Responsible-Industry

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Executive Summary

The Responsible-Industry project has shown that companies engage in and benefit from a range of activities that constitute responsible research and innovation (RRI). While the term "RRI" itself is not widely used in industry, Responsible-Industry has shown how companies can benefit from adopting its principles. This can help companies improve their competitiveness and at the same time promotes the public good by ensuring that the purpose, process and product of research and innovation (R&I) activities are acceptable, desirable and sustainable.

The main aim of Responsible Industry was thus to collect insights on industrial RRI practice and, on this basis, to develop and pilot a framework for RRI in industry.

The Responsible-Industry project consortium undertook a range of activities that aimed to clarify the ways in which RRI can be relevant to industry and to map this to activities in industry that incorporate the principles of RRI. The overall aim of these activities was to develop a framework that shows industry actors what RRI is, why it would be beneficial to them to adopt it and how such an adoption could be implemented.

Based on the initial review of the RRI discourse in health, demographic change and wellbeing, a review of the literature was used to highlight specific challenges for the implementation of RRI in industry. In total 18 domains were identified as being in need of further work and empirical investigation in order to become more applicable to Industry.

This review provided the basis for a set of 30 interviews with thought leaders in the field of industrial R&I in ICT for health and ageing. In order to be able to provide companies real-life insights into RRI practice, five case studies were selected through an open call process. The project undertook a horizon scanning exercise. On the basis of these activities, the consortium developed an the first draft of its Framework for Implementing RRI . This was based heavily on the findings of a Delphi Study that included more than 150 experts from a variety of backgrounds. The first draft of the framework was used to evaluate and validate the insights and recommendations that the project had identified. This was achieved via a number of detailed and in-depth case studies. Following a pilot case study in Denmark, two in-depth case studies were undertaken each in Spain and Finland. In each of these cases the work was split into two phases with an initial engagement with the companies followed by a phase where the companies were invited to work with the framework in their own context. A second stream of evaluation and validation was undertaken via a set of 15 industry-led focus groups. Finally the framework was reviewed via a set of stakeholder engagement exercises.

The final framework was published as three documents: one providing the motivation for engaging with RRI, one giving advice on practical implementation and one focusing on the policy environment. These were disseminated and communicated widely, culminating in a joint event with the EIT Health and the European Economic and Social Committee in May 2017 at the EESC.

Summary Description of Project Context and Main Objectives

Responsible research and innovation (RRI) is a concept of high relevance for companies. The Responsible-Industry project has shown that companies engage in a range of activities that constitute RRI. These companies benefit significantly from these activities. While the term "RRI" itself is not widely used in industry, Responsible-Industry has shown how companies can benefit from adopting its principles. This can help companies improve their competitiveness and at the same time promotes the public good by ensuring that the purpose, process and product of research and innovation (R&I) activities are acceptable, desirable and sustainable.

The reason why RRI is of importance to companies is directly linked to their role in society. Modern societies increasingly rely on R&I to address the most pressing world-wide problems such as demographic change, security, environmental or social sustainability. Current European policy specifically underlines the importance of R&I in addressing these so called "grand challenges" and, more generally, to tackle them promoting a responsible approach to R&I. A key question in this context is how research and innovation can be governed to tackle grand challenges in a responsible manner.

RRI has been defined as "Doing science and innovation with society and for society, including the involvement of society 'very upstream' in the processes of research and innovation to align its outcomes with the values of society." The European Commission relies heavily on RRI to ensure that its considerable investment in research and technology development (over €70 billion for Horizon 2020) is ethically and socially acceptable and desirable. It has therefore defined RRI as a cross-cutting activity that should inform and guide all research in Europe and beyond.

The Responsible-Industry project aimed to broaden the understanding of RRI beyond publicly funded research and innovation to include industrial activities. It sought to find out how companies interpret their responsibility in research and innovation and develop principle and good practice examples of responsible practice in industry R&I. Key questions included why companies would act responsibly, how this translates into practice and which outcomes it would lead to. These insights were to be synthesised, rendered accessible and relevant to stakeholders, in particular industry, and, finally communicated and disseminated to relevant decision makers. In order to provide a methodological focus, the project concentrated on information and communication technologies (ICT) as the subject area of R&I and on one particular social challenge, namely that of health, demographic change and wellbeing.

The main aim of Responsible Industry was thus to collect insights on industrial RRI practice and, on this basis, to develop and pilot a framework for RRI in industry.

Figure 1: Cover Page of part I of the Responsible-Industry Framework, Benefits of RRI in ICT for an ageing society

This main objective was broken down in a number of sub-objectives that were to be achieved via a range of activities. These aimed to clarify the ways in which RRI can be relevant to industry and to map this to activities in industry that incorporate the principles of RRI. The overall aim of these activities was to develop a framework that shows industry actors what RRI is, why it would be beneficial to them to adopt it and how such an adoption could be implemented.

Based on the initial review of the RRI discourse in health, demographic change and wellbeing, a review of the literature was used to highlight specific challenges for the implementation of RRI in industry. In total 18 domains were identified as being in need of further work and empirical investigation in order to become more applicable to Industry.

This review provided the basis for a set of 30 interviews with thought leaders in the field of industrial R&I in ICT for health and ageing. The interviews showed that RRI is not a term familiar in industry, even though many of the activities linked to RRI are undertaken by companies. One of the emerging themes from the interviews has been adopted as a key message for the framework, namely that by conducting their activities in a responsible manner, industries may both be doing good for society and benefiting themselves.

In order to be able to provide companies real-life insights into RRI practice, five case studies were selected through an open call process. These cases illustrate examples of successful RRI implementation in industry. Following a rigorous selection process these case studies were written up and published on the project website.

The final activity related to principles and tools was a horizon scanning exercise. This exercise showed that the Responsible-Industry project needs to incorporate a broader sensitivity to societal issues into the implementation plan, and to identify how other stakeholders, beyond the companies themselves, can contribute to a responsible way of researching and developing novel healthcare ICTs.
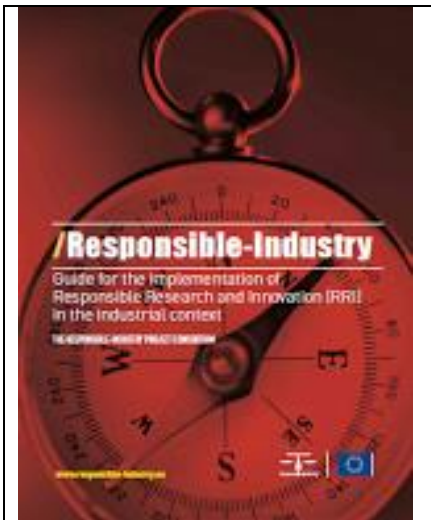
Figure 2: Cover Page of part II of the Responsible-Industry Framework, Guide for the implementation of RRI in the industrial context

On the basis of the above activities, the consortium developed an the first draft of its Framework for Implementing RRI . This was based heavily on the findings of a Delphi Study that included more than 150 experts from a variety of backgrounds. The analysis of the Delphi Study showed that the complexity and variability in industry is too great to reasonably expect that a one size fits all plan can be applied to all industry actors. The consortium therefore used its insights to develop a framework that is based on a number of guiding questions and helps industry explore which areas of RRI are already covered and where further efforts could improve their performance.

The first draft of the framework was used to evaluate and validate the insights and recommendations that the project had identified. This was achieved via a number of detailed and in-depth case studies. Following a pilot case study in Denmark, two in-depth case studies were undertaken each in Spain and Finland. In each of these cases the work was split into two phases with an initial engagement with the companies followed by a phase where the companies were invited to work with the framework in their own context. The case studies were completed by a second round of engagement where feedback from the companies was collected.

 A second stream of evaluation and validation was undertaken via a set of 15 focus groups. These focus groups were distributed throughout the consortium which had the advantage of allowing a broad geographical coverage across Europe. In each focus group the intermediary version of the framework document was discussed with individuals working in companies active in the area of ICT for health, demographic change and wellbeing.

The final step of evaluating and reflecting on the topic and the framework was realised through a set of stakeholder engagement exercise. These started early in the project and informed the initial version of the framework and were continued throughout the project, leading to valuable input from a range of stakeholder groups.

The key insights of the project are expressed in the three documents that collectively represent the framework for RRI in industry and that are included in this document as figure 1-3

Figure 3: Cover page of part III of the Responsible-Industry Framework, EU Policy recommendations for RRI in Health and Ageing

Main Science and Technology Results / Foregrounds

The Responsible-Industry project consisted of four substantive work packages plus one dedicated to dissemination, communication and exploitation as well as one dedicated to management. In this section the activities and results of the four substantive WPs are outlined. These WPs are each discussed in a separate section.

Principles and Tools

The first WP aimed to set the foundations and clarify concepts. This was required because there is not yet agreement on the exact definition of the term RRI or the way it might be implemented. Most of the discussion of RRI focuses on publicly funded research and research that is undertaken in public institutions such as universities. In order to bring together different actors from industry, civil society and research and implement RRI in a particular product, it will be necessary to synthesize current work on RRI to provide a starting point and framework for Responsible Industry. In doing so, WP1 provided the conceptual basis of the project, a selection of tools for use by industry, relevant case studies and horizon scanning activities.

The work started by providing the theoretical basis for the research to be carried out in the other work packages. It reviewed the current discourse on RRI, both policy-oriented and academic, and carried out an initial investigation of their usefulness for industry. The work consisted mainly in reviewing existing literature on RRI, conversations with experienced RRI scholars, as well as analyses of the relation between public policy, Industry, and our application domain (ICT for health, well-being and ageing).

This resulted in a 52-page report, in which the main emphasis was to 1) evaluate its usefulness for industry, and 2) to identify underrepresented areas in the discourse that could potentially aid its applicability in Industry.

In addition to an analysis of the RRI dimensions emphasized in both the academic and policy-oriented discourse, the report identifies 18 domains in which there is need for more work and a better understanding of current practices. These domains are intended to provide input for the empirical research to be carried out in later tasks, as well as task 3.3 (see below).

In total 18 domains were identified as being in need of further work and empirical investigation in order to become more applicable to Industry. These issues are:

- Democratization and Inclusion
- Lessons from the field of Corporate Social Responsibility
- Certifications and standards
- Codes of Conduct
- The importance of Distinguishing Sectors
- Operationalization of public good and well-being
- Underrepresented academic disciplines and frameworks
- Underrepresented Societal Needs

- Workplace environment
- Ethics Education
- Support Infrastructure
- Market Demographics
- New forms of Research and Innovation
- New forms of consumer power and online tools
- Public relations, branding and consumer power
- Workplace Equality
- Science communication and Open Access
- Politics and Power

Some of the findings were compatible with our expectations, but several new issues were also raised.

Following the literature review, Responsible-Industry undertook a set of interviews. The protocol for the interview study, and associated documentation required for ethical compliance, was completed and submitted for approval by DMU Ethics Committee on 23-04-14. Following approval by DMU and partner institutions, potential interviewees were approached, and interviews begun in June 2014. By December 2014 all 30 interviews had been conducted with interviewees located in 11 different countries: Spain, Italy, United Kingdom, Finland, Holland, Cyprus, Denmark, France, Sweden, Germany, and Switzerland. All interviewees were currently holding, or had previously held, key positions in at least one large, medium or small, ICT company; they were all working with projects that, in some way, related to the use of ICT for health and well-being.

Analysis of the transcripts was undertaken centrally, led by one of consortium partners to ensure consistency. A stepped process of thematic coding, with the aid of NVivo qualitative data analysis software, was utilised. Using an inductive approach, the first stage of open coding was followed by two further stages of thematic coding during which emerging themes were compared and contrasted and gradually refined. The final stage of the analysis consisted of identification of potential theoretical models for facilitation of RRI that could be fed directly into development of an implementation plan.

In spite of interviewees' broad experience, some having even worked with EC funded projects, only seven of the thirty were somewhat familiar with the term RRI prior to the interviews; for most it was a new expression. There were however varying degrees of familiarity and regard for the concepts involved in RRI, varying degrees of experience in application of these concepts and some confusion about what constitutes RRI-related activity. Four overarching categories emerged from the analysis and the main themes within each of these categories have been described together with illustrative quotes from the interviewees in a report of the findings. Significantly, one of the emerging themes from the interviews has been adopted as a key message for the implementation plan, namely that by conducting their activities in a responsible manner, industries may both be doing good for society and benefiting themselves.

In addition to collecting insights via interviews, the project asked for the submission of case studies of RRI in industry to get a feeling for how companies envisage RRI. A call for case studies was launched to provide input into the project from stakeholders not yet involved in the Responsible Industry network. Case studies had to be original, based on real

experiences, connected to ICT and Health and transferable to other fields. 12 submissions from 8 countries (including the US and South Africa) were obtained.

The winning submission came from a dementia CSO in the UK. Second place was won by a freelancer writing about a public and private partnership (a telecom company and a German city). The third place was given to a Swedish academic who wrote about including older people's needs in the design phase of products and services. The fourth place was won by a UK entry writing about personal health monitoring and the fifth place was given to an innovation company.

The final set of activities in the first WP was a horizon scanning exercise. The purpose of the horizon scanning activity was to ensure that the conceptual underpinnings of the project remain current and that the project is aware of other activities that can influence its success. During this period, the first stage of the horizon scanning report was finished, with a suitable methodology described, sources (including current discussion forums and social media sites) identified and analysed, and findings discussed.

The major findings included identification of the primary "signals" - issues that are currently being discussed in academia and established discourse around the area of ICT for health and ageing: the definition of ageing and the elderly; concerns about future ageing technologies; assumptions and stereotypes about older people; ageing in a wider social context; operational issues (such as barriers, enablers); design of technology for ageing; and future technologies for ageing societies. These were then used as a baseline for identification of sources of more current discourse, such as social media, forums, news sites, blogs, etc. from which "weak signals", or more current discussions extending the primary signals, were identified. These were: future technologies; innovation motivation; future companies; future environment; and future elderly. This exercise has shown that our data collection from the Delphi study, interviews, and the development of the implementation plan have picked up on many of the established and current issues being discussed in this area, and looks forward in much the same way as the discourse; those that were not addressed will be brought into the development of the next stage of the implementation plan for consideration. The main consideration that the horizon scanning activity has highlighted is the broader societal context in which ICT for health and ageing is being implemented into and which it needs to be aware of. Thus, the Responsible-Industry project needs to incorporate a broader sensitivity to societal issues into the implementation plan, and to identify how other stakeholders, beyond the companies themselves, can contribute to a responsible way of researching and developing novel healthcare ICTs.

The second deliverable updated the horizon scanning to review the existing primary signals and investigate the weak signals two years on from the initial study. The primary signals were consistent with the original exercise, and weak signals were able to be similarly clustered. The main significant difference between these reports was that the impact of austerity and right-wing politics appears to be impacting healthcare technology innovation by opening up opportunities for companies where state-funded healthcare recedes.

Implementation

Based on the theoretical and empirical understanding of RRI in industry gained in the first WP, the Implementation WP sought to find ways of describing and implementing RRI in a

way that renders it relevant to companies. It aimed to work with relevant stakeholders (industry in the first place) to design, test and evaluate, through iterative steps, an implementation plan providing possible paths for the responsible development of products and applications in the ICTs for health, demographic change and wellbeing area.

This WP started with a Delphi study whose aim was to provide basic information and input for drawing up the Implementation Plan through the collection and assessment of attitudes, expectations and opinions of a large number of relevant stakeholders from different countries.

A two-round Delphi Study among a panel of geographically dispersed experts was adopted to this end. This method is based on structured group surveys to gather opinions and to achieve a high degree of convergence on selected themes of exploratory, predictive and even normative nature.

A questionnaire for the first round was drafted and a list of about 480 stakeholders from about 380 different organizations was prepared (details were reported in the deliverable D 2.1). The 1st Questionnaire, prepared using the inputs of WP1 activities and comments from all the partners, was finalized in a dedicated session of the General Meeting held in Cyprus on Sept 11-12, 2014. The final version consisted in 26 (mostly quantitative) questions and was distributed, via a commercial on-line platform, amongst some 500 stakeholders.

Experts from industry, academia and a significant number of key policy makers and end-users (including consumer associations) were questioned about the following topics:

1. Awareness about the concept of Responsible Research and Innovation (RRI)

2. How to integrate Responsible Research and Innovation into the Product Value Chain

3. Choice/selection of tools for Responsible Governance

4. Inclusion of RRI dimensions in the domain of ICT for an ageing society

The respondents were 165, representative of the different stakeholders categories (38.7% Research Institutions, 25.8% Industry, 25.8 % End-users, 9.7% Policy makers) and a broad geographical distribution (160 from 27 European Countries, 3 from EU Commission and 2 from multinational enterprises).

After the first questionnaire was returned, the results of the consultation were thoroughly analysed by the AIRI team and then disclosed to the respondents in a second round through the online platform. The feedback from the first round gave the experts the opportunity to compare their personal impressions with the range of opinions held by the other participants and to adjust their own assessment by answering a set of more qualitative questions to reach a convergence on critical issues for inclusion of the RRI discourses in ICT industry for an ageing society. Moreover, in the second round the experts were encouraged to freely express their point of view on key themes and give recommendations for effective operationalization of RRI in industry.

The respondents to the second questionnaire were 64, with a similar typology of participants with respect to the first round.

In short, a strong agreement was expressed by the participants in both surveys on the need to:

- Increase awareness about RRI principles
- Promote a culture of social and ethical responsibility in research and innovation
- Consider ethical issues arisen by the development of ICT products/services (main potential risks were identified in personal data management, monitoring of user life style and excessive replacement of human contacts with technologies)
- Address the potential risks all "along the entire value chain", or at least at the "early planning stage" of products/services, with the participation of all the societal actors
- Adopt a governance framework for the implementation of RRI principles based on Codes of conduct/Principles, possibly combined with other voluntary measures (like some existing Standards)
- Guarantee transparency and openness in the communication on ICT products
- Develop metrics to quantify the impact of RRI on the desirability/acceptability of ICT products.

Suggestions were given on the specific tasks of the departments that should work together to embed and operationalize RRI inside the enterprise.

The methodology followed in the preparation of the two-stage Delphi Survey and the results of the in-depth analysis of all answers and comments from the respondents were detailed in the I Part of the D 2.2 "Delphi Exercise Report and 1st Draft Implementation Plan" submitted in the EC participant portal on 15/05/2015 (Deliverable 2.2). The full text of both questionnaires is enclosed in the Appendix of the Report.

The next task was to to draw up a plan giving indications to senior managers and others engaged in research and innovation in industries (active in the field of ICT for an ageing society) to pursue responsible practices and behaviours in developing their devices, products and services.

A Framework for inclusion of RRI in ICT for an ageing society was finalised in the Reporting Period 2 through a sequence of linked and complementary activities.

At first, the results from the Delphi consultation together with valuable input from WP1 (Themes from 30 interviews with key industry personnel and the D1.1: Systematic review of the current discourses on RRI) contributed to elaborate a preliminary version of the Implementation Plan.

An ad-hoc meeting was held in Rome at the AIRI premises (on April 20-21, 2015) to analyse and revise this document, based on four main domains: setting a vision for RRI, assign responsibilities, integrate RRI along the value chain, and select governance tools. The content and structure of the Implementation Plan were finalised along the lines defined in the meeting.

The 1st Draft of the Plan (Task 2.2.1), fully described in the II Part of the deliverable D2.2, provides strategic options, recommendations, and procedures for RRI aiming to promote the following activities:

- Reflecting on ethical and social impacts and implications of R&I activities
- Aligning R&I processes along the entire value chain with users and social needs
- Promoting an inclusive approach engaging stakeholders in the R&I process
- Taking into account in R&I processes different aspects of the relationship between science and innovation with society: gender equality, transparency in information & communication (e.g. open access), ethics and education in ethics

The ideas and proposals contained in the 1st Draft of the Plan were deeply discussed with interested parties at the International (Delphi Exercise) Multi-Stakeholders Workshop held at the Karlsruhe Institute of Technology on May 21st 2015.

The workshop was organised back-to-back with the WP4 Stakeholder Dialogue Workshop (held on May 20th). This was the first public event of the Responsible Industry Project. There were 45 participants in the workshop, which was free of charge to attendees. The participants included representatives from research, industry, policy and CSOs.

A lively and constructive debate took place during the workshop plenary sessions and breakout groups, providing useful inputs and suggestions for the revision and testing of the 1st Plan. Main topics of the discussion were the priorities, scope, overall contents and format of the document. More details on the workshop organization (including the Flyer and the Agenda of the meeting) as well as an exhaustive synthesis of the debated issues and the overall conclusions are given in the D2.3: International (Delphi Exercise) Workshop Report" submitted in the EC participant portal on 31/07/2015.

All the insights produced by the project activities so far contributed to prepare a general Framework to guide the implementation of RRI in ICT for an ageing society that is extensively described in the Report D 2.4 Second Draft Implementation Plan, which includes a Glossary and the List of European Legislations relevant to the Framework topics.

The Framework, which is primarily directed at CEOs, senior executives and project managers, provides industry with a set of guidelines to operationalize RRI discourses, and improve ethical acceptability, social desirability and quality of their devices/products/services through integration of RRI principles all along the value chain. The Framework suggests also policy and communication actions which could facilitate and support industry in implementing RRI.

Following extensive discussion amongst partners and feedback received from preliminary activities carried out inside T 2.3 and T2.4 and WP3, a further revision of the framework (D 2.4) was undertaken with the aim to provide an easy to read text, with concise and straightforward messages, for wider dissemination and practical use with stakeholders.

The revision focused on the length and style of the text as well as on the improvement of its editorial presentation and graphics. This work led to the publication of the following two reports:

1. A Framework for implementing Responsible Research and Innovation in ICT for an ageing society
2. Executive Brief: Implementing Responsible Research and Innovation in ICT for an ageing society

The first document (mainly based on the content of the D 2.4) is directed to a wide audience of stakeholders and policy makers. The second is a lighter document, essentially formed by

the "core" of the Framework, and was conceived as a more practical tool for use in the case studies and other testing activities planned in the next part of the project.

Following the design of the first draft of the implementation plan, a set of comparative pilot projects was undertaken to ascertain whether and to what degree the plan was workable in companies. The task T2.3. Comparative Pilot Projects started in Month 11 of the project and take place in two main stages including 'case study design' and 'data collection and data analysis'. All cases as scheduled are in specific research activities in the domain of information and communication technologies (ICT) for health, demographic change and wellbeing.

One of the first steps in the comparative pilot project was to undertake several rounds of screening procedures upon potential candidate cases to identify final cases including an enterprise in Denmark for pilot testing and afterwards four enterprises in Spain and Finland. Starting in January 2015, criteria for case selection were defined by the leader of work package 3 (the University of Southern Denmark, SDU) and other participants of the work package from the project consortium.

The purpose of comparative pilot projects is to assess the relevance, quality and usefulness of the 2nd draft of the implementation plan as a result of WP2.

According to the RRI literature, based on different rounds of peer reviews, and a discussion round during Responsible-Industry consortium meeting in Karlsruhe held in 19th-22nd of May 2015, it was decided to identify in a first step ICT companies that applied good practices and which were actively involved in areas such as active ageing and the development of products and services for elderly people. Therefore, the initial set of selection criteria for cases, which was proposed in Case Study Protocol deliverable D3.1, has been strongly improved and the new set of operational criteria framed accordingly. SDU disseminated these new selection criteria to Technical Research Centre of Finland (VTT) and TECNALIA to assist in their quest to select cases in Finland and Spain. Likewise, SDU has selected a Danish company for becoming a pilot case.

Using an iterative procedure, the first step of the case selection process by VTT and TECNALIA comprised 11 enterprises from Finland and Spain, respectively. Then more responsibility-related data from each enterprise were collected and compared, so that a final selection of four complementary and representative cases in Finland or in Spain was obtained.

After the general project consortium meeting in Karlsruhe (Germany) in May 2015, where the RI consortium had discussed how the RRI framework in industry should be applied, SDU, VTT, and TECNALIA had several internal meetings in which they set out above use cases and categories. SDU modified 1st round of interview guideline in accordance with abovementioned categories and designed 2nd round of interview guideline. SDU applied 2 rounds of interviews (pre- & -post interviews) for 3 above categories in a Danish company to verify the methods for upcoming case studies in Finland and Spain.

The objective of the comparative pilot project within task T2.3 was to identify how the Responsible Research and Innovation (RRI) implementation plan works along the different activities of the value chain and to test its applicability and how it could possibly influence research and innovation within an industrial environment.

The process of co-creation of the RRI framework by involving four companies or industry representatives was performed and data was be collected by VTT and TECNALIA.

After several stages in development of selection criteria we selected one pilot case in Denmark and two cases each in Spain and Finland. The meaning of "case" in this context is that each company is offering its product or project for more detailed observations in the form of interviews and workshops.

Due to companies' different value and visions, Responsible-Industry does see them as separate cases, but also strives to find common RRI approaches among them. A common desire of engaging with social values was present within all four companies' long-term strategy.

Cases:

Spanish Case 1 - Multi National Company (MNC):

This large corporation is one of the main service companies in the field of Information Technology on the Spanish market. The company's activity focuses on the following areas: IT consultancy, infrastructure services, integration of information systems, outsourcing and the implantation of integrated solutions for business management.

Spanish Case 2 - SME:

Spanish SME is an international manufacturer specialized in designing, developing and manufacturing innovative and modern communication solutions of communication systems and software for the healthcare and security sectors. This company has more than 20 years of experience in providing reliable and customized solutions to hospitals, clinics, nursing homes and private companies.

Finnish Case 1 - MNC:

The Finnish large corporation provides transformational medical technologies and services to meet the demand for increased access, enhanced quality and more affordable healthcare around the world. The company is part of highly regulated medical device and pharmaceutical industry.

Finnish Case 2- SME:

Finnish SME Ltd is a Finnish healthcare service company at a stage of intense growth. The company has developed an unique solution: company' automatic medicine dispensing service manages the dispensing of medicine to treat chronic conditions comprehensively and completely automatically.

The first round of interviews with the Comparative Pilot Projects was finalised in the Autumn 2016. After the analysis of the first round of interviews next steps for the intervention with companies were planned in more detail and customised according to analysis. After the interventions (workshops and planned customised actions related to them) the 2nd round of interviews were finalised with the companies in the beginning of 2017 in order to validate the interaction process with them.

Working with companies gives a better understanding about the opportunities and challenges when thinking of aspects of responsible research and innovation; some of these aspects have already taken into account extremely well in these companies (especially legal issues), some aspects could be improved via selected actions if seen as beneficial (user engagement, RRI culture and vision) and some aspects might feel either irrelevant or not very suitable being considered for the company (e.g. CSR as a formal approach to SME).

The final task in the implementation work package was testing and industry evaluation. The concept and the implementation of RRI applied to ICT for health, demographic change and wellbeing and the draft versions of the Framework of an Implementation Plan for RRI in companies from this sector were discussed in 15 Focus Groups with relevant stakeholders in this field – such as researchers, innovators, designers, and managers from several types of companies and moreover policy makers, civil society organisations and elderly people. The FGs took place in the United Kingdom (DMU and EN in different groups), Germany (KIT and UClanCY in different groups); Cyprus (UClanCY), The Netherlands (UT), Italy (AIRI), Denmark (SDU), and Finland (VTT). The FGs started in October 2015 with a pilot study and ended in January 2017.

In parallel, several versions of the draft Implementation Plan were published on the project website for comments and self-assessment from the Internet community. The publications of the draft documents and its final versions were announced on social media like Twitter (@resindustry).

Stakeholders from the U.S.A., China and Japan participated in a workshop of this project in May 2016, providing valuable insights and comments from a point of view outside the European Union.

The feedback from the 15 FGs, the international experts and Internet users led to relevant improvements of the Framework and its dissemination strategies.

Even though RRI was a new term to all participants in the Focus Groups and the case studies, they were aware of concepts like stakeholder involvement, risk analysis, and personal data protection, and in particular those subjects that were regulated by laws, such as personal data protection.

Researchers and designers of the companies that took part in the studies considered stakeholder engagement and especially end-user engagement as being crucial for their designs and developments, and their later success on the markets. Examples of identified barriers and risks were insufficient communication among members of the supply chains, the end users, and other stakeholders, high investment costs in terms of time and money, a prioritisation of economic aspects in research and innovation activities, and issues related to the application of the legislation and regulations regarding personal data protection that were considered too strict by some people.

Analysis, Reflection and Recommendations

The third WP, dedicated to analysis, reflection and recommendation, provided the necessary academic rigour to record, analyse and synthesise the comparative cases developed in WP2. It defined the information that needs to be gathered from the cases, the

way this data is to be analysed and the processes of reflections to be undertaken. The step of rigorous scientific observation and analysis was necessary to demonstrate potential benefits for industry at large to follow up on such an example. Moreover, it offered an excellent basis for further research on these topics.

In the first step a case study protocol for the in-depth cases was developed. A common understanding over the objectives of the Case Study was discussed with involved partners in WP3 and WP2, so that SDU could prepare the methods for gathering data and interview guidelines, and set a timetable for those action plans until month 12.

The list of candidate cases including eleven companies located in three countries had been the basis for the final selection of one Danish, two Spanish, and two Finnish companies for the case studies. SDU provided an information package to all interested candidates to enable them to understand the purposes of our case studies. These documents included a case study action plan, a consent form, an Interview participant information sheet, a survey participant information sheet, and ethical approval. In addition to this material, SDU also prepared interview guidelines for the two rounds of interviews. The interviews are being held within the companies to co-create a company personalisation of the RRI framework conducted in WP2.

Collectively, the 'case study protocol' has been used within all associated case study activities and SDU led the protocol fulfillment in collaboration with VTT and TECNALIA based on a set timetable.

The objective of 'Data collection and Analysis' activities described in D3.2 was to complete the set of case study data and principles and outcomes of the data analysis, to further identify how the Responsible Research and Innovation (RRI) implementation plan developed previously works along the different activities of the value chain and to test its applicability and how it can influence research and innovation within an industrial environment. After several stages in the development of selection criteria, we selected one pilot case in Denmark and two cases each in Spain and Finland. The meaning of "case" in this context is that each company is offering its product or project for more detailed observations in the form of interviews and workshops: a pilot case in Denmark (D 2.5) enabled the testing and development of the case study protocol (D 3.1) that was followed in the later cases.

In general, The data collection method was defined in the case study protocol D3.1. Semi-structured interview guidelines were set as the main collecting method. SDU conducted pilots of 3 types of interview guidelines in 2 rounds interviews by engaging 3 main groups of interviewees including CEO/high level strategy manager, CTO/high level tech manager, the marketing or sales or CSR manager, the R&D manager, and a member of R&D staff. During the general project consortium meeting in Karlsruhe in May 2015, it was decided to work on the potential uses of the RI implementation plan with a view to improving its usability. To assess the usability of the implementation plan, we agreed on studying RRI good practices that could then be used to ascertain whether the RRI framework was fit for purpose and how it needs to be developed further. The criteria for RRI good practices developed in WP2 assisted SDU to frame interview guidelines for the case studies.

The 1st stage of interviews in the pilot case study were fulfilled by SDU in Odense, Denmark, took place in two rounds in 2015 by engaging a Danish company, started first

round in March 2015 and continued with the second round in July 2015. The same procedures will be applied by VTT and TECNALIA in four main cases in 2016.

With regards to the Data analysis, qualitative data analysis was undertaken by using the software NVivo, version 10 & 11.

The RRI framework resulting from WP2 and applied in the pilot case with the Danish company is a good basis for a discussion about RRI--related issues with employees of the target enterprises. The Responsible-Industry framework was applied in Finnish and Spanish cases. The process of co--creation of the RRI framework by involving four companies or industry representatives carried out and data collected by VTT and TECNALIA. The RRI implementation plan and an RRI expert from VTT and TECNALIA helped companies to understand the idea of RRI and give details on how to practically integrate RRI in R&D processes. SDU, VTT, and TECNALIA analyzed the data by the end of 2016 and report outcomes in the beginning of 2017.

One way of synthesising the various insights generated by the project was to develop models of RRI in Industry. These models stem from the empirical work conducted within the other tasks and WP of the Responsible Industry project (Horizon Scanning, Delphi study, key interviews), and the literature review. The report is a culmination of the thought processes started early in the project, which led the task members to think about the meaning of RRI pillars in industry and the role of RRI in increasing well-being.

The final report presents three models of the implementation of Responsible Research and Innovation (RRI) practices in industry. Each of these models addresses a key barrier in the implementation of RRI. The first one (figure 1) answers the insight that industry put in place actions that are vaguely relevant to RRI, without understanding how they align with the concept and without having visibility of the aspects of RRI they are neglecting. It takes the shape of a maturity model, which allows to think of the RRI activities conducted in a company in a multifaceted perspective.

Figure 1: RRI Maturity model, using data from the case studies

The second one (figure 2) is directed at companies who do not do RRI and are not convinced that doing RRI makes sense from a business perspective. It presents, in the form of a causal loop, the internal incentives and relationships between them, linked to adopting RRI.
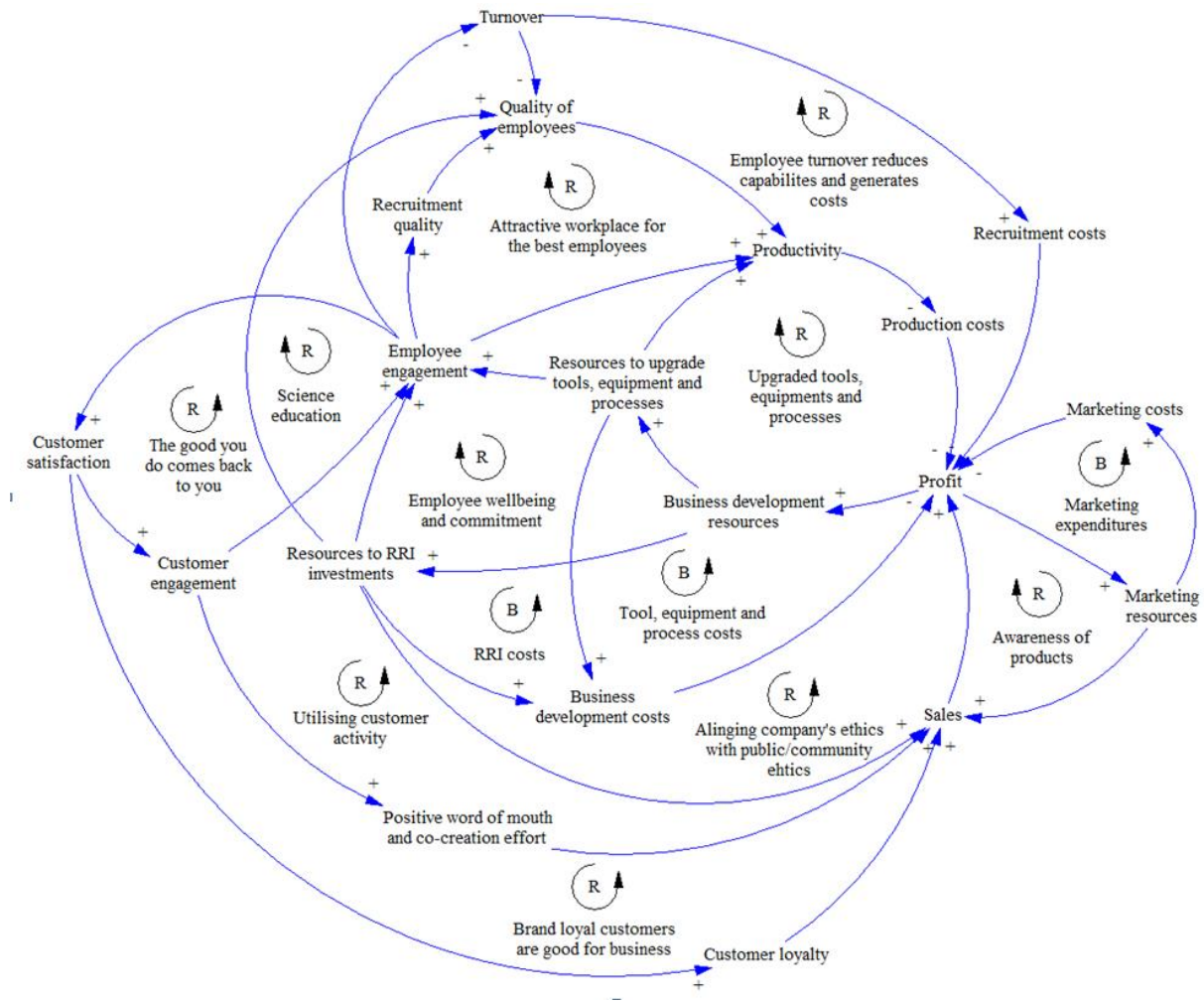

Figure 2: Causal loop model

The third one provides information as to how RRI can be implemented, going beyond the current practices of industry, which focuses on ethics and education, but proposing a split of responsibilities and actions along the value chain, considering RRI as a whole. This model (figure 3) is an operating one, while the first two have a more theoretical value.
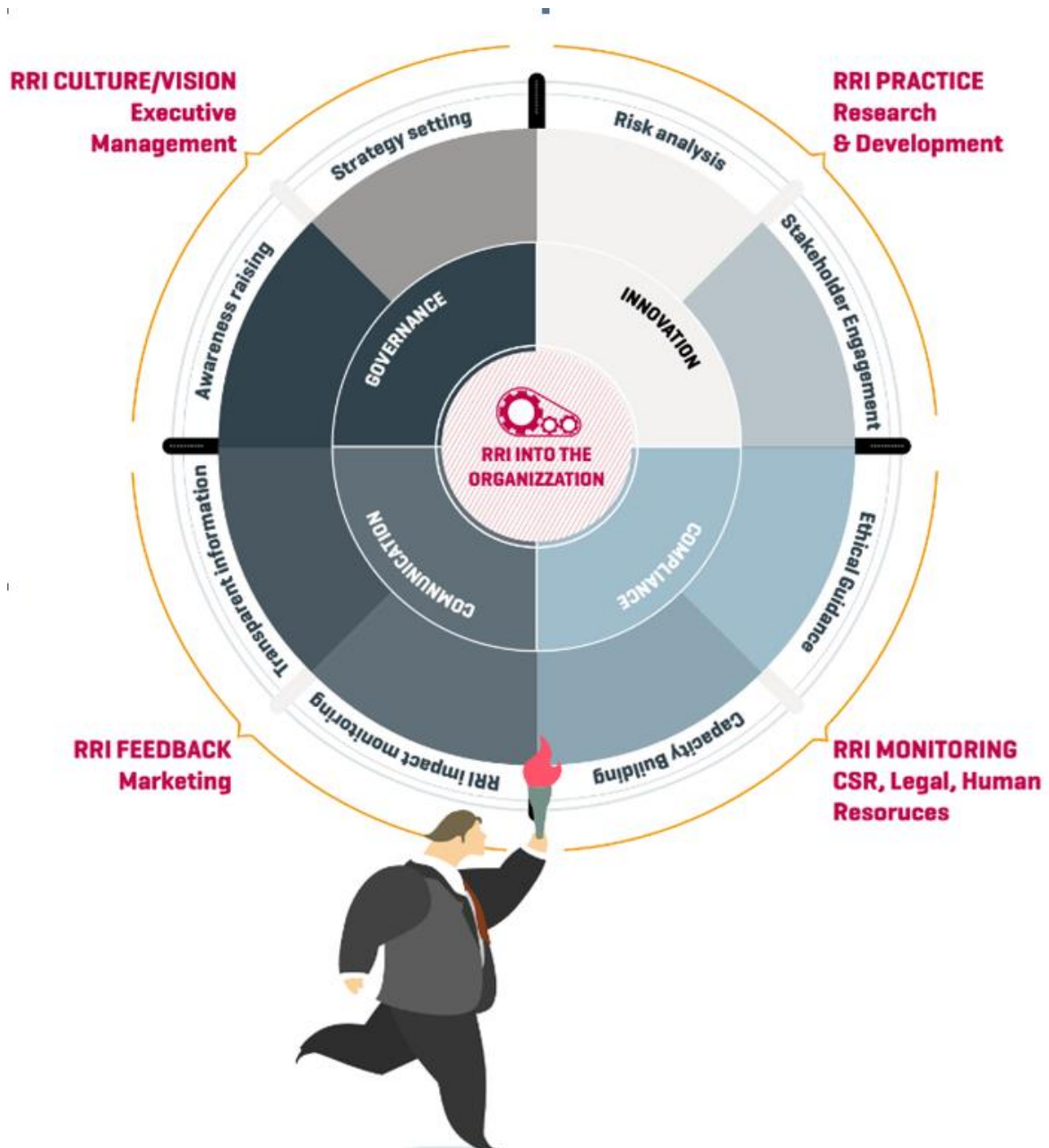
Figure 3: Implementation model

The report highlights discrepancies between the pillars of RRI as defined in the key communications of the European Union, what industry understand from them, and how they implement them. It considers potential incentives for industry, presented under the format of a loop model. These results can be used to guide implementation plans of RRI in industry, but also to inspire policy supporting the uptake of RRI. They also hint at the need for additional academic research in the area, notably to validate the causal loop model and to develop a satisfactory approach to measure RRI.

All the various activities of the project and the insights and lessons learned were distilled into the final version of what was originally called the "exemplar implementation plan". Having learned that it would not be possible to produce such a plan that would fit all applications, the insights of the project were turned into a set of three documents.

Figure 4: Cover Page of part I of the Responsible-Industry Framework, Benefits of RRI in ICT for an ageing society

The first one of these documents (figure 4) is aimed at senior executives and explain to them why RRI is of relevance and interest to them. It sets out the benefits of adopting RRI and aims to ensure top level buy-in.
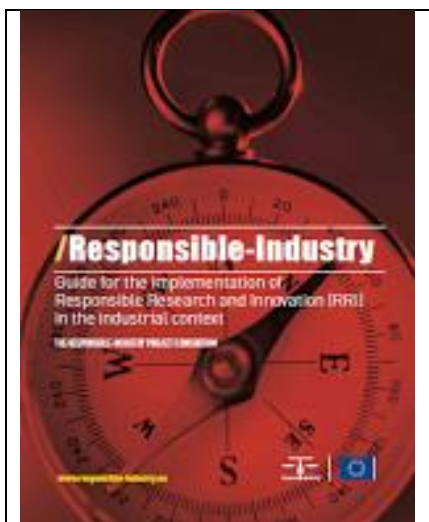

Figure 5: Cover Page of part II of the Responsible-Industry Framework, Guide for the implementation of RRI in the industrial context

Once a company has expressed this top-level buy-in, it will need to understand how to put RRI into practice. This is described in more detail in the second document of the framework (figure 5), the guide for the implementation of RRI in the industrial context.

Figure 6: Cover page of part III of the Responsible-Industry Framework, EU Policy recommendations for RRI in Health and Ageing

The final document (figure 6) is aimed at policy makers and other senior decision makers that are in a position to promote RRI. It focuses in particular on the European policy context and provides recommendations on how to ensure RRI gets adopted more broadly.

Stakeholder Dialogue

The various activities described so far were accompanied by stakeholder dialogue. The aim of this stakeholder dialogue structure was to feed into all steps of the project work from the exploration of conceptual issues in the RRI initiative, to the identification of tools fitting current industrial R&D processes, to the creation of consensus between major players and ultimately the initiation of specific policies that would incorporate RRI in industry R&D.

In the first six months, the consortium discussed the profile of the desired stakeholders, their role in the project work programme and also recommended organisations and names that could form the various groups. The three partners leading the WP4 tasks (KIT, Tecnalia, EN) had regular virtual conferences to structure the stakeholder groups, develop a basic mapping of their role and function in the RRI debate and create templates for invitation and description of requested contribution. Furthermore, discussions with WP2 leaders AIRI took place to better coordinate the work in the Delphi and the subsequent discussion of results with external experts, with that of the stakeholder dialogue that took place as part of stakeholder dialogue.

This task of dialogue creation represented the core of the WP4 as it develops the dialogue in concrete terms and will provide feedback and direction to the subsequent steps in the project's work programme. This included running one workshop in Period 2 and a second workshop in Period 3 of the project. The Task started with the completion of stakeholder mapping and continued in the second period with the running of the first Dialogue workshop. A third workshop was held during the third period in the offices of the Helmholtz Association in Berlin Germany from May 22nd to 23rd 2016. Invited participants were representatives from Industry and Private Research (6 participants), Policy Makers and Policy Advisors (10), and Civil Society Organisations (8). Also 4 international RRI experts participated. In addition, the full project consortium was present.

The main aim of the 2nd Stakeholder Workshop was to bring together stakeholders from the 1st workshop again and include new participants in order to enable discussions and gather concrete feedback on the progress of the project. The aim of the workshop was to gather information on RRI activities from each stakeholder group, gather concrete feedback on the framework developed by the Responsible Industry project on RRI practice in industry for an ageing society as well as initiate debates around specific case studies. In addition to this, three international experts from China, USA and Japan presented their national perspectives on RRI.

Several participants attended the 1st Stakeholder Workshop held in Karlsruhe in May 2015 and therefore already understood RRI as a concept and how it relates to ICT for an ageing society. Other participants were new to the workshop/project and to the concept of RRI itself. Therefore, the first day of the workshop was partly dedicated to introducing the concept of RRI and introducing an international perspective. The second day was dedicated to discussions in the stakeholder groups regarding the Implementation Plan and general feedback on RRI. A more concrete level was achieved by introducing three project case studies and their experiences and issues regarding RRI.

Key Messages from the Policy Group were:

- RRI is not a stand-alone concept. It is competing with different ideas, like sustainability, customer driven innovation, etc. and it is not clear whether the conceptualisation of RRI competes with these other concepts or it is actually complementary.
- A key motivating factor for industry is development of societal trust to the company and the product. That means avoidance of risks, particular health risks but also good communication in relation to RRI implementation.

Key Messages from the Industry Group were:

- As a general framework it can be useful for SMEs, but they need practical instructions that can be adapted easily. It has to be taken into account that SMEs are more flexible and can change easier than most large companies.
- A key requirement is that high-level management in the company need to understand RRI and foster its company-wide implementation and long-lasting application.
- An important aspect for the success of RRI in companies is goal setting in order to measure this against what is being done and to bring RRI into the culture of the company.
- Business models based on Public-Private Partnerships can be useful to create synergies and help to support RRI initiatives.

Key Messages from the **CSO Group** were:

- It would be relevant to have a much shorter version of the Implementation Plan as well (an abstract form)
- There is a high technology fix in the document. It would be interesting to mention the social side of things, the social solutions that exist.
- The animated video (https://www.youtube.com/watch?v=ZOGnZr6Ki1g) was very well received and the CSO group advised that we disseminate it to trade organization, sector federations, unions of ICT developers, etc.

Further group discussions were dedicated to providing insights for the specific companies that participated in the case studies of the Responsible Industry project. In the plenary session prior to the group discussions, the representatives from three companies presented their work and their relation to RRI. The aim of translating RRI into a concrete industry context (ICT for ageing society) needs to incorporate these practical experiences and exchanges.

During the workshop experts from USA, China and Japan presented their main understandings and current discussions of RRI. Overall, one could conclude that in the U.S., discussions on responsibility are often challenged by demands for increased innovation regulated by the market. At the same time there are claims for RRI to become a way to smooth the development of predetermined technologies. China on the other hand, does not have an influential discussion in the context of policy making and public debate on RRI yet. The Chinese innovation policy discourses are focused on innovation-driven development strategy, mass entrepreneurship and supply-side reform. These stem from characteristics of traditional science and technology management, which revolve around developmentalism, scientism and top-down management. Ageing society is also a huge issue in Japan, which has been termed a "super-aged society". This has led to large changes in the structure of the population and has impacted the economy as well as society as a whole. There are many initiatives towards finding ICT solutions for this situation, which is expected to increase in the future. RRI is not known in Japan or discussed at policy or academic levels. Yet, the term "responsibility" has been increasingly discussed in the context of S&T and there are substantial similarities between the debates in Europe, the U.S. and Japan regarding S&T policies and debates.

Stakeholder dialogue in the Responsible Industry (RI) project was mainly shaped around two workshops and a series of other activities including in-depths interviews and focus groups with SMEs. Organised a year from one another, our stakeholder dialogue workshops were attended by respectively 46 and 43 participants. They provided a unique platform of interplay between Academia, Industry and the civil society reflecting on the concept of RRI in the context of ICT for an ageing society, in terms of barriers to its implementation and potential enablers. In conclusion to those various rounds of stakeholder engagement, we draw a series of conclusions expressed in D4.5 'Dialogue Synthesis'.

Key elements hindering RRI adoption were identified such as issues related to the term itself and the overall terminology used by its supporters. In addition to the question of the branding of the concept, lack of incentives and the perceived added bureaucracy that the RRI principles entail was also identified as a significant barrier. The dialogue has, however, also identified key enablers to RRI expansion in the private sector, such as linking the principles of RRI to existing tools and practices, demonstrating the long-term benefits in terms of reputation and profits, presenting RRI as an overall ethos that needs to pervade the company's culture but also business management education in science.

As a project dealing with RRI, it is essential to provide spaces for interplay between policy, society and private sector. The information, thoughts and recommendations provided by the participants of all our dialogue exercises were very valuable and a much appreciated input to the project, especially for its main outcome, the "Implementation Plan", that eventually materialised in three different documents. The mix of stakeholders as well as the different levels of discussion (from more general reflections on RRI to concrete case studies)

provided a crucial feedback enabling and supporting a 'real-world' implementation of RRI in industry dealing with ICT for ageing society. By stressing the flexibility of the RRI principles and seeing them as a mechanism of reflection, it is the mindset of the whole ecosystem that could change. The dialogue between those stakeholders within the frame of Responsible Industry helped us in starting such a change. Additionally, the dialogue helped us shape the format and content of our "Implementation plan", resulted in open and productive exchanges on specific case studies and guided us in the production of a very pedagogic animated video aiming at helping industry leaders to understand the concept.

Potential Impact

Dissemination Activities

The Responsible-Industry developed a dissemination and communication strategy that was published as deliverable D5.1. The dissemination and communication activities are described in deliverable D 5.3. The following table gives an overview of the project dissemination and communication activities.

Description	Metric	Objective	Real (31 July 2017)
Project web site	Number of visits per month	100	**134**
	Visit duration (average)	2 minutes	**1m44**
	Downloads per month	10 flyers 10 public documents	**985 visits to the framework page**
	References from external web pages	10	**5,000**
Social Networks	Followers in Twitter	50	**204**
	Tweets per month	5	**Average: 4.5**
	Newsletter audience	80	**456 for first newsletter; 50 for final newsletter to participants**
Publications	Number of *submitted* papers to scientific conferences	10	**20**
	Number of publications in scientific conferences	8	**16**
	Number of *submitted* papers to scientific journals	6	**8**
	Number of publications in scientific journals	3	**4**
Attendance of events	Number of attended conferences/workshops with presentations of papers	10	**16**
	Number of commercial events attended	4	**16**
	Number of flyers to be distributed	500	**2,000**
Organization	Number of workshop	6	**9**

of workshops	organized		
	Min. number of registered people in each workshop	25	**30-50 in large workshops; 5-10 in individual company workshops**
	Number of main stakeholders registered in the workshop	15	**28 for each of the main workshops; 2-6 for individual company workshops**
Others	Number of companies contacted	200	**308**
	Number of press releases delivered and published	2 (kick-off, end of the project)	**2**
	Number of appearances in TV, radio…	1	**1 (Jaana Leikas, interview with YLE in Finland)**
	Links with other projects, alliances, groups	5 (ongoing European SiS projects on RRI)	**5: COMPASS, PRISMA, Smart-Map, RRI Tools, RRI ICT Forum**
	Number of presentations in other forums	5	**5**

Some of the highlights are now described in more detail:

Website

The website was set up at the beginning of the project and proved to be a successful portal for the Responsible-Industry dissemination activities. We exceeded our aims for views and downloads of the information provided. The Google-hosted site allowed us to provide the information for free, without having to pay for storage or web service provision. It will therefore remain in perpetuity after the end of the project, which is excellent for the legacy of the project's documents and deliverables.

Social Media

Our Twitter social media campaign was minimal but relatively effective. We had 220 followers including other European projects, industry, academia, policy and civil society members (as well as a few bots!). The Twitter account allowed us to post images, videos, and commentary about the project, along with retweeting project members' activities and tweets about the project. Overall we had 199 tweets over the years, concentrating on the main dissemination activities and using the strategy described above. Thus we strove to be an informative, useful Twitter account which focused mostly on our own activities and which kept a record of our dissemination as well as promoting it.

Wikipedia

As mentioned in our initial dissemination and communication plan, we planned to contribute to the Wikipedia article on Responsible Research and Innovation. This was done, through editing the existing page and providing additional information. However, there has been some criticism from one Wikipedia editor, that the page is too full of "gobbledygook (Euromanagerspeak)". This has been attempted, but the criticism remains. There is an

obvious need to further translate the concepts of RRI to make them understandable to the general public. This is not inconsistent with the findings of the Responsible-Industry project more generally.

https://en.wikipedia.org/wiki/Responsible_Research_and_Innovation

Videos

A video was created to engage with the general public about RRI in ICT for health and ageing. It is available at https://youtu.be/ZOGnZr6Ki1g

It has had 749 views and 14 "likes". The video is used in teaching (particularly at De Montfort University) and often as an "ice breaker" general introduction to RRI for academics, industry people, and the general public.

The audio description is in English. Furthermore, for people that do not understand English and for the deaf and hard of hearing individuals captions have been created and translated by the members of the consortium to multiple European languages: Basque, English, Dutch, Finnish, French, German, Greek, Italian, and Spanish.

We believe that the video was a very successful addition to our communication dissemination strategy as it allows the concepts of RRI to be broken down in a realistic scenario.

Webinars

The Responsible-Industry project consortium, in collaboration with the Action group D4 of the European Innovation Partnership on Active and Healthy Ageing (EIP AHA) and the PROEIPAHA project, presented an introduction to Responsible Research and Innovation and an overview over a framework for RRI in business and industry in the domain of ICT for health, demographic change and wellbeing.

Key questions addressed during the webinar were:

- What is Responsible Research and Innovation (RRI)?
- Why is RRI important, also for companies?
- Why are RRI and Responsible-Industry relevant to Active and Healthy Ageing?
- Why should we embrace RRI?
- Who is in charge of implementing and using RRI within companies?
- What are their tasks and responsibilities?
- At which point of the research and innovation process should RRI be considered?
- How could we engage relevant parties?
- Which tools for RRI exist?
- What are you doing in your next step?
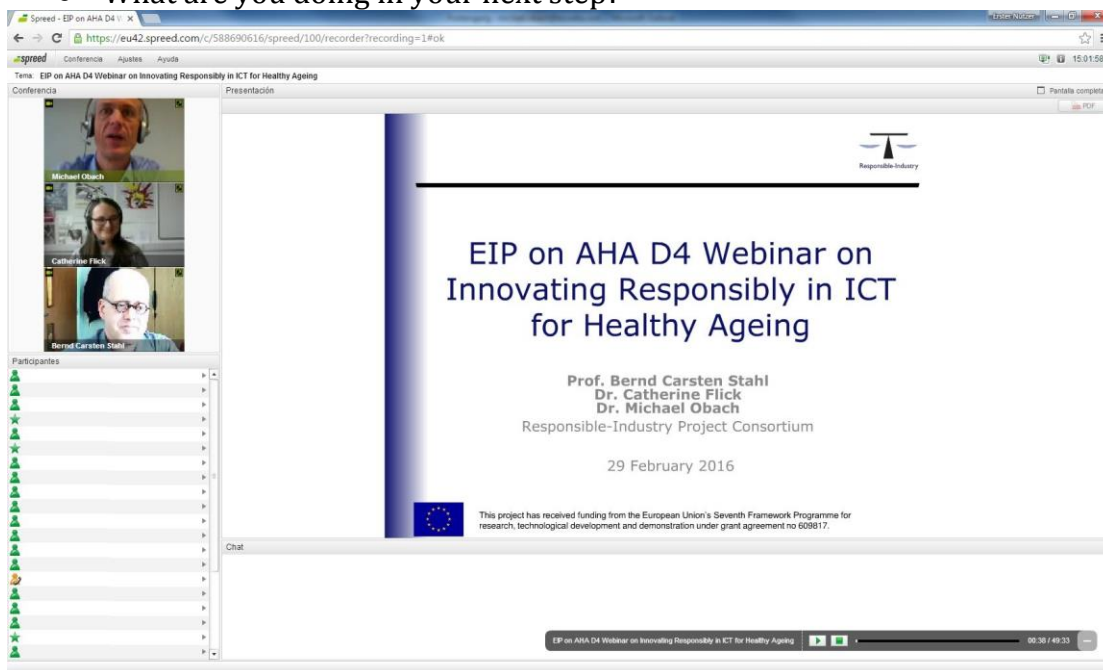
A PDF file with the slides of the presentation used during the webinar can be downloaded following this link: Slideshow http://www.responsible-industry.eu/dissemination/webinareipaha/Responsible-Industry_Webinar_20160229_1500.pdf?attredirects=0&d=1

A video of the webinar is available too: Video https://eu42.spreed.com/c/588690616/spreed/100/recorder?recording=1#ok

The webinar was very successful, with 37 participants (51 registrations, with 14 people not attending after registering).

Observatory for RRI in ICT

The relationship between Responsible-Industry and the platform is discussed further in the D5.5 Exploitation Report. Originally the project aimed to integrate its results in the RESPONSIBILITY project observatory. However, this is no longer maintained and so it was decided to, instead, work with the ORBIT observatory as described in D5.5. This will ensure longevity of the results of the project.

Conferences and Presentations

Responsible-Industry was well-represented by its members at a wide range of different conferences - both academic and non-academic.

Larger impact conferences and presentations include:

- ESOF in both 2014 and 2016, where the project was presented at different points in time to a wide range of scientific stakeholders.
- CEPIS conference in Den Haag to policy-makers, in 2015
- Digital Enlightenment Forum, Kilkenny, Ireland, in 2015
- Amsterdam NWO-MVI conference, in 2016
- European Business Summit, Brussels, in 2017
- Global TA conference in Cork, Ireland, in 2017

A full listing of all presentations and conferences can be found in the Participant Portal.

The project was also represented in many EU project activities, please see section 5 for more information.

Academic and Practitioner publications

The main publications for this project are, of course, the framework documents. These are covered in more detail in D3.4 Exemplar Implementation Plan. The main related academic publications so far are an ACM Computing Surveys paper on The Ethics of Computing (doi: 10.1145/2871196), and several papers in a Special Issue in the journal Sustainability on RRI in Industry. A book, Iatridis & Schroeder: Responsible Research and Innovation in Industry. The Case for Corporate Responsibility Tools (Springer International Publishing, 2016) (ISBN: 978-3-319-21692-8), was also published as part of this project.

These special issue papers include Innovating Responsibly in ICT for Ageing: Drivers, Obstacles and Implementation by Chatfield, Iatridis, Stahl and Paspallis (doi: 10.3390/su9060971), and The Responsible Research and Innovation (RRI) Maturity Model: Linking Theory and Practice by Stahl, Obach, Yaghmaei, Ikonen, Chatfield and Brem (doi: 10.3390/su9061036).

Additional papers are currently in progress.

Final Event

The final event was conducted at the European Economic and Social Committee (EESC) on 18-19 May 2017. It was conducted in conjunction with EIT Health and the "la Caixa" Foundation.

The full programme, presentations, photos, and Twitter interactions, can be found here: http://www.eesc.europa.eu/?i=portal.en.events-and-activities-responsible-research-programme

Speakers included:

- Gonçalo Lobo Xavier, Vice President of the EESC in charge of Communication
- Sylvie Bove, Chief Executive Officer, EIT Health
- Peter Kapitein, Patient Advocate Inspire2Live
- Trish Groves, Director of academic outreach and advocacy for BMJ, editor in chief of BMJ Open and honorary deputy editor of the BMJ
- Pedro Oliveira, Project Leader and Principal Investigator, Patient Innovations Senior Associate Dean for Faculty & Research. UCP - Católica Lisbon School of Business & Economics
- Kelly Verheyen, ENOLL - Health Living Labs Expert Group, LiCalab - Platform coordinator
- Christoph Westerteicher, C West Consulting, former International Director for Philips Hospital to Home business
- Maria Zolotonosa, ECSITE, SPARKS project
- Catelijne Muller, Member of EESC Workers Group, EU affairs and policy, Trade Union Federation for Professionals, The Netherlands - closure
- Alexei Grinbaum, French Alternative Energies and Atomic Energy Commission, RRI-Practice project
- Carlo Mango, Director, Scientific Research Area, Fondazione Cariplo - CREW project
- Lucyna A. Woźniak, Representative from the EC High Level Group on Maximising the impact of EU Research and Innovation Programmes
- Meelis Joost, Member of EESC Various Interests Group
- Members of the Responsible-Industry, COMPASS, PRISMA, and SMART MAP projects
- Lars Rölker-Denker, Uni Oldenburg, AAL
- Philippe Galiay, Head of Sector "Responsible Research and Innovation in H2020 and ERA", DG Research & Innovation, European Commission
- Magda Rosenmöller, Senior Lecturer of Production, Technology and Operations Management, Center for Research in Healthcare Innovation Management (CRHIM)

- Eleonore Pauwels, Wilson Center - Biology Collectives and Citizen Health Innovators projects
- Marcello Palazzi, Co-Founder, B Lab Europe
- Ulrich Samm, EESC Employers Group, Director of Institut for Energy and Climate Research, Research center Jülich
- Ignasi López, Director of Science Department at "la Caixa" Banking Foundation

Overall it was a very successful event, with approximately 55 people in attendance, and more watching over the internet via the live stream.

Industry Stakeholder Network

The networks AFe-INNOVNet (thematic network contributing Towards an Age-Friendly Europe), ENGAGED (thematic network and community for active and healthy ageing) and AALIANCE2 (Coordinated Action entitled European Next Generation Ambient Assisted Living Innovation Alliance) have not only been informing their members about outcomes and events of this project, but also have been useful tools for recruiting scientists, technical experts and other stakeholders from the field of ICT for demographic change for their participation in the Delphi study and workshops on RRI.

Communication with other RRI Projects

As planned in D5.4 Exploitation Plan, Responsible-Industry has contributed to, participated in, or kept in contact with various RRI projects across Europe., including GREAT, NERRI, PIER, ProGReSS, Res-AgorA, RESPONSIBILITY, RRI-ICT Forum, RRI Tools, SATORI, and

Synenergene. This list includes the four projects focussing on RRI started in 2013 as well as the sister project of Responsible-Industry that focuses on the coordination of RRI in industry and the project aimed to develop tools and raise awareness.

Bernd Stahl was interviewed by the RRI-Tools Project, for example, available at https://youtu.be/00lzS6lbmMo

Responsible-Industry was also an invited guest to the final conference (GREAT, RESPONSIBILITY, ProGReSS, and Res-AGORA) in January 2016, where we presented the Case Studies and other outcomes of the project.

Catherine Flick was invited to present RRI as a representative of Responsible-Industry at the RRI-Forum event on July 8-9, 2015.

Additionally, the project has made contact with the next-generation projects COMPASS, PRISMA, and SMARTMAP, all of which take the next steps for RRI in industry, and two of which build directly on the outcomes of Responsible-Industry (such as COMPASS, which is directly comparing results of interviews with the Responsible-Industry project). These three projects were also represented at the Responsible-Industry final event, along with the AAL network (Active and Assisted Living).

The interaction with European Innovation Partnership on Active and Healthy Ageing (EIP AHA) worked through the participation of project partners TECNALIA and VTT in the action groups C2 and A2, and, moreover, addressing also other action groups through the coordination with the project PROEIPAHA, a Support Action to the European Innovation Partnership on Active and Healthy Ageing. The webinar mentioned above was for EIP AHA members and was organised by PROEIPAHA and Responsible-Industry. Additionally, the project was part of the "Active and Healthy Ageing in the framework of Responsible Research and Innovation" synergy as part of the Action Group D4 of EIP AHA. This contributed a set of good practice in RRI in AHA through the deliverables of Responsible-Industry.

https://ec.europa.eu/eip/ageing/commitments-tracker/d4/good-practises-rri-ict-aha_en

Exploitation

Exploitation is the process of rendering disseminated information practical and useful by ensuring its uptake by relevant recipients and stakeholders. It uses findings and recommendations and puts the concept of Responsible Research and Innovation (RRI) into practice in industry, thus ensuring long-term viability of the project legacy. Moreover, exploitation aims at getting value or use from this project, where use is the direct or indirect utilisation of foreground knowledge in further research activities other than those covered by the project, or for developing, creating and marketing a product or process, or for creating and providing a service.

Detail on the Responsible-Industry exploitation plan and exploitation activities can be found in deliverables D5.4 and D5.5.

The Responsible-Industry project has generated important and useful knowledge on how industry can work productively together with societal actors and integrate principles and methodologies of RRI into research and innovation processes. The focus of research and its application is the role that research and innovation in Information and Communication Technologies (ICT) can play in addressing the grand challenge of health, demographic change and wellbeing.

By the end of the project, the foreground will be publicly accessible through 29 deliverables. Furthermore, the consortium members are exploiting their findings by publishing them in academic journals, book chapters, at least one book and by means of other publication channels.

An important means of exploitation is community building and exploitation of foreground in industrial and academic networks (some of them associated with AIRI, Euclid Network, TECNALIA and VTT), as well as networks of policy makers and links to other heterogeneous networks (e.g. AFe-INNOVNet, AALIANCE2, ENGAGED).

The gained foreground has been provided and promoted in other projects on RRI, e.g. GREAT, NERRI, PIER, ProGReSS, Res-AgorA, RESPONSIBILITY, RRI-ICT Forum, RRI Tools, SATORI, and Synenergene. This list includes the four projects focussing on RRI started in 2013 as well as the sister project of Responsible-Industry.

The Responsible-Industry consortium has been collaborating with several organisations and other projects related to ICT for health, demographic change and wellbeing, such as the AAL Association, the Knowledge and Innovation Community (KIC) European Institute of Innovation & Technology (EIT) Health (KIC InnoLife) and the Finnish Business Society (the Corporate Responsibility Network of Finland)

Commercial exploitation of foreground generated in this project will be done though a new spin-off company that offers consultancy. Its value proposition consists in transferring the knowledge on how to use and adapt the findings for two main segments of clients: firstly, the target users, i.e. companies in the sector of ICT for health, demographic change and wellbeing and as the RRI approach is generic also customised to the other branches, and, secondly, for consultancy firms that plan to offer this service to the first segment in the future broadening their portfolio of services.

The consortium of the Responsible-Industry project has nine project partners: Associazione Italiana Per La Ricerca Industriale (AIRI), De Montfort University (DMU), Euclid Network (EN), Fundación TECNALIA Research & Innovation (TECNALIA), Karlsruhe Institute of Technology (KIT), Technical Research Centre if Finland LTD (VTT), University of Central Lancashire, Cyprus (UCLan CY), University of Southern Denmark (SDU), and University of Twente (UT). Their individual exploitation plans comprise teaching of the gained knowledge at universities, research in future national and European research projects, academic and non-academic publications, consultancy, and, community building and networking, among others.

Based on the the evaluation and validation phase as well as insights gained throughout all other activities of the project, it became clear that the framework for RRI in industry needed to be accessible, relevant and easy to accommodate. The first and arguably most important step in implementing RRI in a company is to ensure top level management support. For this to happen, there has to be a straightforward message that one can give to senior managers. This first step of top-level management buy-in is relatively independent of the implementation detail that is required for putting RRI in practice. The Responsible-Industry consortium therefore decided to split the section of the framework that lists and explains the benefits of RRI for companies and present it in a separate document (see figure 1). Based on the experience gained in the project, we can argue that adopting RRI can generate numerous benefits for a company. These include strengthening links with customers and end users, enhancing the company's reputation, decreasing business risks and unintended consequences, strengthening public trust in the safety of products, increasing acceptability of products, and adopting an environmentally friendly profile. In these various ways RRI can contribute to enhance a company's medium-term competitiveness/profitability, so improving the bottom line and the company value.

Once top level buy-in into the idea of RRI is present the next step is to provide detail on how implementation can be approached. The second and most substantial section of the framework, published under the title "Guide for the implementation of RRI in the industrial context" (see figure 2) covers these questions in detail.

Finally, it is clear that RRI as a term and as a set of recognisable activities will flourish depending on the social environment in which it is deployed. Policymakers have an

important role in fostering an environment. These insights are captured in the third of the framework documents (see figure 3).

The three documents that represent the framework of RRI in industry contain the condensed insights gained in the Responsible-Industry project. The consortium has put significant efforts into disseminating them, notably via the final event which was co-organised with the EIT Health and the European Economic and Social Committee in May 2017 at the EESC.

One aspect that became clear during the lifetime of the project is that a complex social construct such as RRI will not be adopted by companies simply on the basis of information provided to them. The framework developed by the Responsible-Industry project will therefore need to be promoted and communicated to companies beyond the end of the project. It relies on a policy environment that creates incentives for organisations to engage with RRI and practical advice on how to implement it. This is an area where the project legacy will need to prove to be successful.

The Responsible-Industry project has been able to secure its legacy in several ways. It has fed into a number of successor projects. In addition to the three European projects that started in 2016 on the topic of RRI in industry, which build on Responsible-Industry in different ways, it has also fed into the UK-funded ORBIT project, the Observatory for Responsible Research and Innovation in ICT (www.orbit-rri.org). ORBIT is set up to perpetuate RRI and set up a legal entity that will provide RRI-related services to research and innovation communities. It will integrate the Responsible-Industry outputs and framework and develop these further. Based on the RRI Maturity Model (see figure 4) which was developed in the project, ORBIT will create a self-assessment tool that will help organisations identify their strengths and weaknesses. In addition to such practical tools ORBIT will also provide training and consultancy services that incorporate the Responsible-Industry insights.

Additionally, the results of the Responsible-Industry data collection activities have fed into one of the successor projects, COMPASS, which will compare results from other sectors, namely cybersecurity, nanotechnology and biomedicine, with the outcomes of the first round interviews conducted for Responsible-Industry.

The Responsible-Industry project has thus made important progress in understanding and promoting RRI in industry. Much remains to be done and the social and policy environment keeps evolving. However, the goal of ensuring that processes and outcomes of research and innovation are socially acceptable, desirable and sustainable will remain and Responsible-Industry has contributed greatly to this goal.