mentzer, 2014; Someh, Davern, Breidback & Shanks, 2019; Walsham, 2012).

Researchers in the policymaking domain have well established stakeholder-participation approaches as a means to engage different groups in decision-making processes (Cornwall & Coelho, 2007). For instance, approaches such as foresight processes, scenario planning, and Delphi studies offer a means to engage different stakeholders in decision making to gather their diverse views on a topic (see Fouché & Light, 2011; Skinner, Nelson, Chin, & Land, 2015). In addition, the more recent "blended" participation approaches provide new opportunities for citizens to participate in policymaking through a mix of face-to-face and online techniques (see Poser et al., 2019; Sæbø, Rose, & Flak, 2008). These complementary techniques can broaden the extent to which the consultation process represents diverse stakeholder groups at different stages using a mix of co-located workshops and information and communication technology (ICT)-enabled consultations (Sæbø et al., 2008).

However, our understanding of responsible research and innovation (RRI) in the IS discipline remains nascent (Davison et al., 2019). In particular, we need further research on how researchers can use stakeholder-participation approaches to explore the socio-technical issues that the IS discipline is synonymous with. Based on this gap in both IS literature and practice, we address the following research question (RQ):

RQ: How can researchers use stakeholder-participation approaches to support RRI in IS research?

We provide empirical insights into this research question by presenting findings from a case study on a 24-month responsible IS research project that involved partners from 30 countries across Europe, engaged diverse stakeholder groups, and combined "blended" face-to-face and online participatory approaches to engage citizens, practitioners, and policymakers during the project.

In this paper, we make three primary contributions that both academics and practitioners will find interest in. First, we present insights into how researchers can conduct responsible IS research using face-to-face and online stakeholder-participation techniques in a large-scale consultation process. We outline the steps included in this approach and the strengths and weaknesses that participants perceive it to have. Second, we discuss lessons learned based on criteria from RRI, a study domain that focuses on research ethics and technology development. We use constructs that we took from the literature (particularly constructs that Stilgoe, Owen, and Macnaghten (2013) developed) to guide our discussion. These criteria can inform responsible IS research efforts in the future. Third, we recommend future research directions for responsible IS research, such as studies on user engagement in online consultations, incentives for stakeholder engagement, and work that develops an evaluation framework for guiding responsible research and innovation in IS going forward. Academics and practitioners in the IS discipline who hope to undertake similar blended consultation approaches should find interest in such efforts.

This paper proceeds as follows: In Section 2, we review the literature on responsible research and innovation and stakeholder-participation approaches (foresight processes, scenario planning, and Delphi studies). In Section 3, we introduce the combined "blended" face-to-face and online participatory techniques that the case study adopted to examine responsible IS research. In Section 4, we present findings from the case study. In Section 5, we discuss these findings as relevant to academic and policymaking communities. Finally, in Section 6, we conclude the paper.

2 Background

2.1 Responsible Research & Innovation (RRI)

The responsible research and innovation (RRI) study domain focuses on research and technology-development ethics (Stahl, Eden, Jirotka & Coeckelbergh, 2014). RRI focuses on preventing harm that research and innovation activities can cause by bridging any perceived knowledge gaps between stakeholders. To do so, one needs to comprehensively understand knowledge gaps from when one begins a research project up to the point at when individuals or organizations use its outputs (Peter, van der Veen, Doranova & Miedzinski, 2013; Stahl et al., 2014). von Schomberg (2013, p. 19) defines responsible research and innovation as "a transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable product".

The RRI discourse revolves around three features:

1) Science for society and its impacts on society: RRI proposes ethical, inclusive, democratic, and equitable innovative science. It focuses on opening up and realizing new areas of public value for science and innovation (Wilsdon, Wynne, & Stilgoe, 2005).
2) Science with society and its responsiveness to society: RRI seeks to integrate and incorporate mechanisms such as anticipation, reflection, and inclusive deliberation among relevant stakeholders into the innovation process (Owen, Macnaghten, & Stilgoe, 2012).
3) Reframing responsible research: RRI focuses on scrutinizing potential impacts and risks associated with emerging technologies in order to ensure accountability (Stahl, 2012). In responding to grand challenges, RRI also focuses on maintaining communication with policymakers at both national and international levels (Owen et al., 2012).

RRI requires social actors to work together to improve the relationship between research and innovation processes and to deliver outcomes that meet societal needs (Geoghegan-Quinn, 2014). A research process that involves various stakeholders (e.g., citizens, practitioners, and policymakers) means they have collective responsibility for producing ethically acceptable outcomes (von Schomberg, 2012). For instance, social and sustainable innovation can address societal challenges such as technology's environmental, ethical, and economic impacts (Bryant, Land, & King, 2009; Lubberink, Blok, van Ophem, & Omta, 2017; Stahl, 2012; Stahl et al., 2014).

RRI and the related area of technology assessment have closely aligned motivations, such as citizen engagement, interdisciplinary collaborations, socio-technical imagery, and the consideration of emerging technologies' wider impact. Using forecasting techniques to anticipate new technologies' potential consequences dates back to Schot and Rip's (1997) work, and, more recently, technology assessment has moved towards more participatory and reflexive approaches to encourage stakeholders to view technological impact in different ways (Genus, 2006). These new approaches emphasize reflection and action early in the development lifecycle to prevent irreversible technological lock-in (Mingers & Walsham, 2010; Stahl et al., 2014).

The dominant framework for RRI in the literature, which Stilgoe et al. (2013) developed, highlights five dimensions (see Table 1).

Table 1. Summary of RRI Criteria (Adapted from Stilgoe et al., 2013)

RRI construct	Description	References
Anticipation	Thinking about research's and innovation's known, likely, and possible implications guided by diverse stakeholder groups' early involvement.	Stilgoe et al. (2013), Wickson & Carew (2014)
Reflexivity	Critically reviewing one's own activities and assumptions to recognize limitations in one's knowledge and whether one's outlook lacks universal applicability. Social actors need such reflexivity to acknowledge their role, responsibility, and wider moral obligations.	Stilgoe et al. (2013), Pavie, Scholten & Carthy (2014)
Inclusion	Ensuring one represents and engages diverse stakeholder groups (e.g., citizens, practitioners, policymakers) to ensure one considers their views and perspectives in the participation process.	Stilgoe et al. (2013), Fitzgerald et al. (2016), Enserink & Monnikhof (2003)
Deliberation	Using different approaches to facilitate discussions and support participants in investigating the ethical, social, and political implications that the innovation in question could produce.	Stilgoe et al. (2013, Fitzgerald et al. (2016), Ianniello, Iacuzzi, Fedele, & Brusati (2019)
Responsiveness	Promoting the capacity to change and adapt the innovation in reaction to stakeholder values, which includes the principle that all stakeholders have responsibility for developing research and innovation.	Stilgoe et al. (2013), Owen et al. (2013)

By including stakeholders in innovation processes, we can ensure unintended negative consequences do not occur and expand our research knowledge on what we can and should achieve in a wider societal context. In Section 2.1.1, we look at stakeholder participation in more detail.

2.1.1 Stakeholder Participation

The RRI philosophy promotes the ethos of "science with and for society" (Laroche, 2011; Von Schomberg, 2013) and views stakeholder participation as a vital part of the social-engagement process. We can trace stakeholder participation in the literature back to Arnstein's (1969) ladder of citizen participation. On this ladder, the highest level of citizen involvement results in citizens being in full charge of a specific program or institution. However, since 1990, stakeholder engagement has also expanded to non-institutional matters such as cooperatives, community enterprises, and services for communities (Klingemann & Fuchs, 1995; Defourny & Nyssens, 2010; Teasdale, 2012). More recently, stakeholder participation has graduated into designing research agendas such as the European Union's (EU) Horizon 2020 research framework.

Stakeholder participation requires careful planning. First, researchers need to consider what stakeholder groups to invite and engage with. In other words, they must first identify groups (both experts and lay people) whom a problem may directly or indirectly affect and ensure that they can contribute to solving it. Involving a wide range of people in the process stimulates them to share perspectives and garners more information on prospective goals and objectives (Bergvall-Kåreborn, Howcroft, & Ståhlbröst**,** 2014; Enserink & Monnikhof, 2003; Fitzgerald et al., 2016). All too often, participatory processes end up recruiting easily recruitable people who can comfortable vocalize their opinions and speak up in public arenas. Therefore, researchers need to ensure they conduct inclusive and diverse recruitment drives to ensure representativeness, which they can aid by choosing convenient meeting times and places for citizens in different catchment areas (Laurian at al., 2004). Additionally, technology has a role to play in engaging the public by providing opportunities for e-participation through computer-generated visualizations and interactive websites (Conroy & Evans-Cowley, 2006; Howard & Gaborit, 2007; Loukis & Wimmer, 2012). Technology can also aid recruitment via online campaigns.

When designing stakeholder-participation processes, researchers have noted that different types of problems require different solution responses (Bryson, Quick, Slotterback, & Crosby, 2013). Therefore, the objective that researchers undertaking the stakeholder-participation process choose guides the strategy for engagement whether it be to inform, to collaborate, or to empower stakeholders to decide for themselves (Cooper, Bryer, & Meek, 2006; Kautz, 2011). For instance, researchers can recruit diverse stakeholders to ensure adequate and diverse representation in order to help better distribute benefits and reduce harm from decisions. In contrast, researchers can use small group formats to ensure participants can collaborate and exchange their nuanced views. In this scenario, participants learn from each other and represent a diverse mixture of expertise in broader stakeholder groups. Ideally, stakeholder participation would result in changing collective assumptions, transforming participant knowledge, and generating new solutions (Bryson et al., 2013). Researchers can ensure these improvements by designing approaches that allow for both exploration and exploitation (i.e., searching for new ideas and solutions and refining existing ideas and solutions) (Kim & Schachter, 2013). Participants should also know why they engage in stakeholder-participation processes.

Any group situation requires effective leadership. Researchers have identified three types of leadership styles in stakeholder participation: sponsors, champions, and facilitators (Crosby & Bryson, 2005; Morse, 2010; Schwarz, Davidson, Carlson, & McKinney, 2011). Each role plays an equal role in ensuring success. Sponsors refer to stakeholders with formal authority to justify participation—they provide funds and staff and have the power to translate results into policy. Champions manage day-to-day activities but lack resources; instead, they rely on informal power that they create through competence and trust. Facilitators build processes, maintain neutrality, and, thus, assist with group cohesion and productivity. Participatory processes require leadership to provide equal opportunity for meaningful exchange around decision outcomes (Bryson, Quick, Slotterback & Crosby, 2013). Leaders can achieve meaningful exchange via co-producing agendas, sharing policy decisions, and preventing value differences between the views that experts and other stakeholders express (Quick & Feldman, 2011; Crewe 2001). Equal participation rules can also guide group dynamics, and facilitators can ensure that participants abide by them (Callalan, 2005; Juarez & Brown, 2008). By providing an opportunity for all stakeholders to engage in open dialogue and interconnection, researchers can create “a space for genuine collaboration” (Boxelaar, Paine, & Beilin, 2006, p. 121).

2.2 Stakeholder Participation Approaches for RRI

Numerous established approaches can guide stakeholder participation for RRI in IS. In this section, we discuss three such approaches: foresight processes, scenario planning, and Delphi studies. We also outline each approach’s relative advantages and limitations.

2.2.1 Foresight Processes

Foresight processes explore future designs through participatory approaches for creative thinking and multiple perspectives (Barré & Keenan, 2006). Researchers can convert information that they garnered from these multiple perspectives into scenarios, shared visions, and, eventually, into strategies and actions for policy creation (Caracostas, 2003; Havas, 2005). Foresight processes best address novel issues that attract much public attention or known issues about which no one has previously considered public opinion (Amanatidou, 2014). To do so, foresight processes build networks, support knowledge creation, and transform participation into action (Amanatidou, 2014). From a collective-learning perspective, foresight can achieve a better match between the environment and its actors and lead to more adaptive behaviors. Foresight’s cross-boundary nature can also help participants create new relationships (through linking research and innovation to socio-economic needs) and form policy (Brown et al., 2001; Georghiou & Keenan, 2006).

Some participatory approaches that foresight programs have used include stakeholder panels, brainstorming, expert panels, stakeholder consultation and analysis, SWOT analysis, interviews, surveys, voting/polling, and road mapping (Rijkers-Defrasne et al., 2007). Prior cases studies suggest that foresight processes result in several (both intended and unintended) positive outcomes (e.g., knowledge societies, networking and collective learning, public participation). In one such case (Rijkers-Defrasne et al., 2007), participants expressed that the foresight process had enabled them to build trust with others and raise their interest in scientific and technological developments, which inspired them to improve collaboration and networking with other individuals and organizations. From this raised awareness, they had not only become more informed but also more concerned and eager to engage in foresight processes in the future (Rijkers-Defrasne et al., 2007). Foresight can also help raise public awareness on science, technology, and innovation policy concerns and promote increased transparency through public inclusion in democratic policymaking (Cassingena & Pace, 2004).

Critics have questioned foresight processes' ability to predict given the uncertain and complex nature of their planning activities (Wright, Cairns, & Goodwin, 2009). However, foresight processes do not necessarily make predictions; rather, they focus participants on an imagined and possible world in the future. In this way, they can help guide strategy by help participants plan alternatives for uncertain futures. Vision building presents an opportunity for participants to evaluate various possible futures, which allows them to investigate alternatives in a systematic way. By formulating many versions of the future through branch analysis, areas of plausibility, cause-effect generation, back casting, and so on, participants can enable creativity and prospective evaluations (Government Office for Science, 2009). These techniques use participatory exercises with stakeholders to stimulate creativity and dialogue. In turn, foresight processes engage multiple views of the future through democratic communication.

2.2.2 Scenario Planning

Scenario planning explores the current social world as a complement to foresight processes' more future-oriented perspective. Scenario planning promotes many versions of the social world through communication processes. Participants can then convert differing perspectives into workable scenarios through negotiating varying interpretations of the world so that they come to understand bounded truths (Dennis, 2013). In other words, truths are a matter of degree and comprise levels of objectivity. Truth and power intimately relate to each other, and scenario-planning techniques redress the truth-power balance by giving voice to an otherwise unheard group/s of people (Green, 2008; Habermas, 1984).

Habermas' (1984) vision of consensus democracy, which asserts that genuine consensus requires rational debate, mutual learning, and argumentation, guides scenario planning. When listeners accept a speaker's speech act as a position, they explicitly articulate a process of implicit understanding. Therefore, understanding requires ongoing dialogue between speakers and hearers in which the expression is made understandable to both parties (Habermas, 1984). Therefore, people can achieve shared understanding only when they reach agreement on a current situation (Van Bouwel & Van Oudheusden, 2017; Bittner & Leimeister, 2014) and ideal speech rests on stakeholders' common conviction.

Researchers who have criticized scenario planning have queried its credibility and legitimacy for policy and decision making (Clark, Mitchell, & Cash, 2002). For instance, researchers have suggested that scenario planning can lack a broad worldview in situations where it includes only a few types of participants (O'Brien, 2004). Researchers have also criticized Habermas' (1984) theory of communicative action for emphasizing community too much. For instance, Maxwell (2012) questioned whether the focus on reaching agreement detracts from the power of heterogeneous responses and multiple visions of the future. However, other researchers have countered these criticisms by demonstrating the power that citizen participation can have in policy and planning processes. Indeed, they have found that scenario planning can increase social learning, enlighten participants, and provide an opportunity for new relationships and network building (Reed et al., 2010). Furthermore, researchers have shown how transparent recruitment and inclusivity practices in scenario planning can broaden participation and capture diverse stakeholder groups' input (Long, 2015).

2.2.3 Delphi Studies

Delphi studies structure communication processes for large groups of people and assess the potential for new technological innovations (Skinner et al., 2015; Turoff, 1970). In Delphi studies, researchers ask groups of experts from many different disciplines to vote on whether they think certain events will occur based on evaluating all group input. Researchers then later let the experts edit or revise these judgments to arrive at a consensus (Mitroff & Turoff, 2012). However, since researchers began using this technique in forecast planning, they have made adaptations to it such that compromise and consensus at the first round may not be appropriate. In technology assessment, researchers deem it more appropriate to generate several alternative options for further discussion and debate. The focus on expert participation has also broadened; that is, who or what constitutes an "expert" has become questionable. We have seen a move toward designing Delphi studies to be more inclusive and increase reflexivity in the individuals who take part in them (i.e., how do we learn about ourselves from this experience? In what way is a group of reflective minds better than one mind?) (Mitroff & Turoff, 2012; Linstone & Turoff, 2011). Therefore, Delphi studies primarily focus on generating ideas and evaluating alternatives via creating a venue for critical debate (Skinner et al., 2015; Turoff, 1970). Delphi studies do so via (Linstone & Turoff, 2011; Skinner et al., 2015):

- Engaging a group of experts in anonymous, multi-round discussions.

- Conducting two or more discussion rounds that move from open-ended to a narrower focus.
- Evaluating participants' responses using rating systems to extrapolate their written reviews.
- Conducting later rounds to refine evaluations and open new lines of enquiry

Moving away from the traditional format of face-to-face meetings among experts, technology now allows researchers to conduct Delphi studies online. Performing Delphi studies online allows researchers to minimizes the time delays between their first, second, and/or third rounds. The online method allows participants to complete a survey (that link Likert-type questions to open-ended "reason questions") and later alter their responses after other participants in the group have reflected and reviewed them. Respondents' identities remain private and anonymous. The online Delphi process can be synchronous or asynchronous and involve participants from anywhere in the world (Gordon, 2009; Lee & Fedorowicz, 2018). The process and, thus, Delphi studies' design also include participants' reactions (Linstone & Turoff, 1975; Skinner et al., 2015).

The Delphi method has several advantages. First, it supports interaction by protecting participants' anonymity and hiding their hierarchical status. As a result, ideas can originate from any participant and flow freely. Second, as the Delphi method constitutes a qualitative approach, it involves personal and subjective views. Thus, feedback focuses on explaining and clarifying and not on judging how participants represent problems. The method provides space for participants to contribute both positive and negative perspectives as complex decision-making processes demand heterogeneous responses. The method asserts that different participants will hold different views over the past and present, which, in turn, can impact the future (Linstone, 1984). Therefore, the Delphi method can help address complex issues and unexpected consequences by drawing on different actors' views. Of course, Delphi studies also have certain limitations. For instance, they must address participants' short-term planning horizons and short-term memories through communicating possible future scenarios. Also, as a qualitative approach, the Delphi method may lack objectivity given that individuals' prior experience can often unconsciously bias their views.

In Section 3, we describe the case study that we report on in this paper called the Visionary Depiction Project[1], which adapted stakeholder-participation approaches (e.g., foresight processes, scenario planning, and Delphi studies) to guide a large-scale responsible IS research process.

3 The Vision Depiction Project

In this section, we describe the Vision Depiction Project, a large-scale responsible research and innovation project that the European Union (EU) Commission funded. Over a two-year period, the project engaged more than 1,500 stakeholders (i.e., citizens, practitioners, and policymakers) across 30 European countries. The project involved partners from 30 countries across Europe (see Appendix A) who organized face-to-face and online consultations in their respective countries with citizens, practitioners, and policymakers. The following objectives guided the project:

- To create visions and scenarios that connect societal needs (e.g., grand challenges) with future expected advances in technology, society, the environment, and so on.
- To provide concrete input to Horizon 2020 through recommendations and policy options for research and innovation (R&I) and calls for the Horizon 2020 work programs.
- To engage citizens and stakeholders in a highly participatory consultation process on scenarios for desirable sustainable futures.
- To facilitate dialogue and shared understanding between policymakers, citizens, and stakeholders.
- To reveal stakeholder-focused consultations' relative merits.

The project ran between June, 2015, to December, 2017, and comprised two consultation phases. A clustering workshop followed each consultation phase. In these workshops, the project partners and invited researchers and citizens aggregated the results across Europe.

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[1] We have disguised the project's, project roles', and organizations' names. They have no relationship to similarly named organizations or projects that might exist in the real world.

The first consultation phase began in September, 2015, and engaged over 1,000 citizens from across 30 European countries. The first consultation phase focused on producing visions for desirable futures that address different societal challenges through technological innovations. All 30 countries involved in the project produced aggregated results from 36 participants at each national consultation workshop. All 30 European countries adopted the same consultation approach to ensure that the project participants could aggregate the results. The first clustering workshop then took place between 21 and 23 April, 2016. During this two-day clustering workshop in Milan, Italy, project partners, researchers from across Europe, and over 40 citizens clustered the results from the first consultation phase into overarching social needs. The workshop sought to combine expert opinion with citizens' perspectives to better inform recommendations going forward. The project participants identified and clustered the overarching social needs thematically to produce a catalogue of visions.

The second consultation phase began in September, 2016, and employed blended face-to-face and online consultations across all 30 countries to validate, enrich, and prioritize the clustered social needs from the first clustering workshop. The second consultation phase focused on enhancing the clustered social needs from the first clustering workshop through further discussion. The project participants generated recommendations on the social and technological issues that they found most important for the future of research and innovation. The second clustering workshop then took place in Brussels, Belgium, in December, 2016, and focused on analyzing output from the second consultation phase based on input from researchers and policymakers from across Europe. These participants transformed the validated and prioritized results phase into policy options and prioritized actions and research agendas for Horizon 2020.

We illustrate the Vision Depiction Project's phrases in Figure 1.

Figure 1. Case Study Timeline

In this paper, we present findings from the second consultation phase that adopted a blended approach to consult citizens, practitioners, and policymakers. We also describe how the project partner in Ireland conducted the blended stakeholder consultation.

3.1 Face-to-face Consultation (Foresight Processes and Scenario Planning)

The Irish face-to-face consultation used foresight processes and scenario planning to explore the theme "holistic health and technology empowerment". This theme centered on contemporary health information systems' future social implications (i.e., privacy, clinical effectiveness, quality). The Irish project partner developed a targeted recruitment strategy to engage citizens, practitioners, and policymakers. The partner recruited target groups to provide diverse viewpoints on the assigned research scenarios. For instance, the recruited citizens came from various different backgrounds and demographics to create as varied a representation as possible (i.e., based on age, gender, education, etc.). Meanwhile, the recruited practitioners comprised clinicians, healthcare practitioners, researchers, health IT professionals, IT services staff, and academics. Finally, recruited policymakers included members of the European Parliament, senators, and an advisor to the government from the Office of Science, Technology and Innovation. In total, the partner recruited 48 people across all target groups and, in the end, 34 stakeholders attended the consultation (See Figure 2). We outline the participants groups in more detail in Appendix B.

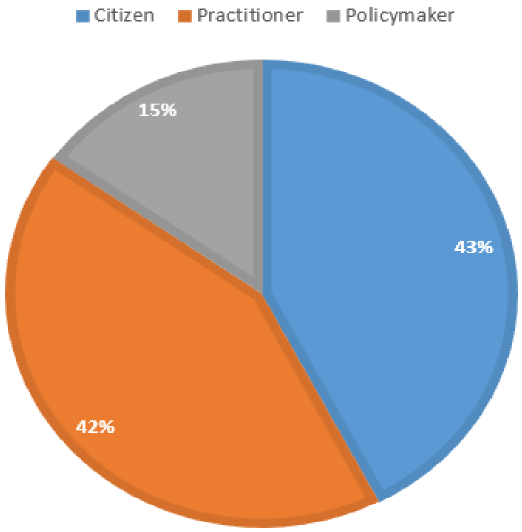

Figure 2. Breakdown of Face-to-Face Participants (N = 34)

The consultation began with an ice-breaker session during which time the participants introduced themselves and briefly shared their motivation for attending the consultation. The participants did not use their professional title during the consultation and used only their first name throughout the entire day. Participants then seated at six roundtables: an assigned seating plan ensured each table adequately represented citizens, practitioners, and policymakers. Each table also had a moderator who invited participants to discuss the future of research and innovation in the European Union as relevant to the aforementioned theme. In all, the participants participated in three discussion rounds throughout the day (see Appendix C) in which they discussed different research scenarios using a designed template (see Appendix D). Participants had to answer the questions in this template in order to promote discussion and enrich each research scenario. Participants did not require special knowledge on the topics prior to the consultation. Instead, participants could contribute their personal views on the different research scenarios based on their own personal experience. Participants used post-it notes to record ideas that the moderators placed on flipcharts for further discussion. The moderators also asked one participant at each table to act as a scribe and document the main points from the discussion at the table. The moderators then allocated a research scenario to each table and asked participants to move to a different table after each discussion round. Each table had limited places to ensure that each participant had a chance to contribute.

3.2 Online Consultation (Delphi Study)

In parallel with the face-to-face consultations, the project ran an online consultation to engage additional citizens, practitioners, and policymakers in the consultation process. The online consultation ran between September and October, 2016, and targeted citizens, practitioners, and policymakers across the 30 E.U. countries that the project consortium represented. The online consultations began by asking participants two questions: “How important do you think each proposed research scenario is for society?” and “What research questions do you think are most relevant for this proposed research scenario?”.

The online consultation used a Delphi approach. The online consultation presented participants with two to five “default” pros and cons arguments for each chosen research scenario that they could rate according to their perceptions about the likelihood that the scenarios would occur and the potential impact that they would have. Participants could also add additional arguments that other participants could see and rate going forward once the platform administrator for each country screened them. Each participant could rate and add up to three arguments maximum. Finally, the system summed the number of votes that each argument garnered during the exercise to provide an overall ranking for each argument. The project recruited 372 distinct users to participate in the Irish online consultation from a database of 444 citizens, practitioners, and policymakers. In the end, 168 Irish users completed the process by providing responses to all steps in the online consultation (see Figure 3).

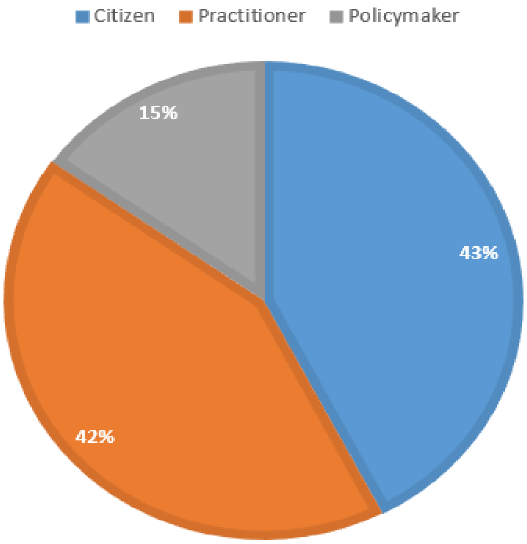

Figure 3. Breakdown of Online Consultation Participants (N = 168)

4 Data Analysis

We used qualitative thematic analysis (Patton, 2002) to analyze participants' responses from both the face-to-face and online consultations. We first continuously read and reread the transcribed content from both consultations to generate codes that we judged as meaningful and important to the study in question. We then grouped these initial codes together to form overarching codes categories that we used to organize the content according to similar themes. We recreated new categories as necessary to help further analyze the content. We continued this thematic-analysis process until we reached saturation and further analysis did not contribute new insights and interpretations but rather supported existing ones (Patton, 2002).

During each consultation, moderators asked participants to offer their unique perspectives on research scenarios around technology empowerment in healthcare. In addition, each participant had the opportunity to contribute to judge the collected data's accuracy at the end of the consultation period and provide further feedback. For instance, at the end of the face-to-face consultation, the partner held a plenary session in which moderators asked each participant for feedback on the findings and could vote for five research scenarios they felt were most important in terms of impact and occurrence probability. Moderators provided participants with five colored dot stickers (total votes available = 165 (5 votes x 34 participants)), and participants could place only one dot sticker on one research scenario. Based on this evaluation, we obtained further insights that supported our data analysis and developed additional insights into our research question. In Section 5, we present our findings results from the two consultations alongside the most salient quotes as further support and illustration.

5 Findings

In this section, we report on findings from the second consultation phase. The project built on the conviction that society's collective intelligence could strengthen the European science and technology system's relevance to citizens' needs. To do so, the project focused on establishing genuine dialogue between citizens, practitioners, and policymakers and collecting actors' visions around science's, technology's, and innovation's social implications. The findings focus on technology empowerment in healthcare and pertain to three research scenarios in particular: 1) quantitative person-centered health, 2) data for all—share the power of data, and 3) equal access to holistic health services and resources for all citizens.

5.1 Quantitative Person-centered Health

Cyprus, Finland, Ireland, and Slovakia looked at the scenario "quantitative person-centered health". In particular, they focused on the five questions that we discuss in Sections 5.1.1 to 5.1.5.

5.1.1 What Challenge(s) does this Research Scenario Address?

Participants spoke about the need for an overall change in the way we think about health and wellbeing and how health information systems need to become more patient centric. They shared the view that technology (e.g., e-health solutions, electronic health records) can help healthcare practitioners deliver efficient, cost-effective, and accessible healthcare services. Discussions also focused on how the use of e-health solutions would result in significantly more data collection and support diagnosis and treatment. However, they generally shared the sentiment that a patient-centric healthcare environment should place patient data protection, security, and integrity at the forefront and that technology use should be regulated, inclusive, and follow a holistic approach that reflects the ever-changing world we live in.

5.1.2 Is it Important from Your Point of View to Address this Challenge? Why?

Participants felt that, in order to assess the challenges that the healthcare system faces, one would need to use technology to benchmark the current service that healthcare providers offer to patients. By doing so, one could determine where best/worst practices exist and whether one should implement services elsewhere in the healthcare system. Benchmarking could provide the opportunity to improve patient healthcare outcomes and healthcare services using data on process efficiency, cost, data protection, and technology use.

5.1.3 How could it be Approached?

Participants agreed that countries in the EU need to bring their healthcare systems to a similar level. They discussed how such a result would require regulations to protect patient data privacy and integrity and both public and private healthcare providers in all EU countries to share patient records. Practitioners argued that data availability could greatly improve the overall standard of care through medical diagnostics. However, others noted that healthcare practitioners would need targeted education programs and research funding to ensure that they followed best practices in designing data-driven healthcare services.

5.1.4 Who should be Involved in Solving the Problem?

For E.U member states to fully implement this scenario, participants asserted that they would need to set minimum standard requirements for technology implementation. The participants noted that relevant bodies must actively participate in this process, such as policymakers, member-state non-governmental organizations (NGOs), citizens, healthcare professionals, universities, IT professionals, legal professionals, and other specialist groups.

5.1.5 What should be the Main Goals/Impacts of the Research Activity?

In terms of goals and expected impacts from this scenario, participants hoped for an “integrated healthcare systems (public and private)” that would deliver “improved health care services and systems… [and] patient healthcare outcomes”. The participants shared the view that, to achieve these goals, countries would need to improve “access to healthcare services” and improve their “ability to measure healthcare service efficiency and patient satisfaction”. Some participants also pointed out that countries would need to measure privacy’s impact through “improved patient data management, protection and validation”.

5.2 Data for All: Share the Power of Data

Croatia, Germany, and Ireland looked at scenario “data for all—share the power of data”. In particular, they focused on the five questions that we discuss in Sections 5.2.1 to 5.2.5.

5.2.1 What Challenge(s) does this Research Question Address?

Participants noted that this scenario should address the availability, transparency, and reliability of data in healthcare systems. They asserted that countries need to relook at data management and security in their healthcare systems and the ethics behind data use in order to ensure equality around data use and accessibility. They also discussed that citizens need to receive education about how various stakeholders create and use healthcare data to improve data management and security overall.

5.2.2 Why would it be Important to Address this Challenge?

The participants shared the view that we need to address this challenge in order to foster informed decision making and to improve data transparency and protection. Participants confidently expressed the view that more informed decision making can help increase patients' overall quality of life via applying targeted interventions. However, citizens again felt that they needed education to understand data ownership and data management to ensure that they felt empowered when making healthcare decisions.

5.2.3 How could this Challenge be Approached?

Participants noted that addressing this challenge required increasing citizen knowledge on their rights in relation to healthcare data. Policymakers must also ensure that everyone has access to the Internet by providing high-speed broadband and affordable Wi-Fi Internet connections. Participants also discussed how researchers needed to conduct further research to determine what "the correct use of data" means and provide guidelines on how to identify real problems and issues and desired outcomes. Participants noted that policymakers need to ensure relevant policy exists to match new technologies to these problems.

5.2.4 Who should be Involved in Solving the Problem?

Citizens vocally noted different stakeholders should participate in healthcare decision making, which includes citizens themselves, policymakers, state institutions/decision makers, civil society organizations (CSOs), stakeholders and experts, public service providers, IT experts, the media, and user groups. This vision for engaged involvement would require new processes to manage decision making.

5.2.5 What should be the Main Goals/Impacts of the Research Activity?

Participants identified the following primary goal: "develop the [capability] of citizens for participating in decision-making processes and for validating the relevance and meaning [of] metrics". In order to help citizens to validate metrics' relevance and meaning, participants asserted the need for "reliable data sources [and] enhanced systems across Europe and "enhanced...awareness in the general public [about] personal health and maintenance". Participants also spoke about the opportunities in this scenario for citizens and CSOs to co-create solutions by enabling them "to use and create data through open source digital tools and platforms". Most participants agreed that co-creation processes could enable countries to "use data to solve social problems and inequalities with the aim of development of sustainable society". However, again, some raised caution about the need to include "improved data security and protection".

5.3 Equal Access to Health Services and Resources for all Citizens

Austria and Ireland also looked at scenario "access to equal and holistic health services and resources for all citizens". In particular, they focused on the five questions that we discuss in Sections 5.3.1 to 5.3.5.

5.3.1 What are the Problems/Challenges of this Scenario?

Participants noted that external cost pressures from sources such as the pharmaceutical industry have created many challenges around equal access to healthcare services. They discussed how healthcare services face continuous cost-cutting measures and increased pressures on healthcare staff. In addition, participants noted that citizens often lack awareness of health issues because schools do not focus on promoting education around wellbeing, and many did not know about the effects that changes in their lifestyle could have on their health.

5.3.2 Why is it Important to Find Solutions to These Challenges?

Participants noted that countries need to improve the healthcare systems as a whole by ensuring equal access to treatment for everyone. They noted technology's potential to help reduce wait times, improve inefficiencies, and minimize current healthcare services' negative economic impact via preventing illnesses. In turn, timely interventions can ultimately lead to an increase in the quality of life for everyone and reduce the costs of healthcare delivery.

5.3.3 How could it be Approached?

Participants noted harmonizing medical care (e.g., training standards, product standards, etc.) across the European market and improving working conditions for staff as key antecedents to ensuring equal access to treatment for everyone. Technology could also help medical staff cooperate and exchange knowledge more closely. However, they noted that countries need to invest more in research and development on how medical staff can adopt a focused-patient orientation through technology. Participants felt that countries could address these challenges through increased education, improved care environments, and targeted policymaking on IT-enabled healthcare service redesign.

5.3.4 Who should be Involved in Solving the Problem?

Participants asserted that multiple stakeholder groups should participate in solving this problem, such as citizens, researchers, healthcare service providers (including general practitioners (GPs), and public health agencies. Participants also noted that the government should play an important role in delivering policy to fund research at a national and local level. They discussed supporting roles for the IT industry, national statistics offices, teachers, and other private companies.

5.3.5 What should be the main Goals/Impacts of the Research Activity?

Participants emphasized the goals “improved awareness and education [on] health and wellness” among citizens and “improved [access to] healthcare services”. To achieve these goals, the participants discussed the need for policymakers to recognize national differences across the EU and “to note that in the case of EU policies one size does not fit all”. Participants asserted the need for “increased research into the healthcare as a whole” in order to further support this goal.

6 Discussion

In this section, we discuss our findings in relation to our research question (i.e., “How can researchers use stakeholder-participation approaches to support RRI in IS research?”). We use Stilgoe et al.’s (2013) RRI framework (see Table 1) to guide the discussion.

6.1 Anticipation

Foresight processes and scenario planning proved effective for supporting anticipation in the Vision Depiction Project. The participants enthusiastically engaged in dialogue around the future of technology empowerment in healthcare and discussed visions for the next 20 to 30 years. Questionnaire results from the Irish consultation suggest that the opportunity to contribute towards the future of science and technology in Europe excited participants and that they found the stakeholder-participation techniques useful for promoting creative thinking. However, participants had diverging views on outcome effectiveness. For instance, around five percent of respondents disagreed with the questions “overall, I was satisfied with the results of the event” and “it is clear to me what will be done with the results of the discussions”, which suggests uncertainty around the Vision Depiction Project’s outcomes and how its results would be used going forward. Foresight processes and scenario planning commonly receive such criticism (Kim & Schacter, 2013), and the uncertainty suggests the need for existing ideas to be refined by stakeholders to ensure both RRI process and outcome effectiveness (Geoghegan-Quinn, 2014; Kim & Schachter, 2013).

Overall, the results suggest that the Vision Depiction Project provided a structured process for participants to discuss future socio-technical issues and engage in dialogue around how technology can produce both positive outcome (utopian visions) and negative outcomes (dystopian visions). In Table 2, we provide sample responses from the Irish consultation across each stakeholder group to illustrate utopian and dystopian visions of technology empowerment in healthcare.

Table 2. Utopian and Dystopian Visions of Technology Empowerment in Healthcare

	Utopian vision	Dystopian vision
Citizen group	*Technology can help make universal healthcare a reality and promote greater social inclusion. We can overcome equality divides, geographical divides, age divides, empower students with disabilities. We can address key challenges through awareness, discovery, and inclusivity*.	*There are a lot of "tech-phobic citizens" out there, we need to overcome this fear of technology through greater digital literacy across all age groups. The profit motive of big pharma is also a concern. Things like patient consent, data protection, confidentiality; we need to enforce policies and provide education on evidence-based medicine*.
Practitioner group	*It's about personalized medicine, supporting preventative health. Patients can take personal responsibility for one's health. Keeping citizens in control will promote better conversation. We'll also have a wider evidence base for research*.	*Storing poor quality data will result in misinformation. We're an over medicalized society so health illiteracy is important, as well as engagement and communication across geography, age, cultural differences, and multiple-conditions*.
Policymaker group	*I'd hope for better value from money spent. We can reduce costs to the economy by having a healthier population. We need to think about peoples' longevity—that they're healthy for longer not just living for longer. This requires a bottom-up approach—public and private mix involved. We need societal discussion—we can't ignore the issue*.	*The short political cycle is a challenge for ensuring sustainability and the future proofing of outcomes. There is also a complex regulatory environment and a lack of standards; for example, a unique health identifier. Anything that improves lives is important but if we don't focus on barriers, we fail before we start*.

6.2 Reflexivity

The literature suggests that engaging with different stakeholder groups and their diverse perspectives can support creative responses (Enserink & Monnikhof, 2003; von Schomberg, 2012). In the Vision Depiction Project, participants noted citizens', practitioners', and policymakers' involvement had a positive effect on dialogue and helped generate interesting and diverse discussions during the consultation. In terms of reflexivity, most participants agreed that they clearly understood the event's purpose and felt comfortable when voicing their opinions during the process. However, given participants' diverse background, respect for others' opinion turned out to be a crucial concern, and power dynamics sometimes arose between citizens, practitioners, and policymakers. For instance, practitioners at times asserted their position as healthcare experts on a discussion topic, which drew criticism from citizens who countered that practitioners did not understand the patient perspective.

Power dynamics require strong management to provide the opportunity for meaningful exchange and bearing on decision outcomes (Bryson et al., 2013). Thus, power dynamics signal the need for strong facilitation while implementing participatory approaches (Callalan, 2005; Juarez & Brown, 2008). The Vision Depiction Project's organizers organized training sessions prior to each consultation phase to help prepare facilitators run the consultation using rules for equal participation. For instance, rule sets sought to generate a commitment to discussion and ensure the integrity/authenticity of participants. These rules proved important for both exploration and exploitation processes to allow citizens, practitioners, and policymakers a chance to explore and refine existing ideas and solutions (Kim & Schachter, 2013). As one participant stated: "The main challenge is to keep discussions on topic. [We] need to always draw each point back to question.". Another participant noted the importance of good facilitation and observed that "all facilitators were excellent—very professional and friendly". The templates (see Appendix D) also helped guide stakeholders through the steps involved in the approach using targeted questions and motivated each stakeholder group to stay focused. In Table 3, we summarize the opportunities and challenges for reflexivity based on quotations from participants in the Irish consultation.

Table 3. Quotes from Irish Participant on Reflexivity

Please state something you liked about the workshop	Is there anything we could improve about the workshop
• *Very diverse range of participants made this most interesting and open-minded.* • *Engagement, multi-disciplinary approach, energy.... The enthusiasm was infectious.* • *Group of bright and interesting people—stimulating and enjoyable.* • *Good discussion, personalities and different experiences of people.* • *How respectful everyone was of the opinion of others*.	• *More time given for summary of ideas and consensus forming.* • *More time devoted to an overall proposal.* • *Some topics had questions to drive it others did not. The ones with [questions] worked better.* • *Having a prior commitment from people to stay until the end" is important.* • *More digital approach; for example, electronic voting.*

6.3 Inclusivity

The Vision Depiction Project focused on providing ample opportunities for inclusiveness by inviting diverse stakeholder groups to attend the consultation. The interest generated during the recruitment process came as a welcome surprise to the organizers as diverse groups were eager to engage in the process. Nevertheless, the organizers experienced significant challenges in ensuring a context-sensitive design that catered to different target groups (Laurian at al., 2004). While the project achieved a good level of diversity overall, fewer citizens from the primary- and secondary-level education categories compared from the tertiary-level education category attended the event. In the Irish context, the fact that organizers hosted the event a university campus may explain why since citizens with a university education may have been more likely to attend. However, the project also underrepresented citizens older than 66 years old despite a targeted communication strategy in a national newspaper to address a low number of applications from citizens in this age bracket. This result again points to the challenge of designing a context-sensitive approach that caters to all demographics.

Our results suggest that combining digital and face-to-face approaches can prove more effective for inclusiveness than face-to-face approaches alone and helps increase participation among certain minority groups. However, the project still faced a significant challenge in getting all participants to actively engage with the online consultation and remain engaged over time. While the online consultation garnered some interest, the level of engagement fell far below the project partners' ambitious targets. Each partner had expected to engage 300 participants in their country, which would have led to a total user base of around 9,000 participants across 30 European countries. However, in the end, only 3,461 participants participated; some partners even failed to engage more than 30 participants. Note that some participants felt that digital communication did not substitute for face-to-face communication, and senior citizens in particular noted a preference for paper-based media. One participant suggested after the face-to-face event that "Info might be handed out to all participants in paper form on the day" as they were less comfortable interacting with the PDF copies that the organizers had made available via email. A blended approach may cater better to diverse stakeholder groups' needs as e-participation alone may exclude less tech-savvy groups (Mahrer & Krimmer, 2005).

6.4 Deliberation

The Vision Depiction Project used numerous deliberation tools, techniques, and approaches in order to support RRI process and outcome effectiveness. The literature suggests that using multiple participation approaches can ensure a collective responsibility over RRI processes' control and direction so that they become ethically acceptable for the diverse stakeholder groups involved (von Schomberg, 2012). In particular, the Vision Depiction Project adopted a "blended" approach to facilitate deliberation among citizens, practitioners, and policymakers. Time turned out to be a critical constraint during the face-to-face consultation as stakeholders' diverse views meant that they found it difficult to reach consensus during the allotted schedule. Accordingly, the face-to-face event unsurprisingly produced more mixed responses: while 77.27 percent of participants expressed satisfaction with the event's results, some participants indicated afterwards that did not know what would be done with the discussions given the constrained time for consensus building. In Table 4, we summarize questionnaire results from the Irish consultation.

Table 4. Results from Irish Participant Questionnaire (Deliberation)

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1) I felt sufficiently comfortable and at ease to speak out and voice my opinions during the process.	77.27%	22.73%	-	-	-
2) The moderators did a good job in ensuring a constructive and fair process during the discussions.	57.14%	38.1%	4.76%	-	-
3) The timing of the program was perfect: I did not feel stressed or in a rush.	50%	50%	-	-	-
4) I had a clear understanding of the purpose of the event.	43.48%	52.17%	4.35%	-	-
5) Overall, I was satisfied with the results of the event.	59.09%	18.18%	18.18%	4.45%	-
6) It is clear to me what will be done with the results of the discussions.	34.78%	47.83%	13.04%	4.35%	-
7) I would take part in such an event again.	100%	-	-	-	-

The project's organizers helped address timing issues by using e-participation techniques such as instant messaging, computer-generated visualizations, and e-voting to engage stakeholders after the event (Conroy & Evans-Cowley, 2006; Loukis & Wimmer, 2012; Howard & Gaborit, 2007). Three participants left the face-to-face consultation before the program ended due to other personal commitments—a common challenge that one faces when organizing face-to-face workshops (Laurian at al., 2004). E-participation provided opportunities for them to re-engage with the process after leaving and continue the conversation using digital tools. Nevertheless, the online consultation carried out in the Vision Depiction Project suffered from a lack of clear rules as it adopted a more open-ended approach and relied less on consensus compared to traditional Delphi studies. Part of the problem centered on the fact that project organizers did not conduct in-depth user testing on the online consultation platform, which resulted in many participants noting that they found the online consultation platform unintuitive and too time-consuming. Another major challenge involved representing the high volume of information that the online consultation's research scenarios contained in an accessible way. Unfortunately, the online consultation placed a large burden on users to understand the rules and process high volumes of information, which lead to information overload. In hindsight, organizers could have resolved this issue if they involved a user experience expert to make the user interface more accessible and clarify rules. In particular, users noted that the interface could have hidden much text that all screens repeatedly showed in order to streamline the process, which would better assist participants in working together to improve the relationship between outcomes and societal needs (Geoghegan-Quinn, 2014).

6.5 Responsiveness

The Vision Depiction Project proved effective in terms of responsiveness as it supported a strong future-oriented focus for research and innovation in Europe. Responsiveness requires that stakeholders take co-responsibility for developing innovation agendas and drive change by adapting deliverables to one another's values (Owen et al., 2013; Stilgoe et al, 2013). In the Vision Depiction Project, citizens, practitioners, and stakeholders transformed their needs and concerns into recommendations and suggestions for research and innovation policies in the EU. The project later delivered this output to the E.U. Commission and supported the processes of setting the scientific course of funding calls in the EU going forward. Therefore, the Vision Depiction Project delivered on the RRI principle "science for society", which focuses on conducting ethical, inclusive, democratic, and equitable innovative science by including public values in science and innovation (Wilsdon et al., 2005).

Initial evidence suggests that outcomes from the project have had an impact on the topics that the next research funding program for the EU will include. In addition, the project organizers extracted policy options from the validated and prioritized scenarios to form recommendations that they directly delivered to policymakers at the national and E.U. levels. The project organizers disseminated results from the two consultation phases to key stakeholders with an involvement in research and innovation, such as government officials, national research councils, and scientific bodies. As a result, the project organizers expressed satisfaction that they achieved responsiveness through delivering and communicating responsible research agendas for grand challenges at national and international policy-making levels. The project also increased accountability by allowing stakeholders to scrutinize potential impacts and risks from emerging technologies, a key criterion for responsiveness in RRI (Stahl, 2012; Owen et al., 2012). Participant responses from the Irish consultation support the need for similar approaches in the future; one participant asserted that “the format…is a good formula for improving future policy decisions”.

7 Conclusion

In this paper, we present findings from a 24-month RRI project that engaged citizens, practitioners, and policymakers from across 30 European countries in co-creating research agendas. Overall, both the project’s participants and partners deemed the project a success. The face-to-face and online consultation techniques provided a rich catalyst for discussion between stakeholders on diverse socio-technical issues, and the feedback from participants indicated a strong desire for similar IS research consultations in the future.

In terms of theoretical contributions, we present insights into using stakeholder-participation approaches for RRI in IS research. We assess these lessons learned based on criteria from Stilgoe et al.’s (2013) RRI framework: anticipation, reflexivity, inclusion, deliberation, and responsiveness. Based on this discussion, we analyze stakeholder participation’s relative strengths and weaknesses and derive recommendations for IS research. In terms of practical contributions, we recount how IS researchers and practitioners might foster responsible IS research through engaging diverse stakeholder groups. We draw on case study findings from the project’s second consultation phase that used blended face-to-face and online techniques to engage citizens, practitioners, and policymakers. We hope the lessons we describe in the paper will assist IS researchers and practitioners in navigating the promises and pitfalls of RRI in information systems and assist them in undertaking their own multi-stakeholder consultations.

Our study has at least two limitations. First, in our case study, we focused primarily on the initial stages of engaging stakeholders in designing IS solutions; therefore, an in-depth study that examined the impact derived from project outcomes on the future efforts to develop IS solutions fell outside our scope. Future studies could provide a longitudinal analysis of responsible IS research approaches’ impact from the design to the implementation stages in IS development. Second, our findings pertain specifically to the healthcare sector; therefore, future research needs to investigate whether responsible IS research approaches apply to other domains and compare idiosyncrasies between them. Similarly, we need an evaluation framework grounded in RRI and information systems literature to compare different stakeholder-participation approaches for responsible IS research in different contexts.

In terms of other future research agendas, we suggest that we urgently need user-engagement studies on blended consultations to increase their effectiveness going forward. We learned that one must design online consultation platforms in a way that motivates users to remain continuously engaged in the participatory process. Our findings suggest that one can do so via delivering brief but informative prompts to guide users through online consultations. Incentives can also help gain individuals’ attention. However, budgetary considerations will likely constrain the monetary incentives that organizers can provide, and the Vision Depiction Project instead relied on individuals’ inherent motivation to engage with the topics. Future research can investigate using different forms of incentives for user engagement in blended consultations.

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Appendix A: List of Countries Involved in Project

The Vision Depiction Project involved the following countries (in alphabetical order): Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Greece, Germany, Hungary, Italy, Ireland, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom. We highlight the countries on a map in Figure A1.

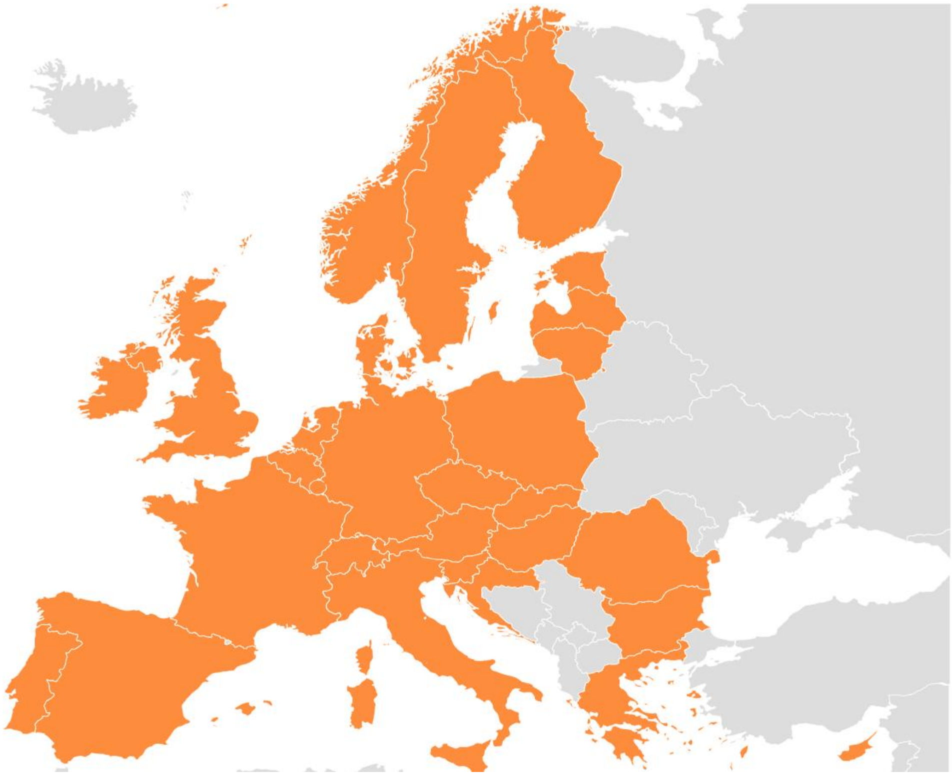


Figure A1. Countries Involved in the Vision Depiction Project

Appendix B: Participants in the Irish Face-to-face Consultation

Table B1. List of Participants at Face-to-face Consultation

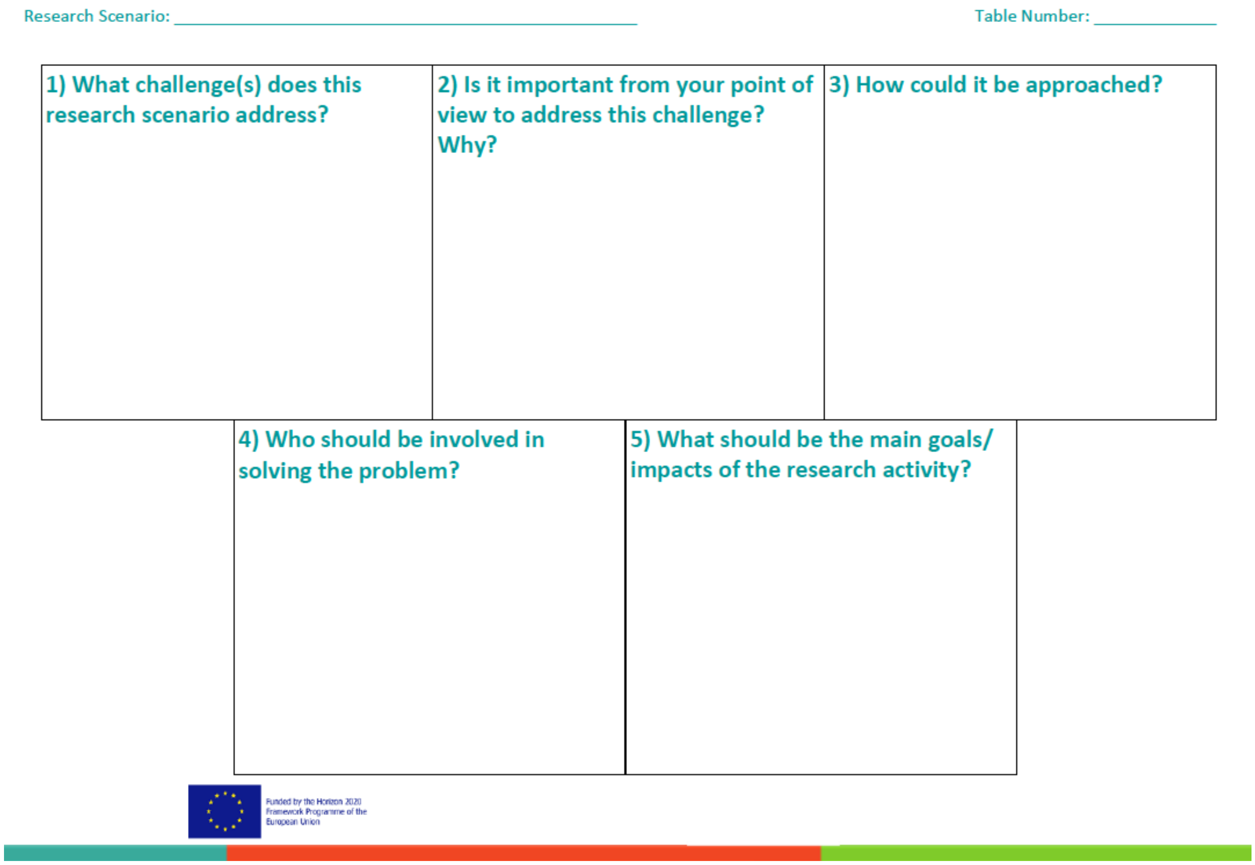
Participant	Background
Participant 1	Member of European Parliament
Participant 2	H2020 national contact point
Participant 3	Senator
Participant 4	Healthcare worker
Participant 5	Senior lecturer
Participant 6	Operations manager
Participant 7	Surgeon
Participant 8	Developer
Participant 9	Senior lecturer
Participant 10	dentist
Participant 11	Nursing
Participant 12	IT director
Participant 13	Medical representative
Participant 14	Senior postdoctoral fellow
Participant 15	Clinical research center manager
Participant 16	IT/EU projects manager
Participant 17	Project administrator
Participant 18	PhD research student
Participant 19	Non-executive chairman
Participant 20	Lecturer
Participant 21	Masters student
Participant 22	Human performance
Participant 23	Researcher
Participant 24	Account manager
Participant 25	Retired telecoms technician
Participant 26	Retired
Participant 27	Student
Participant 28	Private teacher
Participant 29	Unemployed
Participant 30	Adult literacy organizer
Participant 31	Student
Participant 32	Null
Participant 33	Null
Participant 34	Null

Appendix C: Schedule of the Face-to-face Consultation

Table C1. Schedule of Face-to-face Consultation

Time	Activity
9.00 - 9.30	Welcoming participants
9.30 - 9.40	Presentation of the consultation objectives and expected outcomes
9.50 - 10.10	Get to know each other: ice breaker
10.10-10.30:	Overview of research scenarios
10.30 - 11.00	Coffee break
11.00 - 12.45	First and second discussion rounds
12.45 - 13.45	Lunch break
13.45 - 14.15	Third discussion round
14.15 - 14.50	Summary of the results
14.50 - 15.45	Finalization of the template
15.45 - 16.00	Coffee break
16.00 - 16.30	Exhibition of the five enriched research topics and then prioritization
16.30 - 17.00	Closing session: feedback on the day

Appendix D: Discussion Template



Research Scenario: ____

Table Number: ____________

1) What challenge(s) does this research scenario address?

2) Is it important from your point of view to address this challenge? Why?

3) How could it be approached?

4) Who should be involved in solving the problem?

5) What should be the main goals/ impacts of the research activity?

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Figure D1. Discussion Template

About the Authors

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