CORA Cork Open Research Archive
Cartlann Taighde Oscailte Chorcaí

| | |
|---|---|
| Title | Blended stakeholder participation for responsible Information Systems research |
| Authors | McCarthy, Stephen;Rowan, Wendy;Lynch, Laura;Fitzgerald, Ciara |
| Publication date | 2020 |
| Original Citation | McCarthy, S., Rowan, W., Lynch, L. and Fitzgerald, Ciara (2020) 'Blended Stakeholder Participation for Responsible Information Systems Research', Communications of the Association for Information Systems, (forthcoming) In Press. |
| Type of publication | Article (peer-reviewed) |
| Link to publisher's version | http://aisel.aisnet.org/cais/ |
| Rights | © Association for Information Systems 2020. This is a PDF file of an unedited manuscript that has been accepted for publication in the Communications of the Association for Information Systems. For a definitive version of this work, please check for its appearance online at http://aisel.aisnet.org/cais/. - https://creativecommons.org/licenses/by/4.0/ |
| Download date | 2026-10-12 06:13:33 |
| Item downloaded from | https://hdl.handle.net/10468/10395 |

UCC
University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

Communications of the Association for Information Systems

# Accepted Manuscript

## Blended Stakeholder Participation for Responsible Information Systems Research

**Stephen McCarthy**
Department of Business Information Systems,
Cork University Business School,
University College Cork, Ireland.

**Wendy Rowan**
Health Information Systems Research Centre,
Department of Business Information Systems,
University College Cork, Ireland.

**Laura Lynch**
Health Information Systems Research Centre,
Department of Business Information Systems,
University College Cork, Ireland.

**Ciara Fitzgerald**
Department of Business Information Systems,
Cork University Business School,
University College Cork, Ireland.

Please cite this article as: McCarthy, Stephen; Rowan, Wendy; Lynch, Laura; Fitzgerald, Ciara: Blended Stakeholder Participation for Responsible Information Systems Research, *Communications of the Association for Information Systems* (forthcoming), In Press.

This is a PDF file of an unedited manuscript that has been accepted for publication in the *Communications of the Association for Information Systems*. We are providing this early version of the manuscript to allow for expedited dissemination to interested readers. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered, which could affect the content. All legal disclaimers that apply to the *Communications of the Association for Information Systems* pertain. For a definitive version of this work, please check for its appearance online at http://aisel.aisnet.org/cais/.

Communications of the Association for Information Systems

Research Paper ISSN: 1529-3181

# Blended Stakeholder Participation for Responsible Information Systems Research

**Stephen McCarthy**
Department of Business Information Systems,
Cork University Business School,
University College Cork, Ireland.

**Wendy Rowan**
Health Information Systems Research Centre,
Department of Business Information Systems,
University College Cork, Ireland.

**Laura Lynch**
Health Information Systems Research Centre,
Department of Business Information Systems,
University College Cork, Ireland.

**Ciara Fitzgerald**
Department of Business Information Systems,
Cork University Business School,
University College Cork, Ireland.

**Abstract:**

Information Systems (IS) research is often conducted 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. It is therefore not surprising that examples abound of where technology use has failed 'to make the world a better place', or worse still has contributed towards unintended negative outcomes. In light of 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 which combined 'blended' face-to-face and online participatory techniques. The case study relates to a large-scale consultation undertaken in a 24-month European project involving 30 countries. The project engaged over 1,500 stakeholders in the co-creation of future research agendas for the European Union. We discuss case study findings using Stilgoe, Owen, & Macnaghten's (2013) RRI framework (Anticipation, Reflexivity, Inclusion, Deliberation, Responsiveness) 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; health IT

[Department statements, if appropriate, will be added by the editors. Teaching cases and panel reports will have a statement, which is also added by the editors.]

[Note: this page has no footnotes.]

This manuscript underwent [editorial/peer] review. It was received xx/xx/20xx and was with the authors for XX months for XX revisions. [firstname lastname] served as Associate Editor.] **or** The Associate Editor chose to remain anonymous.]

# 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 (cf. Davison et al., 2019; Chen et al., 2017; Turel et al., 2011; Walsham, 2012). Previous studies have shown how technology use can open up new channels of communication and give a 'voice' to marginalised social groups (Bedeley et al., 2019), improve standards of healthcare quality (Damberg et al., 2009), and drive process innovation (Bilgeri et al., 2019). However, for each success story, there are contrasting cases where technology use has also led to negative outcomes. This includes outcomes such as smartphone addiction (Busch & McCarthy, 2018), increased social control through data monitoring of employees (Howcroft and 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, illuminating IT outcomes that can instead negatively impact the quality of life for different stakeholders.

In order to understand both the positive and negative consequences of technology use, literature asserts the need for IS researchers to engage in dialogue with diverse stakeholder groups early in the system development process to explore direct and indirect effects of use (Chen et al., 2017; Markus and Mentzer, 2014; Poser, Küstermann, & Bittner, 2019). For instance, Markus and Mentzer (2014) note that while negative consequences are rarely intended, they can be foreseen by IS researchers using analysis techniques in advance of system building. This requires targeted methods which allow researchers to constructively engage with stakeholders and gather first-hand insights into how technology might impact their daily lives. However, to date, many IS studies demonstrate limited evidence of having engaged with the stakeholders that they claim to benefit and speak on behalf of (cf. Peticca-Harris et al., 2019). Considering these concerns, IS scholars have recently called for new approaches which enable different stakeholder groups to express their opinion on complex socio-technical issues (Davison et al., 2019). Such approaches can potentially help IS researchers maximise the positive consequences, while adhering to ethical principles which minimise the potential negative consequences of technology use (Markus and Mentzer, 2014; Someh, Davern, Breidback & Shanks, 2019; Walsham, 2012).

Stakeholder participation approaches are well established in the policy making domain as a means of engaging different groups in decision-making processes (Cornwall and Coelho, 2007). For instance, approaches such as Foresight Processes, Scenario Planning, and Delphi Studies offer a means of engaging different stakeholders in decision-making to gather their diverse views on a topic (cf. Fouché & Light, 2011; Skinner et al., 2015). In addition, the more recent use of 'blended' participation approaches provide new opportunities for citizens to participate in policy making through a mix of face-to-face and online techniques (cf. Poser, Küstermann, & Bittner, 2019; Sæbø et al. 2008). These complementary techniques can broaden the representation of diverse stakeholder groups at different stages of the consultation process using a mix of co-located workshops, and information and communication technologies (ICT) enabled consultations (Sæbø et al., 2008).

However, our understanding of responsible research and innovation (RRI) within the IS field remains nascent (Davison et al., 2019). In particular, further research is needed on how stakeholder participation approaches can be used for exploring the socio-technical issues which the IS field is synonymous with. Based on this gap in both IS literature and practice, we seek to answer with the following research question**:** *How can stakeholder participation approaches be used to support RRI in IS research?*

We provide empirical insights into this research question by presenting findings from the case study of a 24-month responsible IS research project which involved partners from 30 countries across Europe and engaged diverse stakeholder groups. This paper presents findings from the use of a blended approaches where both face-to-face and online techniques were used to engage citizens, practitioners, and policymakers during the project.

This paper makes three primary contributions which will be of interest to both academics and practitioners. Firstly, we present insights into how responsible IS research can be conducted using face-to-face and online stakeholder participation techniques within a large-scale consultation process. We outline the steps included in this approach, together with the strengths and weaknesses perceived by the participants. Secondly, we discuss lessons learned based on a set of criteria from RRI, a domain of study which

concerns the ethics of research and technology development. Our discussion was guided by constructs taken from the literature, in particular those developed by Stilgoe, Owen, & Macnaghten (2013). These criteria can inform responsible IS research efforts in the future. Thirdly, we recommend future research directions for responsible IS research, including studies on user engagement in online consultations, incentives for stakeholder engagement, and the development of an evaluation framework for guiding responsible research and innovation in IS going forward. This will be of interest to academics and practitioners in the IS field who hope to undertake similar blended consultation approaches.

The remainder of the paper is structured as follows: Section 2 provides the background to the paper by reviewing literature on responsible research and innovation, and stakeholder participation approaches (Foresight Processes, Scenario Planning, and Delphi Studies). Section 3 then introduces the approach adopted in the case study which combines face-to-face and online consultation techniques for responsible IS research. Section 4 presents case study findings and Section 5 discusses these findings as relevant to academic and policymaking communities. Section 6 brings the paper to a close with a conclusion.

# 2 Background

## 2.1 Responsible Research & Innovation (RRI)

Responsible Research and Innovation (RRI) is a domain of study which concerns the ethics of research and technology development (Stahl, Jirotka & Coeckelbergh, 2014). The aim of RRI is to prevent harm occurring from research and innovation activities by bridging any perceived knowledge gaps between stakeholders. This requires a comprehensive understanding of knowledge gaps, starting at the beginnings of research right up to the point at when individuals or organisations use the outputs of research (Peter, van der Veen, Doranova & Miedzinski, 2013; Stahl, et al 2014). Von Schomberg (2013, pg. 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 innovative science that is ethical, inclusive, democratic and equitable. It aims to open up and realise new areas of public value for science and innovation (Wilsdon et al., 2005).
2. Science with society and its responsiveness to society – RRI seeks the integration and incorporation of mechanisms such as anticipation, reflection and inclusive deliberation by relevant the stakeholders of research and the innovation process (Owen, Macnaghten, & Stilgoe, 2012).
3. Reframing responsible research – RRI aims to scrutinise potential impacts and risks associated with emerging technologies in order to ensure accountability (Delpy, 2011). In responding to grand challenges, RRI also seeks to maintain communication with policymakers at both national and international levels (Owen et al., 2012).

RRI requires social actors to work together in improving the relationship between research and innovation processes, and outcomes that meet the needs of society (Geoghegan-Quinn, 2014). By involving a range of stakeholders (e.g. citizens, practitioners, and policymakers) in the research process, there is a collective responsibility over the control and direction of outcomes that are ethically acceptable (von Schomberg, 2012). For instance, social and sustainable innovation can aim to address societal challenges such as the environmental, ethical, and economic impacts of technology (Bryant et al,, 2009; Lubberink, Blok, van Ophem & Omta, 2017; Stahl, 2012, 2014).

RRI and the related area of technology assessment have closely aligned motivations including citizen engagement, interdisciplinary collaborations, socio-technical imagery, and the consideration of wider impacts from emerging technologies. The use of forecasting techniques to anticipate the potential consequences of new technologies dates back to the work of Schot & Rip (1997), and more recently technology assessment has moved towards more participatory and reflexive approaches to promote a positive impression of technological impact (Genus, 2006). These new approaches place an increased emphasis on reflection and action early in the development lifecycle to prevent irreversible technological lock-in (Mingers and Walsham, 2010; Stahl et al., 2014).

The dominant framework for RRI in the literature, put forward by Stilgoe et al. (2013), 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 the known, likely and possible implications of research and innovation. This is guided by the involvement and early inclusion of diverse stakeholder groups. | Stilgoe et al. (2013); Wickson & Carew (2014) |
| Reflexivity | Critical review of one's own activities and assumptions, recognising limitations in knowledge and lack of universal applicability of one's own outlook. This is important for social actors to acknowledge their role responsibility and wider moral obligations. | Stilgoe et al. (2013); Pavie, Scholten & Carthy (2014). |
| Inclusion | Representation and engagement from diverse stakeholder groups (e.g. citizens, practitioners, policymakers) to ensure their views and perspectives are considered during the participation process. | Stilgoe et al. (2013); Fitzgerald, et al. (2016); Enserink & Monnikhof (2003). |
| Deliberation | Utilising 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 et al. (2019) |
| Responsiveness | Promoting the capacity to change and adapt the innovation in reaction to stakeholder values. This includes the principle of co-responsibility for the development of research and innovation by all stakeholders. | Stilgoe et al. (2013); Owen et al. (2013). |

Stakeholder participation is essential for preventing such scenarios by expanding our research knowledge on what is possible and desirable within the wider societal context. The next section looks at stakeholder participation in more detail.

### 2.1.1 Stakeholder Participation

The philosophy of RRI promotes the ethos of 'science with and for society' (Laroche, 2011; Von Schomberg, 2013), with stakeholder participation seen as a vital part of the social engagement process. Stakeholder participation can be traced back in the literature to Arnstein's (1969) ladder of citizen participation, with the highest level of citizen involvement resulting 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, we have seen the graduation of stakeholder participation into the design of research agendas such as the European Union's (EU) Horizon 2020 research framework.

Stakeholder participation requires careful planning. Firstly, the stakeholder groups invited to engage requires consideration. We must first identify groups (both experts and lay people) who may be directly or indirectly affected by a problem and ensure that they are able to contribute. Involving a wide range of people in the process stimulates the sharing of perspectives and garners more information on prospective goals and objectives (Bergvall-Kåreborn et al, 2014; Enserink & Monnikhof, 2003; Fitzgerald et al., 2016). All too often participatory processes end up recruiting people who are easy to recruit, who are comfortable at vocalising their opinions and speaking up in public arenas. Therefore, inclusive and diverse recruitment drives are essential to ensure representativeness; this can be aided 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 visualisations and interactive websites (Conroy & Evans-Cowley, 2006; Howard & Gaborit, 2007; Loukis & Wimmer, 2012). Technology can also aid recruitment using online campaigns.

When designing stakeholder participation processes, it has been noted that different types of problems require different solution responses (Bryson, Quick, Slotterback & Crosby, 2013). The chosen objective of participation therefore 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, diverse stakeholders can be recruited to ensure adequate and diverse representation, with the end goal of informing the distribution of benefits and the reduction of harms ensuing from decisions. In contrast to this, small group formats can be used to ensure collaboration among participants through the exchange of nuanced views. In this scenario, participants learn from each other, and represent a diverse mixture of expertise within broader stakeholder groups. The outcome would be to change collective assumptions, transform participant knowledge, and generate new solutions (Bryson, Quick, Slotterback &

Crosby, 2013). These improvements can be ensured by designing approaches which allow for both exploration and exploitation i.e. searching for new ideas and solutions, as well as refining existing ideas and solutions (Kim & Schachter, 2013). It is important for participants to also know the purpose of their engagement.

In any group situation, effective leadership is required. With stakeholder participation, three types of leadership styles have been identified – sponsors, champions, and facilitators (Crosby & Bryson, 2005; Morse, 2010; Schwarz et al. 2011). Each role is deemed equally important to ensure success. Sponsors are identifiable as those with formal authority to justify participation – providing funds, staff, and having the power to translate results into policy. Champions manage day to day activities but lack resources, relying instead on informal power created through competence and trust. The facilitator's role is to build processes, maintain neutrality, assisting with group cohesion and productivity. In participatory processes, leadership is required to provide equal opportunity for meaningful exchange around decision outcomes (Bryson, Quick, Slotterback & Crosby, 2013). This can be achieved via the co-production of agendas, sharing of policy decisions and preventing value differences between the views expressed by experts and other stakeholders (Quick & Feldman, 2011; Crewe 2001). Group dynamics can also be guided by equal participation rules, with facilitators ensuring these rules are abided to (Callalan, 2005; Juarez & Brown, 2008). By providing an opportunity for all stakeholders to engage in open dialogue and interconnection, 'a space for genuine collaboration' can be created (Boxelaar, Paine & Beilin, 2006, 121).

## 2.2 Stakeholder Participation Approaches for RRI

There are numerous established approaches which can guide stakeholder participation for RRI in IS. We will discuss three such approaches: Foresight Processes, Scenario Planning, and Delphi Studies. We also outline the relative advantages and limitations of each.

### 2.2.1 Foresight Processes

Foresight processes aim to explore future designs through participatory approaches for creative thinking and the inclusion of multiple perspectives (Barré & Keenan, 2006). Information garnered from these multiple perspectives can be converted into scenarios and shared visions, and eventually into strategies and actions for policy creation (Caracostas, 2003; Havas, 2005). Foresight processes are most useful for addressing novel issues with high levels of public concern, or known issues where public opinion has not previously been considered (Amanatidou, 2014). To do this, foresight processes seek to 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, leading to more adaptive behaviours. The cross-boundary nature of foresight is also useful for creating new relationships, through linking research and innovation to socio-economic needs, and policy formation (Brown et al., 2001; Georghiou & Keenan, 2006).

Some of the participatory approaches used in foresight programmes include stakeholder panels, brainstorming, expert panels, stakeholder consultation and analysis, SWOT analysis, interviews, surveys, voting/polling, and road mapping (FNR et al., 2007). Prior cases studies suggest several positive outcomes from foresight processes, both intended and unintended (e.g. knowledge societies; networking and collective learning; public participation). In one such case, participants expressed that the foresight process had enabled them to build trust with others and raise their interest in the subject, inspiring them to improve collaboration and networking with other individuals and organisations. 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 (FNR 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 policy making (Cassingena & Pace, 2004).

Critics have questioned the ability of foresight processes to predict, given the uncertain and complex nature of such planning activities (Wright, Cairns, & Goodwin, 2009). However, foresight processes do not necessarily make claims of prediction, with the aim instead to focus participants on an imagined, and possible world in the future. This can in turn help guide strategy by planning alternatives for uncertain futures. Vision building presents an opportunity for participants to evaluate a range of possible futures, allowing alternatives to be investigated in a systematic way. Creativity and prospective evaluations are enabled by formulating many versions of the future, through branch analysis, areas of plausibility, cause-effect generation, and back casting, to name a few (Foresight, 2009). These techniques utilise

participatory exercises with stakeholders to stimulate creativity and dialogue. In turn, foresight processes seek to engage multiple views of the future through democratic communication.

### 2.2.2 Scenario Planning

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

Scenario planning is guided by Habermas' (1984) vision of consensus democracy which asserts that rational debate, mutual learning, and argumentation are crucial for genuine consensus. When the speech act of one person is accepted as a position, a process of implicit understanding is explicitly articulated. Understanding is therefore a dialogue between speakers and hearers, in which the expression is made understandable to both parties (Habermas, 1984). Shared understanding can therefore only be achieved when people reach agreement on shared knowledge of the current situation (Van Bouwel & Van Oudheusden, 2017; Bittner and Leimeister, 2014), and ideal speech is not imposed during communication but rests on common convictions of stakeholders.

Critics of scenario planning have queried the credibility and legitimacy of scenario planning for policy and decision-making (Clark, Mitchell, & Cash., 2002). One of the recognised constraints of scenario planning is the limited worldview of participants taking part (O'Brien, 2004). Habermas' theory of communicative action has also been criticized for putting too much emphasis on community, with Maxwell (2012) questioning whether the focus on reaching agreement detracts from the power of heterogeneous responses and multiple visions of the future. However, proponents of scenario planning have countered these criticisms by demonstrating the power of citizen participation in policy and planning processes. Such that, scenario planning has reported successes in increased social learning, enlightening participants, and providing an opportunity for new relationship and network building (Reed et al., 2010). Transparency around recruitment and inclusivity practices are another example of rebuffing the concerns of critics by broadening participation to capture inputs from diverse stakeholder groups (Long, 2015).

### 2.2.3 Delphi Studies

Delphi Studies are designed to structure communication processes for large groups of people and assess the potential for new technological innovations (Skinner et al., 2015; Turoff, 1970). Groups of experts from many different disciplines are asked to vote on whether they think certain events will occur based on the evaluation of all group input. They are then later permitted to edit or revise these judgements to arrive at a consensus (Mitroff & Turoff, 2012). However, since the initial use of this technique in forecast planning, adaptations have been made such that compromise and consensus at the first round may not be appropriate. In technology assessment, it is deemed more appropriate to generate several alternative options for further discussion and debate. The focus on expert participation has also broadened, it is now questionable as to who or what constitutes an 'expert'. There has been a move towards more inclusion in the design of Delphi and increased reflexivity by those taking part (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). Delphi is therefore primarily aimed at generating ideas and evaluating alternatives, through the creation of a venue for critical debate (Skinner et al., 2015; Turoff, 1970). These aims are achieved through the following features (Linstone & Turoff, 2011; Skinner et al., 2015):

- A group of experts engaged in anonymous, multi-round discussions.
- Two or more rounds that move from open-ended to a narrower focus.
- Evaluation of responses by participants, using rating systems to extrapolate written reviews.
- 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 for the performance of online Delphi studies. This minimizes the time delays between the first, second or third round of face-to-face Delphi designs. The online method allows participants to complete a survey

(Likert type questions are linked to open-ended "reason questions"), which is stored and altered over time following reflection and review by other participants within the group. Respondents' identities are kept private and anonymous. The online Delphi process can be synchronous or asynchronous, involving participants from a worldwide panel (Gordon, 2009; Lee and Fedorowicz, 2018). Participant reactions are also part of the process and included in the design (Linstone & Turoff, 1975; Skinner et al., 2015).

The Delphi method holds several advantages. Firstly, interactionism is supported by protecting the anonymity of participants and hiding their hierarchical status. Ideas can therefore originate from any participant and are free flowing. Delphi is also by its very nature a qualitative approach and thus involves personal and subjective views. Feedback is aimed at explaining and clarifying but does not seek to judge representations of problems. There is space to contribute both positive and negative perspectives, and heterogeneity in responses is desired. The Delphi method asserts that different participants will hold different views over the past and present, which in turn can impact on the future (Linstone, 1984). The Delphi method can therefore help address complex issues and unexpected consequences by drawing on the views of different actors. Nevertheless, there are certain limitations associated with Delphi studies. One limitation concerns the short-term planning horizons and short-term memories of participants which must be addressed through the communication of possible future scenarios. Objectivity may also be an illusion as expert opinion can often be unconsciously biased by prior experience.

The next section describes the case study of this paper 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

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

- To create visions and scenarios that connect societal needs (e.g. Grand Challenges) with future expected advances in technology, society, environment etc.
- 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 Programmes.
- 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 the relative merits of stakeholder focussed consultations.

The project ran between June 2015 to December 2017 and consisted of two consultation phases. Each consultation phase was then followed by a clustering workshops where the results from across Europe were aggregated by the project partners, and a group of invited researchers and citizens.

The *first consultation phase* began in September 2015 and engaged over 1,000 citizens from across 30 European countries. The purpose of the first consultation phase was to produce visions for desirable futures in which different societal challenges are addressed through technological innovations. All 30 countries involved in the project produced aggregated results from 36 participants at each national consultation workshop. The same consultation approach was adopted by all 30 European countries to ensure that results could be aggregated. *Clustering workshop 1* then took place between April 21th-23rd, 2016. During this two-day clustering workshop in Milan, Italy, results from the first consultation phase were clustered into overarching social needs by the project partners, and over 40 citizens, and researchers from across Europe. The workshop sought to combine expert opinion with the perspectives of citizens to

[1] Name of the project, project roles, and organisations have all been disguised. They have no relationship to similarly named organizations or projects that might exist in the real world.

better inform recommendations going forward. Overarching social needs were identified and clustered thematically by participants 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 prioritise the clustered social needs from the first clustering workshop. The purpose of the second consultation phase was to enhance the clustered social needs from the first clustering workshop through further discussion. Participants were asked to generate recommendations on the social and technological issues which they found most important for the future of research and innovation. *Clustering workshop 2* then took place in Brussels, Belgium in December 2016 and sought to analyse output from the second consultation phase based on input from researchers and EU policymakers from across Europe. These participants transformed the validated and prioritised results phase into policy options and prioritised actions and research agendas for Horizon 2020.

The Vision Depiction Project's phrases are illustrated in Figure 1.

**Figure 1. Timeline of Case Study**

This paper presents findings from the second consultation phase in which a blended approach was adopted to consult citizens, practitioners, and policymakers. The remainder of this section provides descriptions of how the blended stakeholder consultation was undertaken by the project partner in Ireland.

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

The Irish face-to-face consultation utilised foresight processes and scenario planning to explore the theme "Holistic Health and Technology Empowerment". This theme centred on the future social implications of modern health information systems i.e. privacy, clinical effectiveness, quality. A targeted recruitment strategy was developed to engage citizens, practitioners, and policymakers. Target groups were recruited to provide diverse viewpoints on the research scenarios assigned. For instance, the recruited citizens came from a variety of different backgrounds and demographics to create as varied a representation as possible i.e. based on age, gender, education etc. Meanwhile, the recruited practitioners consisted of 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, 48 people were recruited across all target groups and in the end, 34 stakeholders attended the consultation (See Figure 2). Appendix B outlines the breakdown of participants groups in more detail.

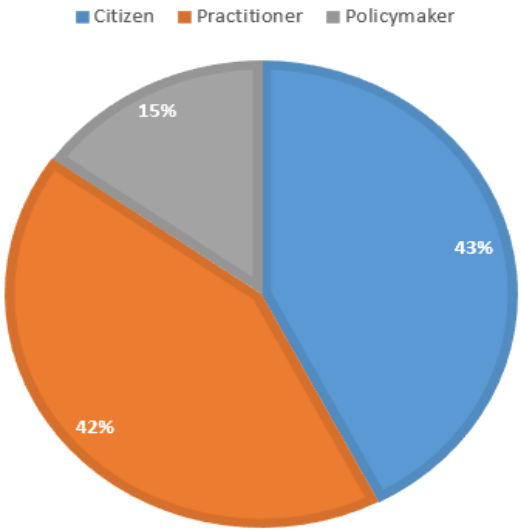


**Figure 2. Breakdown of Face-to-Face Participants (n=34)**

The consultation began with an ice-breaker session, during which time the participants were invited to introduce themselves and briefly share their motivation for attending the consultation. The professional title of each participant was not mentioned during the consultation and only first names were used to refer to individuals during the entire day. Participants were then seated at six roundtables, and an assigned seating plan ensured representation of citizens, practitioners, and policymakers at each table. A moderator was also seated at each table and invited participants to discuss the future of research and innovation in the European Union as relevant to the aforementioned theme. Three rounds of discussions were held during the day (see Appendix C) in which participants discussed different research scenarios using a designed template, see Appendix D. The objective was to answer the questions in this template in order to promote discussion and enrich each research scenario. Special knowledge on the topics was not required prior to the consultation. Instead the goal was for participants to contribute personal views on the different research scenarios based on their own personal experience. Participants used post-it notes to record ideas which were placed on flipcharts for further discussion. The table moderator also asked one participant at each table to act as a scribe and document the main points from the discussion at the table. Each table was then allocated one research scenario, and participants were asked to move to a different table after each discussion round. Places were limited at each table to ensure that each participant would have a chance to contribute.

## 3.2 Online Consultation (Delphi Study)

In parallel with the face-to-face consultations, an online consultation was run to engage additional citizens, practitioners, and policymakers in the consultation process. The online consultation ran between September and October 2016 and was targeted towards citizens, practitioners, and policymakers across the 30 EU countries represented by the project consortium. 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 utilised a Delphi study approach. Participants were presented with 2 to 5 ‘default’ pros and cons arguments for each chosen research scenario which they could rate in terms of perceived likelihood of occurrence and potential impact. Participants could also add additional arguments which would be visible to and rated by other participants going forward, once screened by the platform administrator for each country. The maximum number of arguments that could be rated and added by each participant was limited to three. Finally, the number of votes gathered by each argument during the exercise was summed to provide an overall ranking for each argument. 372 distinct users were recruited 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).

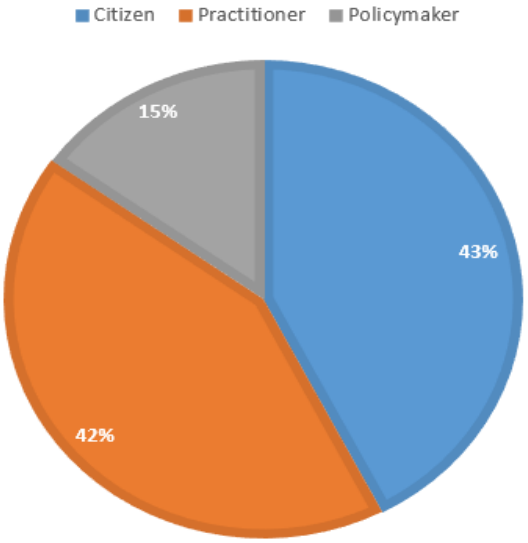


**Figure 3. Breakdown of Online Consultation Participants (n=168)**

# 4 Data Analysis

Qualitative thematic analysis (Patton, 2002) was used by the authors to analyse participants' responses from both the face-to-face and online consultation. The authors began by continuously rereading the transcribed content from both consultations to generate a set of codes which were judged as meaningful and important to the study in question. These initial codes were then grouped together to form overarching categories of codes which helped organise the content according to similar themes. New categories were created as necessary to help further analyse the content. The authors continued this process of thematic analysis until a point of saturation was reached and further analysis did not contribute new insights and interpretations, but rather supported existing ones made by the authors (Patton, 2002). During each consultation, participants were asked to offer their unique perspectives on research scenarios around technology empowerment in healthcare.

In addition, each participant was provided with the opportunity to contribute towards the accuracy of the collected data at the end of the consultation period and provide further feedback. For instance, at the end of the face-to-face consultation, a plenary session was held where each participant was asked for feedback on the findings and was allowed to vote for 5 research scenarios they felt were most important in terms of impact and probability of occurrence. Participants were provided with 5 coloured dot stickers (Total votes available = 165 (5 votes x 34 participants)) and participants could place only 1 dot sticker on one research scenario. This evaluation contributed further insights to support the data analysis and generated additional insights into the research question. The findings presented in the next section centre on the most salient quotes selected to further support and illustrate results from the two consultations.

# 5 Findings

This section reports on findings from the second consultation phase. The project built on the conviction that the collective intelligence of society could strengthen the relevance of the European science and technology system. To achieve this, the project sought to establish genuine dialogue between citizens, practitioners, and policymakers, and collect actors' visions around the social implications of science, technology and innovation. The findings focus on the topic of technology empowerment in healthcare, with specific relevance to three research scenarios: 1) Quantitative person-centred 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-centred Health

Several participating countries looked at the scenario "Quantitative person-centred health" (e.g. Cyprus, Finland, Ireland and Slovakia), focusing on the following 5 questions:

### 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. There was consensus that the delivery of efficient, cost effective and accessible healthcare services can be supported by technology i.e. the use of e-health solutions, electronic health records. Discussions also centred on how the use of e-health solutions will result in an explosion of data collection and support improved diagnosis and treatment. However, the general sentiment was that patient data protection, security and integrity must be at the forefront of a patient centric healthcare environment and technology use should be regulated, inclusive, and follow a holistic approach which 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 facing the healthcare system, it was important to benchmark the current healthcare service offered to patients using technology. This could help determine where best /worst practices exist and whether services should be implemented 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 use of technology.

### 5.1.3 How could it be approached?

Participants agreed that healthcare systems in each country must be brought to a similar level across the EU. They discussed how this will require regulations to be put in place to protect patient data privacy and integrity, and in doing so allow for patient records to be shared between healthcare providers, both public and private, in all EU countries. Practitioners argued that data availability could greatly improve the overall standard of care through medical diagnostics. However, others noted that education and the use of targeted research funding were essential to ensure that best practices were achieved for data management system design and healthcare services efficiency.

### 5.1.4 Who should be involved in solving the problem?

For this scenario to be fully implemented, participants asserted that each member state of the EU must set minimum standard requirements for technology implementation. They noted that relevant bodies must be actively involved in this process, including policy makers, member-state non-governmental organisations (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)” which would deliver “Improved health care services and systems… [and] patient healthcare outcomes.” To achieve this, the consensus was that “Improved access to healthcare services.” as well as “Improved ability to measure healthcare service efficiency and patient satisfaction.” were essential. Some participants also pointed out the need to include privacy as a measured impact of the scenario: through “Improved patient data management, protection and validation.”

## 5.2 Data for All – Share the Power of Data

Several participating countries looked at scenario Data for all – Share the power of data (e.g. Croatia, Germany and Ireland), again focusing on the following 5 questions:

### 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 there was a need to relook at data management and security in the healthcare system as well as the ethics behind data use, in order to ensure equality around data use and accessibility. There were also discussions on how citizens’ need to be educated around both the creation and use of healthcare data to improve data management and security overall.

#### 5.2.2 Why would it be important to address this challenge?

There was consensus that it was important to address this challenge in order to foster informed decision making and to improve data transparency and protection. Participants were confident that more informed decision-making can in turn help increase the overall quality of life for patients through the application of targeted interventions. However, again citizens felt that education was needed to understand data ownership and data management to ensure that they could be empowered during healthcare decisions.

#### 5.2.3 How could this challenge be approached?

The 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 through the provision of high-speed broadband and affordable Wi-Fi Internet connections. It was also discussed how further research was needed to determine what "the correct use of data" means and provide guidelines on how to identify real problems and issues, as well as desired outcomes. Participants noted that there was a 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 were very vocal that different stakeholders should be involved in healthcare decision-making including the citizens, policy makers, state institutions / decision makers, Civil society organisations (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?

For the second scenario, the 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 the relevance and meaning of metrics, participants asserted the need for "reliable data sources [and] enhanced systems across Europe. Providing enhanced... awareness in the general public [about] personal health and maintenance." Participants also spoke about the opportunities in this scenario for solutions to be co-created by "enabling citizens and public service providers (for example, CSOs) to use and create data through open source digital tools and platforms." Most participants agreed, co-creation processes could enable the "usage of data to solve social problems and inequalities with the aim of development of sustainable society." However, again, there was cautions raised about the need to include "improved data security and protection".

### 5.3 Equal Access to Health Services and Resources for all Citizens

Participating countries also looked at scenario Access to equal and holistic health services and resources for all citizens (e.g. Austria and Ireland), focusing on the following 5 questions:

#### 5.3.1 What are the problems/challenges of this scenario?

Participants noted that external cost pressures from sources such as the pharmaceutical industry were creating many challenges around equal access to healthcare services. They discussed how healthcare services were facing continuous cost-cutting measures and increasing pressures on healthcare staff. In addition, participants noted that overall awareness of health was limited due to a lack of focus on health promotion and many were unaware of the effect that changes in lifestyles could have on their health.

#### 5.3.2 Why is it important to find solutions to these challenges?

The importance of solving these challenges centred on the need to improve the healthcare systems as a whole by ensuring equal access to treatment for everyone. Participants noted that there is potential for technology help reduce wait times, improve inefficiencies, to minimize the negative economic impact of the current healthcare service through the prevention of illnesses. In turn, timely interventions can ultimately lead to an increase in the quality of life for all and reduce the costs of healthcare delivery.

#### 5.3.3 How could it be approached?

Participants noted that the harmonization of medical care (e.g. training standards, product standards, etc.). across the European market, as well as improved working conditions for staff were key antecedents

for ensuring equal access to treatment for everyone. Technology could also support closer cooperation between medical staff and a closer exchange of knowledge. However, there is also a need for more investment in research and development on how medical staff can adopt a focused patient orientation through technology. Participants felt that these challenges could be addressed through increased education, improved care environments, and targeted policymaking for improving the entire healthcare service through technological developments.

### 5.3.4 Who should be involved in solving the problem?

Participants asserted that multiple stakeholder groups should be involved in solving this problem including 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. Supporting roles were also discussed 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?

In the third scenario, participants placed an emphasis on the goal of "Improved awareness and education [on] health and wellness" among citizens as well as "Improved [access to] healthcare services." To achieve this, the group discussed the need for policy makers to recognise 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.

The next section discusses findings from the Vision Depiction Project in more detail.

# 6 Discussion

The following section provides an in-depth discussion of our findings in relation to the following research question: *How can stakeholder participation approaches be used to support RRI in information systems research?* The discussion is guided by Stilgoe et al.'s (2013) RRI framework as presented in Table 1.

## 6.1 Anticipation

The use of foresight processes and scenario planning proved effective for supporting anticipation in the Vision Depiction Project. There was a palpable enthusiasm among participants as individuals 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 participants were excited by the opportunity to contribute towards the future of science and technology in Europe and found the stakeholder participation techniques useful for promoting creative thinking. However, there was some divergence between participants' views of outcome effectiveness. For instance, around 5% 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 what the outcome from the Vision Depiction Project was, and how results would be used going forward. This is a common criticism of foresight processes and scenario planning and suggests the need for more exploitation focus (cf. Kim & Schachter, 2013) to refine existing ideas ensuring both RRI process and outcome effectiveness (cf. Geoghegan-Quinn, 2014).

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). Table 2 provides 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 personalised 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 medicalised 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 e.g. 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

Literature suggests that creative responses can be supported by engaging the diverse perspectives of different stakeholder groups (Enserink & Monnikhof, 2003; von Schomberg, 2012). In the Vision Depiction Project, participants noted that the involvement of citizens, practitioners, and policymakers was very positive for dialogue and helped generate interesting and diverse discussions during the consultation. In terms of reflexivity, most participants agreed that they had a clear understanding of the purpose of the event and felt comfortable when voicing their opinions during the process. However, given the diverse background of participants, respect for the opinions of others 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, Quick, Slotterback & Crosby, 2013). This signals the need for strong facilitation while implementing participatory approaches (Callalan, 2005; Juarez & Brown, 2008). In the Vision Depiction Project, training sessions were organised prior to each consultation phase to help prepare facilitators for running 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*". This 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 stated by one participant "*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 use of 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. Table 3 provides an overview of the opportunities and challenges for reflexivity based on quotations from participants in the Irish consultation.

**Table 3. Quotations 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."<br>• "Engagement, multi-disciplinary approach, energy" ... "The enthusiasm was infectious."<br>• "Group of bright and interesting people – stimulating and enjoyable."<br>• "Good discussion, personalities and different experiences of people."<br>• "How respectful everyone was of the opinion of others." | • Need "more time given for summary of ideas and consensus-forming"<br>• Need "more time devoted to an overall proposal"<br>• "Some topics had questions to drive it others did not. The ones with [questions] worked better."<br>• "Having a prior commitment from people to stay until the end" is important.<br>• "More digital approach e.g. electronic voting." |

## 6.3 Inclusivity

The Vision Depiction Project aimed to provide 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 organisers as diverse groups were eager to engage in the process. Nevertheless, significant challenges were experienced in ensuring a context-sensitive design that catered to the diverse representation of different target groups (Laurian at al. 2004). While a good level of diversity was achieved overall, the number of attending citizens from the primary and secondary level education categories was lower than the tertiary level education category. In the Irish context, this may have been impacted by the fact that the event was hosted on a university campus, and therefore citizens with a university education may have been more likely to attend. However, there was also an underrepresentation of citizens aged 66+, despite a targeted communication strategy in a national newspaper to address low number of applications received from citizens in this age bracket. This again points to the challenge of designing a context-sensitive approach which caters to all demographics.

Our results suggest that combining digital and face-to-face approaches can be more effective for inclusiveness than face-to-face approaches alone and helps increase participation among certain minority groups. However, there was still 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, leading to a total user base of around 9,000 participants across 30 European countries. However, in the end only 3,461 participants were engaged, with some partners even failing to engage more than 30 participants. It should be noted that some participants felt that digital communication was not a 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 had been made available by the organisers via email. We find that a blended approach may cater better to the needs of diverse stakeholder groups, as the use of eParticipation alone may exclude groups who are less tech savvy (Mahrer and Krimmer, 2005).

## 6.4 Deliberation

The Vision Depiction Project utilised numerous deliberation tools, techniques, and approaches in order to support RRI process and outcome effectiveness. Literature suggests that the use of multiple participation approaches can ensure a collective responsibility over the control and direction of RRI processes so that they become ethically acceptable for the diverse stakeholder groups involved (von Schomberg, 2012). In particular, the Vision Depiction Project adopted 'blended' approaches such as face-to-face workshops and e-participation to facilitate deliberation among citizens, practitioners, and policymakers. Time turned out to be a critical constraint during the face-to-face consultation as the diverse views of stakeholders meant that it was difficult to reach consensus during the allotted schedule. It is therefore not surprising that more mixed responses were received around the output of the face-to-face event; while 77.27% of participants were satisfied with the results of the event, some participants indicated afterwards that they were unclear what will be done with the results of the discussions given the constrained time for consensus building. Table 4 provides an overview of 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 programme was perfect: I didn't 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% | - | - | - | - |

E-participation techniques helped address timing issues by using technology to engage stakeholders after the event via interactive media such as instant messaging, computer generated visualisations, and e-voting (Conroy & Evans-Cowley, 2006; Loukis & Wimmer, 2012; Howard & Gaborit, 2007). Three participants left the face-to-face consultation before the programme ended due to other personal commitments; a common challenge faced when organising 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 the process was more open ended and less consensus based than traditional Delphi studies. Part of the problem centred on the fact that in-depth user testing had not been carried out on the online consultation platform and as a result, many participants noted that the online consultation platform was not designed in an intuitive way and took too long to complete. Another major challenge was representing the high volume of information contained in the online consultation's research scenarios in an accessible way. Unfortunately, the online consultation placed a large burden on the user to understand the rules and process high volumes of information which lead to information overload. In hindsight, this issue could have been resolved through the involvement of a user experience expert to make the user interface more accessible and clarify rules. In particular, users noted that a lot of text could have been hidden, especially text, which was repeated across all screens, in order to streamline the process. This would better assist participants in working together to improve the relationship between outcomes and the needs of society (Geoghegan-Quinn, 2014).

## 6.5 Responsiveness

Lastly, 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 the development of innovation agendas, and drive change by adapting deliverables to the reaction of stakeholder values (Owen et al., 2013; Stilgoe et al, 2013). In the Vision Depiction Project, the needs and concerns of citizens, practitioners, and stakeholders were transformed into recommendations and suggestions for research and innovation policies in the EU. This output was later delivered to the EU Commission and supported the processes of setting the scientific course of funding calls in the EU going forward. The Vision Depiction Project therefore delivered on the RRI principle of 'science for society' which concerns innovative science that is ethical, inclusive, democratic and equitable 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 will be included in the next research funding programme for the EU. In addition, policy options have been extracted from the validated and prioritised scenarios to form recommendations which were directly delivered to policymakers at a national and EU level. Results from the two consultation phases were disseminated to key stakeholders with an involvement in research and innovation, including government officials, national research councils, and scientific bodies. The Vision Depiction Project's steering

committee were therefore satisfied that responsiveness was achieved through the delivery and communication of responsible research agendas for grand challenges at national and international policy-making levels. The project also increased accountability by allowing stakeholders to scrutinise potential impacts and risks from emerging technologies, a key criterion for responsiveness in RRI (Delpy, 2011; Owen et al., 2012). Participant responses from the Irish consultation support the need for similar approaches in the future, with one participant asserting that *"the format… is a good formula for improving future policy decisions*".

# 7 Conclusion

In this paper, we presented findings from a 24-month RRI project which engaged citizens, practitioners, and policymakers from across 30 European countries in the co-creation of research agendas. Overall, the Vision Depiction Project was deemed a success both by participants, and the partners involved. 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 indicates a strong desire for similar IS research consultations in the future.

In terms of theoretical contributions in this paper, we present insights into the use of 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, the relative strengths and weaknesses of stakeholder participation for RRI were analysed and recommendations were derived for IS research. In terms of practical contributions, we provided an account of how IS researchers and practitioners might foster responsible IS research through engaging diverse stakeholder groups. We draw on case study findings from the second consultation phase, where blended face-to-face and online techniques were used to engage citizens, practitioners, and policymakers. We hope the learnings described 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 multi-stakeholder consultations of their own going forward.

One limitation of the paper is that the case study was primarily focused on the initial stages of engaging stakeholders in the design of IS solutions; therefore, an in-depth study of the impact derived from project outcomes on the future development of IS solutions was outside the scope of our paper. Future studies can seek to provide a longitudinal analysis of the impact of responsible IS research approaches from design to the implementation stages of IS development. The findings of our case study are also specific to the healthcare sector therefore, future research is needed to investigate the application of responsible IS research approaches to other domains and compare idiosyncrasies between them. Similarly, an evaluation framework, grounded in RRI and information systems literature, is needed to compare different stakeholder participation approaches for responsible IS research in different contexts.

In terms of other future research agendas, we suggest that there is an urgent need for user engagement studies on blended consultations to increase their effectiveness going forward. One lesson learned was that online consultation platforms must be designed in a way which motivates users to remain continuously engaged in the participatory process. Our findings suggest that this can be achieved through the delivery of brief but informative prompts to guide users through the online consultations. The inclusion of incentives can also help gain individuals' attention. However, monetary incentives will likely be constrained by the budget available to organisers, and the Vision Depiction Project instead relied on individuals' inherent motivation to engage with the topics. Future research can investigate the use of different forms of incentives for user engagement in blended consultations.

# Acknowledgments

The authors would like to thank Professor Graeme Shanks for his guidance in shaping the manuscript. We would also like to acknowledge the helpful comments provided by Professor Jan Recker, the editor in chief, and the associate editor, and two anonymous reviewers.

## References


Amanatidou, E. (2014). Beyond the veil—The real value of Foresight. *Technological Forecasting and Social Change*, 87, 274-291.

Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Institute of planners*, 35(4), 216-224.

Barre, R., & Keenan, M. (2006). Evaluation, impact and learning. In Seville FTA conference, September.

Bedeley, R., Carbaugh, D., Chughtai, H., George, J., Gogan, J., et al. (2019). Giving voice to the voiceless: The use of digital technologies by marginalized groups. *Communications of the Association for Information Systems*, 45(1).

Bergvall-Kåreborn, B., D. Howcroft and A. Ståhlbröst (2014). "Disregarding History: Contemporary IS Contexts and Participatory Design." *Communications of the Association for Information Systems* 34, 68.

Bilgeri, D., Gebauer, H., Fleisch, E., and Wortmann, F. (2019), Driving Process Innovation with IoT Field Data, *MIS Quarterly,* 18(3).

Bittner, E. A. C., & Leimeister, J. M. (2014). Creating shared understanding in heterogeneous work groups: Why it matters and how to achieve it. *Journal of management information systems*, *31*(1), 111-144.

Boxelaar, L., Paine, M., & Beilin, R. (2006). Community engagement and public administration: Of silos, overlays and technologies of government. *Australian Journal of Public Administration*, 65(1), 113-126.

Brown, N., Rappert, B., Webster, A., Cabello, C., Sanz-Menéndez, L., Merkx, F., & Van de Meulen, B. (2001). *Foresight as a Tool for the Management of Knowledge Flows and Innovation (FORMAKIN)*. Work Package, 5(6).

Bryant, A.; Land, F.; and King, J., L., (2009) Editor's introduction to the special issue on ethical issues in IS research. Journal of the Association for Information Systems 10(11), 782–786.

Bryson, J. M., Quick, K. S., Slotterback, C. S., & Crosby, B. C. (2013). Designing public participation processes. *Public administration review*, 73(1), 23-34.

Buckwalter, N. D. 2014. "The Potential for Public Empowerment through Government-Organized Participation." *Public Administration Review* 74 (5): 573–584. doi:10.1111/puar.2014.74.issue-5.

Busch, P. A., & McCarthy, S. (2020). Antecedents and consequences of problematic smartphone use: A systematic literature review of an emerging research area. *Computers in Human Behavior*, 106414.

Callanan, M. (2005). Institutionalizing participation and governance? New participative structures in local government in Ireland. *Public Administration*, 83(4), 909-929.

Cassingena Harper, J., & Pace, G. (2004). 'The creative processes in policy making: a case for context in foresight. *In Proceedings of the Fifth International Conference on Creative Thinking*, Malta (pp. 21-2).

Caracostas, P. (2003). Sharing Visions: Towards European Area for Foresight. *Brussels: European Commission*.

Chen, W.S. and Hirschheim, R. (2004) A Paradigmatic and Methodological Examination of Information Systems Research from 1991 to 2001, *Information Systems Journal* 14, 197–235.

Clark, W. C., Mitchell, R. B., & Cash, D. W. (2006). *Evaluating the Influence of Global Environmental Assessments. Global environmental assessments: information and influence*. MIT, Cambridge, 1-28.

Conroy, M. M., & Evans-Cowley, J. (2006). E-participation in planning: an analysis of cities adopting on-line citizen participation tools. Environment and Planning C: *Government and Policy*, 24(3), 371-384.

Cooper, T. L., Bryer, T. A., & Meek, J. W. (2006). Citizencentered collaborative public management. *Public Administration Review*, 66, 76-88.

Cornwall, A., & Coelho, V. S. (Eds.). (2007). *Spaces for change?: the politics of citizen participation in new democratic arenas* (Vol. 4). Zed Books.

Crewe, K. (2001). The quality of participatory design: The effects of citizen input on the design of the Boston Southwest Corridor. *Journal of the American Planning Association*, 67(4), 437-455.

Crosby, B. C., & Bryson, J. M. (2005). *Leadership for the common good: Tackling public problems in a shared-power world* (Vol. 264). John Wiley & Sons.

Damberg, C. L., Ridgely, M. S., Shaw, R., Meili, R. C., Sorbero, M. E., Bradley, L. A., & Farley, D. O. (2009). Adopting information technology to drive improvements in patient safety: lessons from the Agency for Healthcare Research and Quality health information technology grantees. *Health services research*, 44(2p2), 684-700.

Davison, R., Hardin, A., Majchrzak, A., Ravishankar, MN (2019), Responsible IS Research for a Better World: A Special Issue of the Information Systems Journal, Call for Papers, *Information Systems Journal*.

Defourny, J., & Nyssens, M. (2010). Social enterprise in Europe: At the crossroads of market, public policies and third sector. *Policy and Society*, 29(3), 231-242.

Delpy, D. (2011). Synthetic Biology Dialogue and What is the Public Perspective. Science in Parliament: *The Journal of the Parliamentary and Scientific Committee,* Spring, 2011, 41-42.

Dennis, B. (2013). *"Validity crisis" in qualitative research: Still? Movement toward a unified approach. In Dennis, B., Carspecken, L., Carspecken, P. (Eds.), Qualitative research: A reader in philosophy, core concepts, and practice (Series—Counter points)* (pp. 3-37). New York, NY: Peter Lang.

Enserink, B., & Monnikhof, R. A. (2003). Information management for public participation in co-design processes: evaluation of a Dutch example. *Journal of Environmental Planning and Management*, 46(3), 315-344.

Fitzgerald, C., McCarthy, S., Carton, F., Connor, Y. O., Lynch, L., & Adam, F. (2016). Citizen participation in decision-making: can one make a difference? *Journal of Decision systems*, 25(sup1), 248-260.

Fouché, C., & Light, G. (2011). An Invitation to Dialogue: 'The World Café' In Social Work Research. *Qualitative Social Work*, 10(1), 28-48.

French, S., & Bayley, C. (2011). Public participation: comparing approaches. *Journal of Risk Research*, 14(2), 241-257.

Foresight, (2009). Scenario Planning: Guidance Notes. http://www.scribd.com/doc/129432607/Foresight-Scenario-Planning#scribd

FNR, VDI, Z-Punkt (2007). *FNR Foresight Final Report National Priorities for Public Research and Other Findings*. June 2007.

Geoghegan-Quinn, M. (2014*). Horizon 2020–A Paradigm Shift for Funding Research and Innovation in Europe*. Speech, 14, 65.

Georghiou, L., & Keenan, M. (2006). Evaluation of national foresight activities: Assessing rationale, process and impact. *Technological Forecasting and Social Change*, 73(7), 761-777.

Genus, A. (2006). Rethinking constructive technology assessment as democratic, reflective, discourse. *Technological Forecasting and Social Change*, 73(1), 13-26.

Gordon, T. J. (2009). The real-time Delphi method. *Futures research methodology* version, 3, 19.

Greene, J. C. (2008). Is mixed methods social inquiry a distinctive methodology*? Journal of mixed methods research*, 2(1), 7-22.

Gusmano, M. K. 2013. "FDA Decisions and Public Deliberation: Challenges and Opportunities." *Public Administration Review* 73 (S1): S115–S126. doi:10.1111/puar.2013.73.issue-s1

Habermas, J. (1984). *The theory of communicative action* (T. McCarthy, Trans.). Boston, MA: Beacon.

Havas, A. (2005). *Terminology and methodology for benchmarking foresight programmes*. Available at SSRN 1735023.

Howard, T. L., & Gaborit, N. (2007). Using virtual environment technology to improve public participation in urban planning process. *Journal of Urban Planning and Development*, 133(4), 233-241.

Howcroft, D. and Trauth, E.M. (eds), *Handbook of Critical Information Systems Research: Theory and Application*, Edward Elgar Publishing, Cheltenham, UK.

Ianniello, M., Iacuzzi, S., Fedele, P., & Brusati, L. (2019). Obstacles and solutions on the ladder of citizen participation: a systematic review. *Public Management Review*, 21(1), 21-46.

Jørgensen, M.-L. and S. Schøning. 2016. *Vision Catalogue. Encompassing the Visions From All 30 Countries. CIMULACT project, deliverable 1.3*. http://www.cimulact.eu/wp-content/uploads/2016/06/D1.3final.pdf

Juarez, J. A., & Brown, K. D. (2008). Extracting or empowering? A critique of participatory methods for marginalized populations. *Landscape Journal*, 27(2), 190-204.

Kautz, K. (2011). "Investigating the design process: participatory design in agile software development." *Information Technology & People* 24(3), 217-235.

Khalil Gibran – Sand and Foam. https://www.goodreads.com/quotes/list/64083006-leah-wyman accessed 1/9/2019

Klingemann, H. D., & Fuchs, D. (Eds.). (1995). *Citizens and the State* (Vol. 1). OUP Oxford.

Kim, S., & Schachter, H. L. (2013). Citizen participation in the budget process and local government accountability: Case studies of organizational learning from the United States and South Korea. *Public Performance & Management Review*, 36(3), 456-471.

Kohlegger, M., Meier, R. and Thalmann, S. (2009). Understanding Maturity Models. Results of a Structured Content Analysis. *In Proceedings of the 9th International Conference on Knowledge Management and Knowledge Technologies (IKNOW '09)*, Graz, Austria.

Laurian, L., Day, M., Berke, P., Ericksen, N., Backhurst, M., Crawford, J., & Dixon, J. (2004). Evaluating plan implementation: A conformance-based methodology. *Journal of the American Planning Association*, 70(4), 471-480.

Laroche, G. (2011) *Presentation at the Responsible Innovation Workshop*, London. https://www.ambafrance-uk.org/IMG/pdf/Gilles_LAROCHE.pdf.

Lee, J., & Fedorowicz, J. (2018). Identifying issues for the bright ICT initiative: a worldwide delphi study of IS journal editors and scholars. *Communications of the Association for Information Systems*, *42*(1), 11.

Linstone, H. A. (1984). Multiple perspectives for decision making; bridging the gap between analysis and action.

Linstone, H. A., & Turoff, M. (Eds.). (1975). *The Delphi Method. Reading*, MA: Addison-Wesley.

Linstone, H. A., & Turoff, M. (2011). *The Delphi method: techniques and applications*, Elsevier Science Pub. Co.

Long, H. (2017). Validity in mixed methods research in education: the application of Habermas' critical theory. *International Journal of Research & Method in Education*, 40(2), 201-213.

Loukis, E., & Wimmer, M. (2012). A multi-method evaluation of different models of structured electronic consultation on government policies. *Information Systems Management*, *29*(4), 284-294.

Lubberink, R., Blok, V., van Ophem, J., & Omta, O. (2017). *A framework for responsible innovation in the business context: lessons from responsible-, social-and sustainable innovation*. In Responsible Innovation 3 (pp. 181-207). Springer, Cham.

Mahrer, H., & Krimmer, R. (2005). Towards the enhancement of e-democracy: identifying the notion of the 'middleman paradox'. *Information systems journal*, *15*(1), 27-42.

Markus, M. L., & Mentzer, K. (2014). Foresight for a responsible future with ICT. *Information Systems Frontiers*, 16(3), 353-368.

Maxwell, J. A. (2012). *A realist approach for qualitative research*. Sage.

Mingers, J. and Walsham, G. (2010) Towards ethical information systems: the contribution of discourse ethics. MIS Quarterly 34(4), 833–854.

Mitroff, I., & Turoff, M. (2012). *Philosophical and methodological foundations of Delphi*. The Delphi method: Techniques and applications, 30.

Morse, R. S. (2010). Integrative public leadership: Catalyzing collaboration to create public value. *The Leadership Quarterly*, 21(2), 231-245.

O'Brien, F. A. (2004). Scenario planning—lessons for practice from teaching and learning. European *Journal of Operational Research*, 152(3), 709-722.

Owen, R., Macnaghten, P., & Stilgoe, J. (2012). Responsible research and innovation: From science in society to science for society, with society. *Science and public policy*, 39(6), 751-760.

Owen, R., Stilgoe, J., Macnaghten, P., Gorman, M., Fisher, E., & Guston, D. (2013). A framework for responsible innovation. *Responsible innovation: managing the responsible emergence of science and innovation in society*, 31, 27-50.

Pavie, X., Scholten, V., & Carthy, D. (2014). *Responsible Innovation. From Concept to Practice*. World Scientific

Peter, V., van der Veen, G., Doranova, A., & Miedzinski, M. (2013). Screening of Regulatory Framework. Final Report. https://ec.europa.eu/research/innovation-union/pdf/KI-04-13-129-EN-N-RegulatoryScreening.pdf Accessed 22/8/2019

Peticca-Harris, A., deGama, N. and Ravishankar, M.N. (2018) Postcapitalist Precarious Work and those in the 'Drivers'' Seat: Exploring the Motivations and Lived Experiences of Uber Drivers in Canada, Organization, https://journals.sagepub.com/doi/abs/10.1177/1350508418757332

Poser, M., Küstermann, G., & Bittner, E. (2019). Citizen E-Participation: Bringing the "E" to Facilitated Workshops. *In Proceedings of the 52nd Hawaii International Conference on System Sciences*.

Quick, K. S., & Feldman, M. S. (2011). Distinguishing participation and inclusion. *Journal of Planning Education and Research*, 31(3), 272-290.

Reed, M., Evely, A. C., Cundill, G., Fazey, I. R. A., Glass, J., Laing, A., ... & Stringer, L. (2010). What is social learning? *Ecology and society*.

Rissgaard, K., Schoning, C and CIMULACT Consortium partners, 2017. *Vision Catalogue- Encompassing the Visions from all 30 Countries.* Document originated from D1.3. CIMULACT project. Retrieved (http://www/cimulact.eu)

Sæbø, Ø., Rose, J., & Flak, L. S. (2008). The shape of eParticipation: Characterizing an emerging research area. *Government information quarterly*, 25(3), 400-428.

Schot, J., & Rip, A. (1997). The past and future of constructive technology assessment. *Technological forecasting and social change*, 54(2-3), 251-268.

Schwarz, R. M., Davidson, A., Carlson, P., & McKinney, S. (2011). *The skilled facilitator fieldbook: Tips, tools, and tested methods for consultants, facilitators, managers, trainers, and coaches*. John Wiley & Sons.

Skinner, R., Nelson, R. R., Chin, W. W., & Land, L. (2015). The Delphi Method Research Strategy in Studies of Information Systems. *Communications of the Association for Information Systems*, 37, 2.

Someh, I., Davern, M., Breidbach, C. F., & Shanks, G. (2019). Ethical issues in big data analytics: A stakeholder perspective. *Communications of the Association for Information Systems*, 44(1), 34.

Stahl, B. C. (2012). Responsible research and innovation in information systems, European Journal of Information Systems, 21, 207–211.

Stahl, B. C., Eden, G., Jirotka, M., & Coeckelbergh, M. (2014). From computer ethics to responsible research and innovation in ICT: The transition of reference discourses informing ethics-related research in information systems. *Information & Management*, 51(6), 810-818.

Stilgoe, J., Owen, R., & Macnaghten, P. (2013). Developing a framework for responsible innovation. *Research Policy*, 42(9), 1568-1580.

Teasdale, S. (2012). What's in a name? Making sense of social enterprise discourses. *Public policy and administration*, 27(2), 99-119.

Turel, O., Serenko, A., & Bontis, N. (2011). Family and work-related consequences of addiction to organizational pervasive technologies. *Information & Management*, 48(2-3), 88-95.

Turoff, M. (1970). The design of a policy Delphi. *Technological forecasting and social change*, 2(2), 149-171.

Van Bouwel, J., & Van Oudheusden, M. (2017). Participation beyond consensus? Technology assessments, consensus conferences and democratic modulation. *Social Epistemology*, 31(6), 497-513.

Von Schomberg, R. (2013). A vision of responsible research and innovation. *Responsible innovation: Managing the responsible emergence of science and innovation in society*, 51-74.

Von Schomberg, R. (2012). *Prospects for technology assessment in a framework of responsible research and innovation.* In Technikfolgen abschätzen lehren (pp. 39-61). VS Verlag für Sozialwissenschaften.

Walsham, G. (2012). Are We Making a Better World with ICTs? Reflections on a Future Agenda for the IS Field, *Journal of Information Technology* 27, 2, 87-93.

Wickson, F., & Carew, A. L. (2014). Quality criteria and indicators for responsible research and innovation: Learning from transdisciplinarity. *Journal of Responsible Innovation*, 1(3), 254-273.

Wilsdon, J., Wynne, B., & Stilgoe, J. (2005). *The public value of science*. London: Demos.

Wright, G., Cairns, G., & Goodwin, P. (2009). Teaching scenario planning: lessons from practice in academe and business. *European journal of operational research*, 194(1), 323-335.

Zuboff, S. (2015). Big other: surveillance capitalism and the prospects of an information civilization. *Journal of Information Technology*, 30(1), 75-89.

# Appendix A: List of Countries Involved in Project

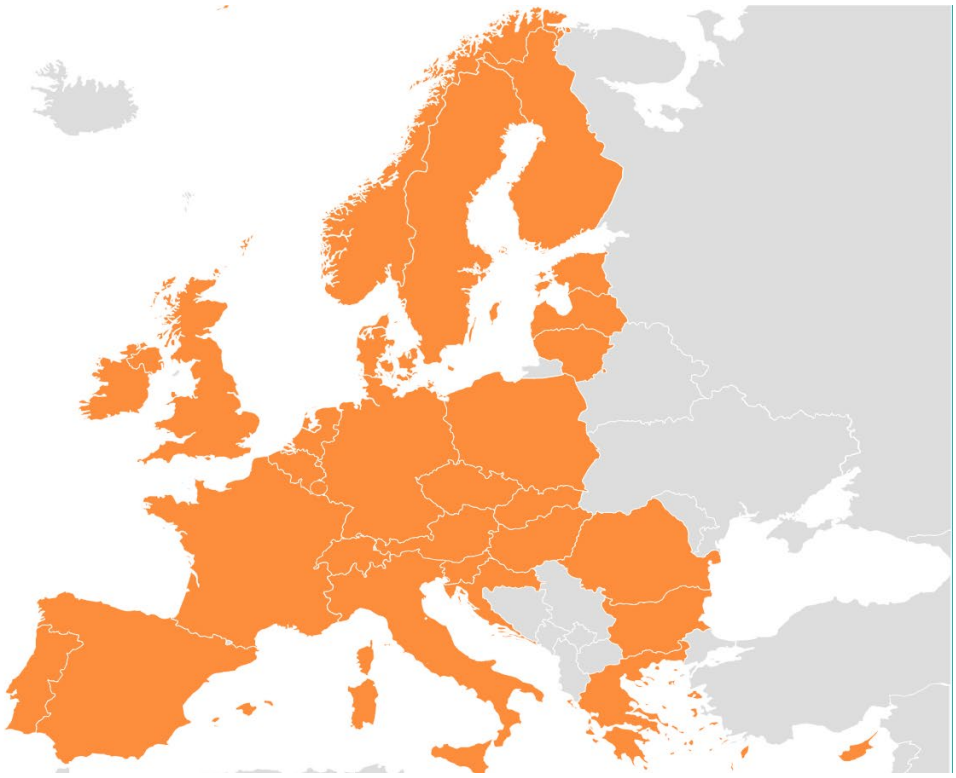

Figure A1. Countries Involved in Vision Depiction Project

**Countries Involved (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.

# 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 Centre 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 Organiser |
| 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 and 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 Discussion round 1 & 2 |
| 12.45 - 13.45 Lunch break |
| 13.45 - 14.15 Discussion round 3 |
| 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 5 enriched research topics and then prioritization |
| 16.30 - 17.00 Closing session: feedback on the day |

# Appendix D: Discussion Template

**Table D1. 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? |

## About the Authors

**Dr. Stephen McCarthy** is a lecturer and researcher in the Department of Business Information Systems, University College Cork (UCC) and is a co-director of the MSc Business Information and Analytics Systems postgraduate programme in UCC. He holds a Ph.D. and MBS in Information Systems (IS), and Bachelor of Commerce (Management and Information Systems) degree in the National University of Ireland. Stephen's research centers on five areas: (i) knowledge integration in distributed teams, (ii) artefacts for participatory design, (iii) Health IT use across contexts, (iv) IT ethics and responsible IS research, and (v) practice-oriented research. He has published in leading outlets within the IS and management field, including: Computers in Human Behavior, the International Conference on Information Systems, Journal of Total Quality Management and Business Excellence, European Conference on Information Systems, the Hawaii International Conference on Systems Science.

**Dr. Wendy Rowan** is a Postdoctoral Researcher in Business Information Systems at Cork University Business School, University College Cork, Ireland. Her research focuses on the use of Information Systems in ethical practices and health domains. Currently, she works within the Ethical Research Centre (EITIC) and the Health Information Systems Research Centre (HIRSC) at UCC. She has several publications and conference papers in the area of Information Systems.

**Laura Lynch** is a Research Support Officer, Project Manager in the Health Information Systems Research Centre (HISRC), in Business Information Systems at University College Cork. Her research to date has focused on the use of information systems in the healthcare industry. She has published and presented at a number of conferences in the area of Health and Information Systems.

**Dr. Ciara Fitzgerald** is a faculty member at the Cork University Business School. Her research and teaching interests lie at the intersection of technology innovation, entrepreneurship and strategy. Her research investigates (1) strategies used by universities and firms to manage intellectual property and the commercialisation process, (2) strategies to engage citizens and policymakers in technology assessment, and (3) exploratory and applied research of innovative health information systems. Ciara has published widely in leading journals and influential volumes such as Research Policy, Journal of Technology Transfer, Edward Elgar, Routledge and Cambridge University Press. She is Co-Director of the Health Information Systems Research Centre in the Department of Business Information Systems in UCC.

Copyright © 2020 by the Association for Information Systems. Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and full citation on the first page. Copyright for components of this work owned by others than the Association for Information Systems must be honored. Abstracting with credit is permitted. To copy otherwise, to republish, to post on servers, or to redistribute to lists requires prior specific permission and/or fee. Request permission to publish from: AIS Administrative Office, P.O. Box 2712 Atlanta, GA, 30301-2712 Attn: Reprints or via e-mail from publications@aisnet.org.