



# **/Responsible-Industry**

Guide for the implementation of  
Responsible Research and Innovation (RRI)  
in the industrial context

THE RESPONSIBLE-INDUSTRY PROJECT CONSORTIUM

[www.responsible-industry.eu](http://www.responsible-industry.eu)





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**HOW TO APPLY RESPONSIBLE RESEARCH AND INNOVATION (RRI)  
IN INDUSTRY – AN INTERACTIVE GUIDE**

<https://www.youtube.com/watch?v=ZOGnZr6Ki1g>



# INTRODUCTION



Responsible Research and Innovation (RRI) aims “to ensure that societal actors work together during the whole research and innovation (R&I) process to better align both the process and outcomes of R&I with the values, needs and expectations of European society”<sup>1</sup>

**F**or industry, an enhanced consideration of societal needs and ethical aspects in its R&I activity is recommended.

#### How this can be achieved?

- By strengthening links with customers to get insights into their needs and preferences
- By better matching societal expectations
- By undertaking foresight activities as part of risk management
- By stimulating and motivating the workforce
- By mitigating environmental impacts
- By ensuring compliance with qualified norms and standards

**Implementing RRI** is a multi-faceted business that **could translate into clear benefits** by:

- Enhancing the company's reputation
- Decreasing business risks and unintended consequences

- Strengthening public trust in the safety of products
- Adopting an environmentally friendly profile
- Optimizing the company's medium-term competitiveness/profitability

A GUIDE TO PUT IT INTO PRACTICE IS OUTLINED IN THE FOLLOWING.

The Guide provides strategic options and recommendations **to be considered on a case-by-case basis** by industrial actors engaged in research and innovation to pursue responsible practices and behaviors when developing devices, products and services.

**The Framework is primarily directed at CEOs, senior executives and project managers.**

It was developed on the basis of research undertaken by companies that are active in research and innovation in the domain of ICT (Information and Communication

<sup>1</sup> Schomberg, R. Towards Responsible Research and Innovation in the Information and Communication Technologies and Security Technologies Fields, 2011

Technologies) for an ageing society<sup>2</sup> but many of the insights are applicable more broadly.

ICT holds a huge potential for management and delivery of health and social care to an ageing society and offers increasing opportunities for independent living. There is however a growing concern about the possibility that these technologies, like other innovations, could raise ethical issues and fail to meet societal needs and expectations. Ultimately, this could severely limit their acceptability and marketability<sup>3</sup>.

In a Delphi survey conducted by the Responsible Industry project<sup>4</sup>, it was indicated that the highest ethical and societal risks are those raising from the technologies for data transmission, storage and analysis, followed by the technologies for real time monitoring of the user lifestyle through “sensing systems” and the development of Brain-Computer Interfaces.

The principles and values that should be respected in developing ICT products for older persons in need of care (*vulnerable consumers*) are<sup>5</sup>:

→ **Individual rights and liberties** (privacy, data protection, rights to freedom of

movement, etc.)

→ **Personal safety and health**

→ **Autonomy, authenticity and identity**

(impact of technology on free will, ability to have one’s own thoughts and make one’s own decisions, to develop own social identity)

→ **Implications for quality of life (QoL)**

→ **Social isolation**

→ **Integrity and dignity**

→ **Bodily integrity** (self-determination of human beings over their own bodies)

→ **Social safety**

→ **Justice (distributive) and access** to developed technology

→ **Equality** (equal opportunity of human beings in society: age, culture, gender etc.)

→ **Avoidance of dual use** of developed technologies

The implementation of RRI concepts in the industry of ICT helps innovators to take these critical issues into account and develop new ICT products which provide safe, ethically acceptable and desirable solutions to meet needs and expectations of the elderly.

DOING RESEARCH AND INNOVATION RESPONSIBLY WILL BENEFIT THE COMPANY AND CONTRIBUTE TO MAKING A BETTER WORLD.

<sup>2</sup> See more at [www.responsible-industry.eu](http://www.responsible-industry.eu)

<sup>3</sup> AALIANCE2 Summary Market Review for AAL, AALIANCE2 Project, 2013

<sup>4</sup> Borsella E., Porcari A., Mantovani E. Delphi Exercise Report Responsible Industry Project, 2015

<sup>5</sup> See more on the possible impact of ICT developments on the rights of elderly people at [www.valueageing.eu](http://www.valueageing.eu)



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# THE FRAMEWORK TO IMPLEMENT RRI



The framework to operationalize RRI in companies dealing with ICT for an ageing society addresses four main questions: Who is responsible for what? How can RRI be integrated along the value chain? What voluntary tools can be used for RRI? How can ethical and social impact analysis be performed?<sup>6</sup>

**E**ach organization using the plan might find that only a selection of the recommendations highlighted in the Framework are applicable/relevant.

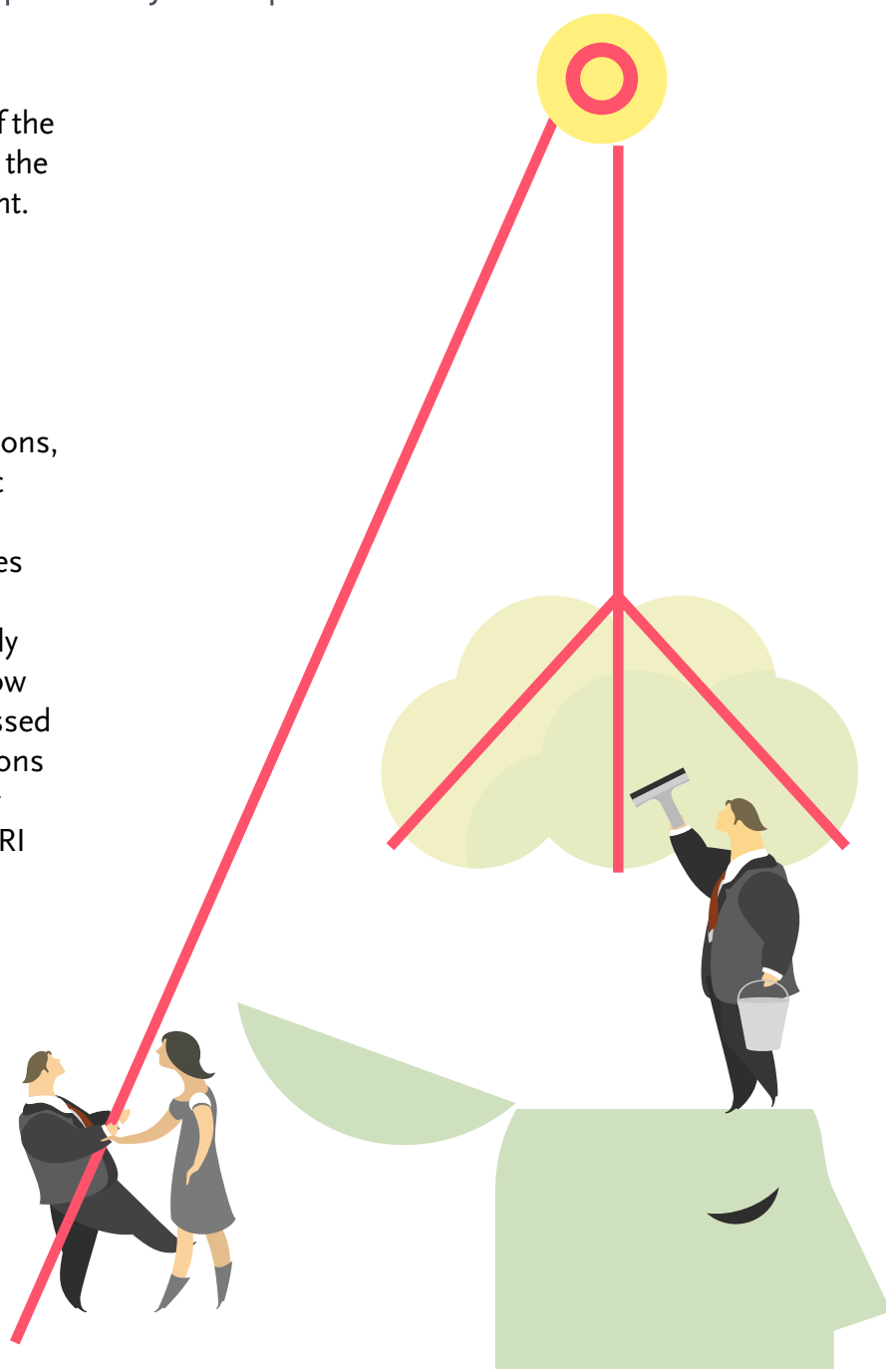
### IMPLEMENTING RRI IS A DYNAMIC PROCESS

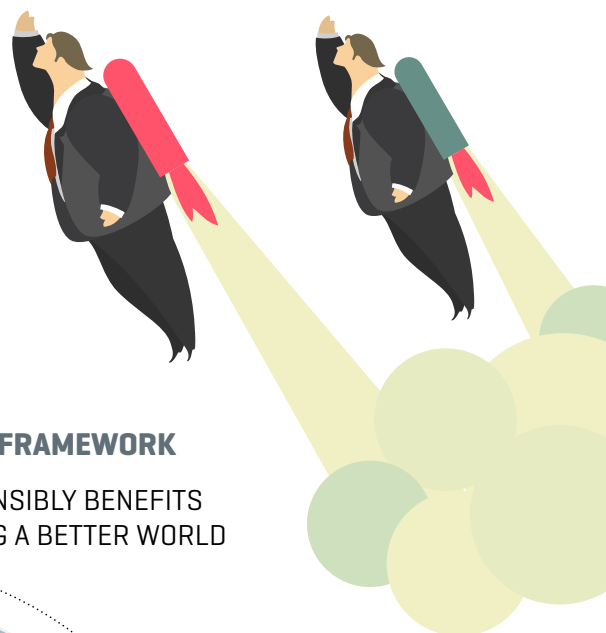
that requires continuous attention to the evolution of scientific knowledge, regulations, public attitudes and perceptions, all the way from agenda-setting and basic research to the market stage.

The Framework focuses on responsibilities of individual organizations along the *R&I value chain*. Nevertheless, since the supply chain can have a significant impact on how ethical and social implications are addressed in the final product, individual organizations should ensure that supplier and end user license agreements are consistent with RRI principles.

**Ideally all the organizations in the supply chain should adopt the Framework.**

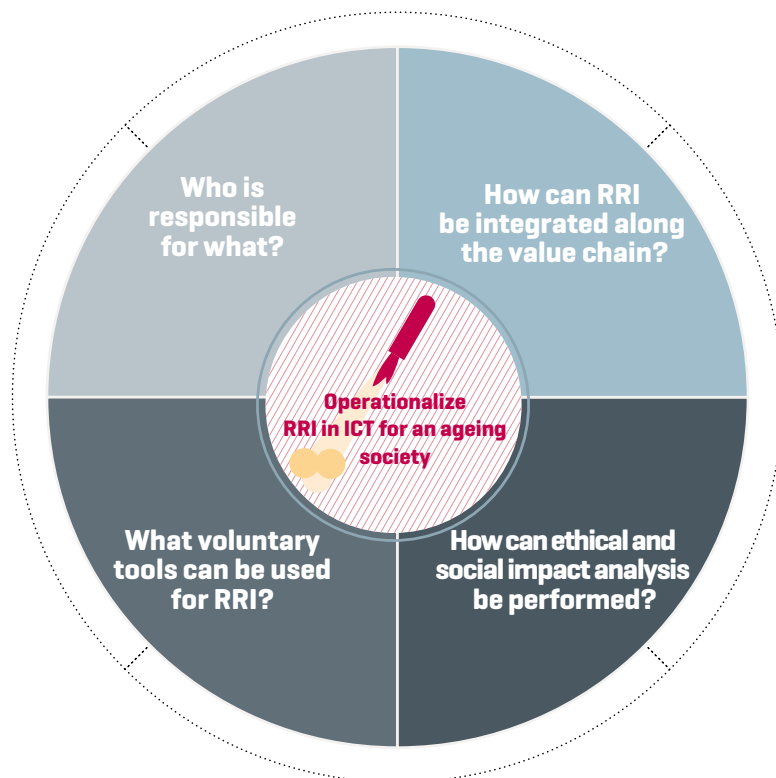
<sup>6</sup> The full document “Framework for implementing Responsible Research and Innovation in ICT for an ageing society” is available on [www.responsible-industry.eu](http://www.responsible-industry.eu)





**FIG. 1: OVERVIEW SCHEME OF THE FRAMEWORK**

DOING RESEARCH AND INNOVATION RESPONSIBLY BENEFITS THE COMPANY AND CONTRIBUTES TO MAKING A BETTER WORLD



## RRI DRIVERS

### RRI CORE SUBJECTS

- **Reflection** on ethical and social impacts
- **Aligning R&I** with users and societal needs
- **Engaging** stakeholders in the R&I process
- **Equality and transparency** in information & communication, **education** and **ethics**

### VALUES

- **Individual rights and liberties**
- **Personal Safety and Health**
- **Autonomy, Authenticity, Identity**
- **Quality of life**
- **Social Isolation**
- **Integration and Dignity**
- **Bodily integrity**
- **Social Safety**
- **Justice, Access**
- **Dual use**

### COMMUNICATION

- Increasing **awareness**
- **Informing** the public
- Providing **training** and fostering a **RRI culture**

## RRI FACILITATORS

### POLICY OPTIONS

- Optimizing the **regulatory framework**
- Setting **incentives** for RRI practices

## HOW CAN RRI BE INTEGRATED ALONG THE VALUE CHAIN?

### DOING RESEARCH AND INNOVATION RESPONSIBLY REQUIRES A WIDE AND INTEGRATED METHODOLOGY

#### AIMING TO:

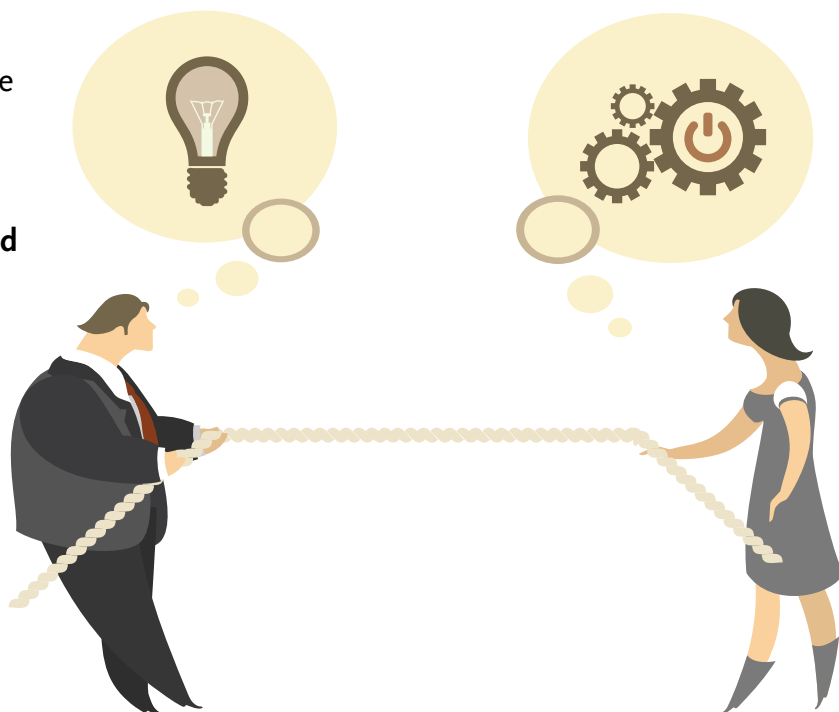
- Improve the quality and acceptability of services and products by better matching the rapidly evolving user requirements, identifying both opportunities and threats
- Provide global analysis and holistic evaluation of risks
- Uncover unintended or unforeseen consequences as the products are developed and deployed

A RRI approach for reaching these objectives must consider the integration of RRI principles and practices **along the whole value chain**, as sketched in Fig. 2, where the **key steps** are indicated.

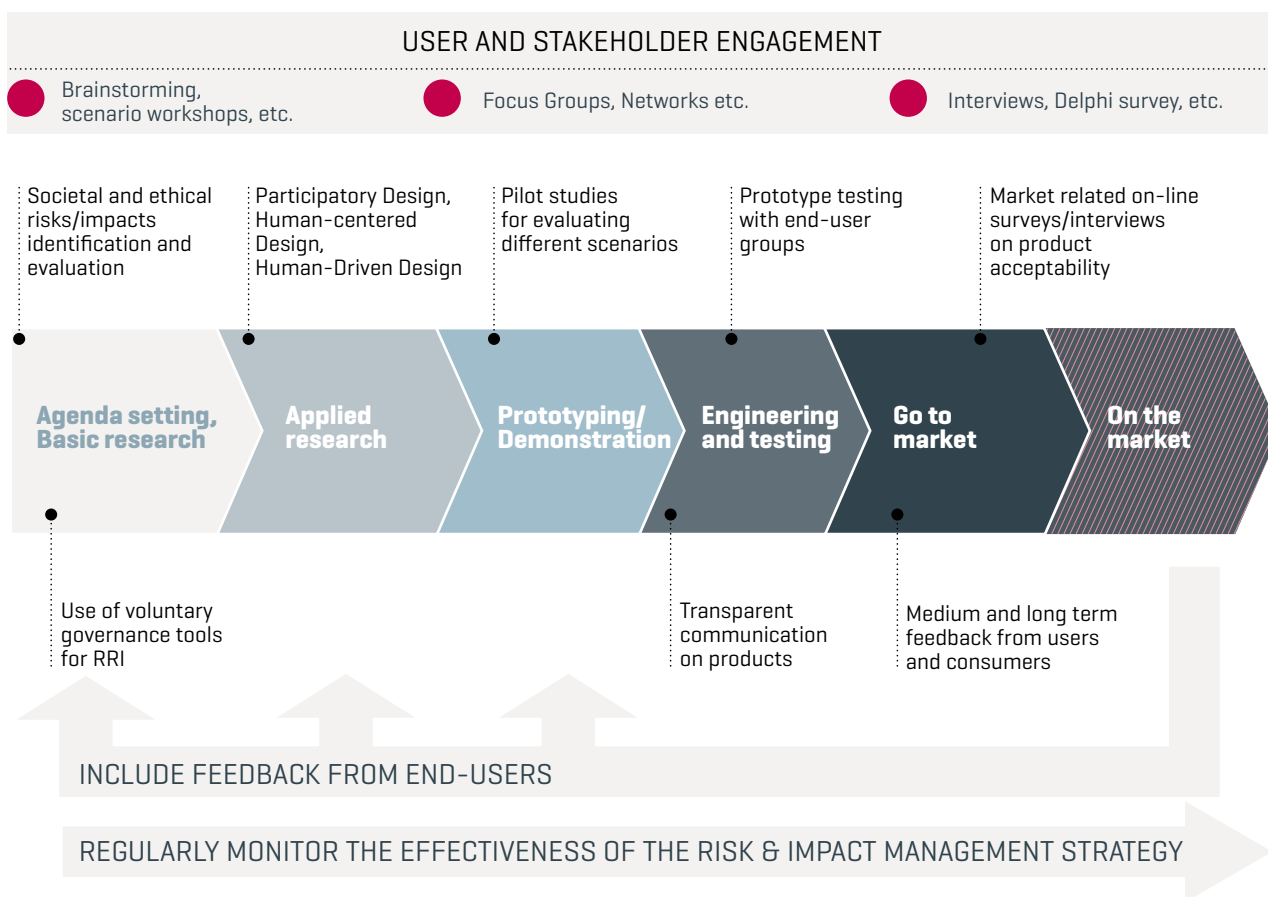
**In the case of lack of resources, or simple/short value chains, it could be sufficient and cost-effective to limit the assessment and management of ethical and social impacts to the early stage of the value chain.**

This approach would help to better plan activities and investments and to reduce the risk of expensive changes in later stages as a consequence of unforeseen critical ethical issues.

However, misunderstandings in the early phase can lead to premature termination of a production process and limit innovation, and not all ethical issues can be foreseen or anticipated at the early planning stage. To avoid these problems, whenever possible, **it is better to combine the risk evaluation phase with the functional and performance analysis of the products with the objective to increase their safety, quality and acceptability.**



**FIG. 2: ACTIVITIES TO BE UNDERTAKEN FOR THE INTEGRATION OF RRI ALONG THE WHOLE VALUE CHAIN**



## HOW CAN ETHICAL AND SOCIAL IMPACT ANALYSIS BE PERFORMED?

### **ETHICAL AND SOCIAL IMPACT ANALYSIS IS REQUIRED TO ENSURE THAT THE DEVELOPED ICT SOLUTIONS ARE SENSITIVE TO CRITICAL ISSUES FOR THE BENEFIT OF SOCIETY AND THE GREATER GOOD.**

Key to RRI is the involvement of stakeholders for the early evaluation of ethical and social risks and impacts<sup>7</sup>. A number of recommendations for the impact analysis are indicated below (see Figure 3):

- Design a specific strategy for the assessment and management of ethical and social risks and impacts. Take into account the adoption of voluntary governance tools to support the strategy implementation
- Consider the creation (or at least the consultation) of a body to oversee the impact assessment strategy, formed by independent actors, including stakeholders' representatives
- Regularly update and adapt the ethical and social impact assessment strategy throughout the product value chain
- Cooperate with policy-makers and regulators in defining precautionary measures, updating/reviewing the risk and impact assessment<sup>8</sup>.

- Identify and evaluate impact scenarios for each specific product/service through procedures such as: Ethical Assessment, and Social Impact Assessment in pilot studies.
- Involve key stakeholders (such as end-users, consumer organizations and other representatives of civil society, policy makers/legislators) in ethical and social impact analysis
- Use methodologies for stakeholder engagement such as<sup>9</sup>: *network mapping, focus groups and brainstorming events, scenario workshops, user committees, citizen's jury* online forums, online pool, delphi study
- Promote a user-centered approach to R&I, working together with stakeholders to develop ethically acceptable and socially desirable products via participatory, human-centered, human-driven design<sup>10</sup>
- Ensure decisions (e.g. by ethical committees) take into account end users' (e.g. senior and senior associations, patients, caregivers) views

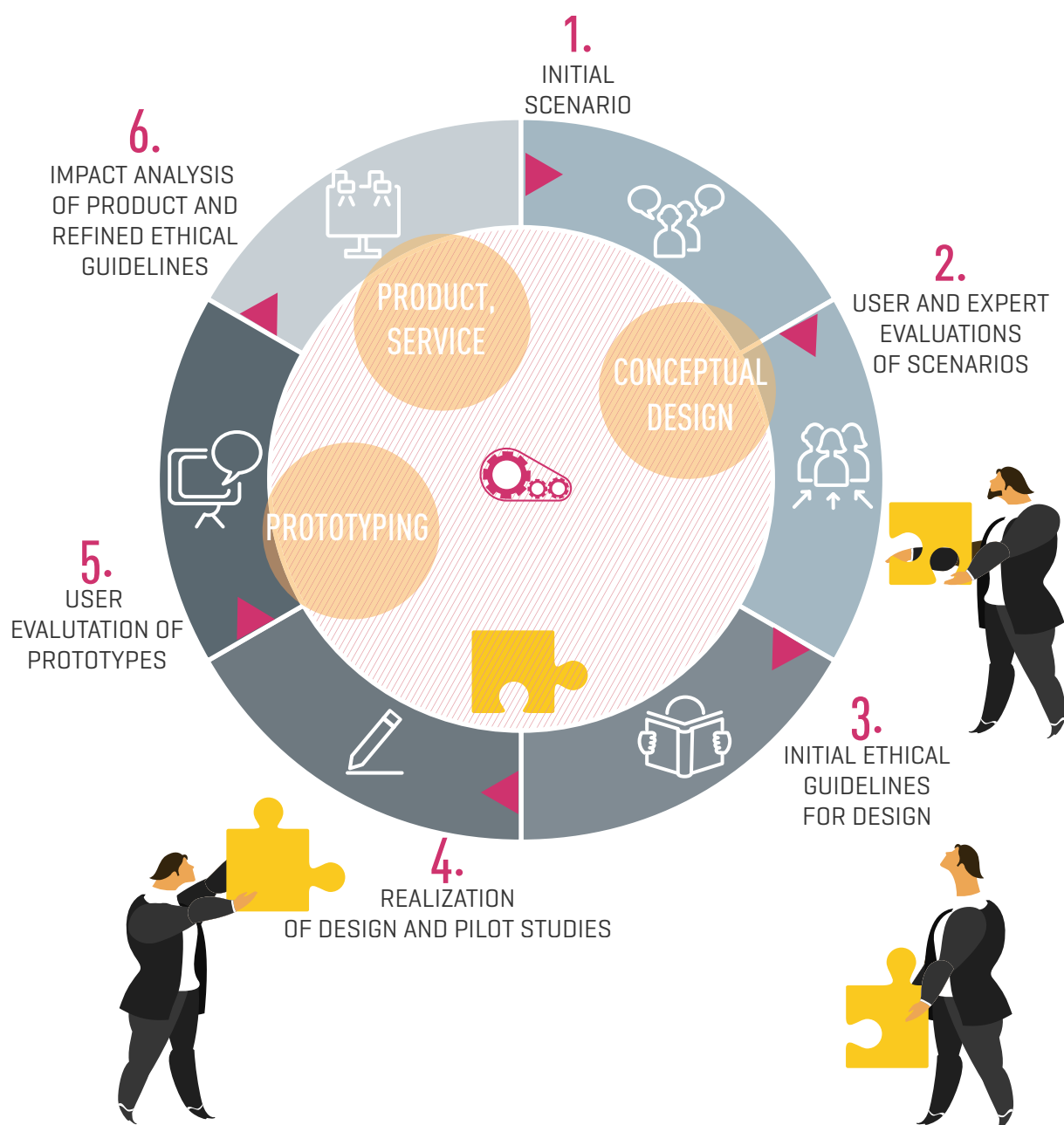
7 Methods and tools to engage public, stakeholders, consumers and other groups in the research process are developed by the project Engage2020 ([www.engage2020.eu](http://www.engage2020.eu)).

8 See more at the web-site of the Project PACITA (*Parliaments and Civil Society in Technology Assessment*) at [www.pacitaproject.eu/](http://www.pacitaproject.eu/)

9 See more at the web-site of the Project *Public Engagement Innovations for Horizon 2020* and Engage 2020.

10 An inventory of methods and tools for user-centered design in the ICT for an ageing society is available in the report from the Nomadic Media project: *User-Centred Design Guidelines for Methods and Tools*

**FIG. 3: HOW TO PERFORM ETHICAL ANALYSIS OF NEW PRODUCTS/SERVICES THROUGH SCENARIO WORKSHOPS**



## WHAT VOLUNTARY TOOLS CAN BE USED FOR RRI?

### THE ADOPTION OF VOLUNTARY GOVERNANCE TOOLS CAN HELP THE ORGANIZATION TO ADDRESS CRITICAL ETHICAL ISSUES IN THE ICT FOR AN AGEING SOCIETY, AS WELL AS TO COMPLY WITH THE EXISTING REGULATORY FRAMEWORKS.

As indicated by the project Delphi survey<sup>4</sup>, existing governance tools are all considered suitable to support responsible R&I along the value chain (see figure 4).

However, the analysis also pointed out that most of these tools have a general purpose and therefore should be better tailored to the specific needs of RRI in ICT for an ageing society.

Specific recommendations are the following:

- Consider adoption of CSR global initiatives, standards and principles<sup>11</sup>
- Consider adoption of risk management systems and quality certifications<sup>12</sup>
- Consider the adoption of a specific Code of Conduct to commit the organization (and employees) to behave responsibly in

R&I in ICT for an ageing society<sup>13</sup>.

- Take due account of international declarations on human rights<sup>14</sup>
- Carefully evaluate use of existing technical standards relevant for the engineering and design of products in ICT for an ageing society (e.g. standards on privacy, security, data protection, health informatics, information security systems, electronic health records, privacy by design, consumer rights, etc.)<sup>15</sup>
- Promote the adoption of certification marks for RRI/ethical issues
- Commit the organization to the regular review of the adopted governance tools. Define monitoring and auditing procedures involving external, independent bodies
- Work with stakeholders, and in particular end-users, to integrate the tools that take into account peculiar aspects related to research and innovation in ICT for an ageing society.

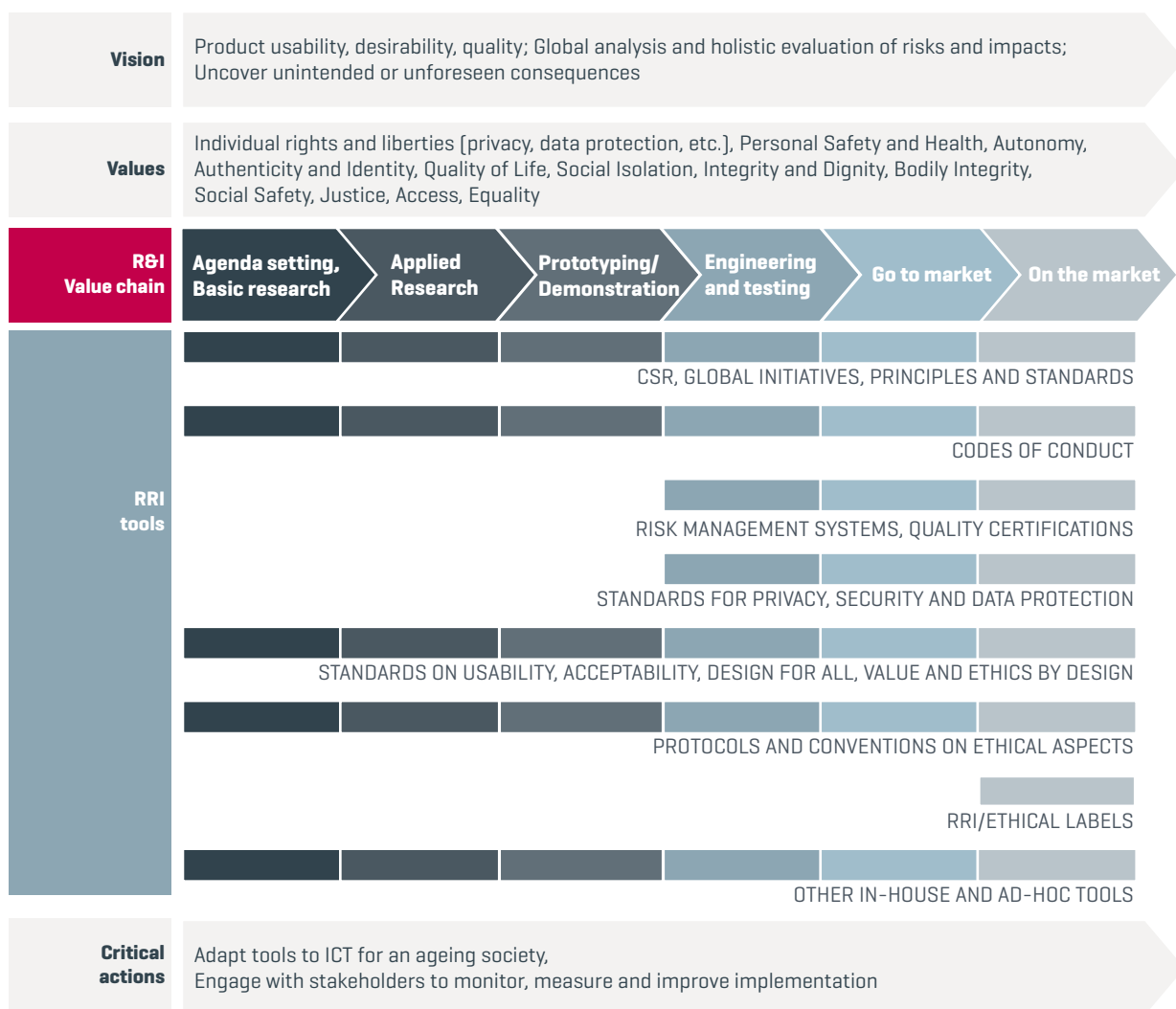
11 Examples are the *Global Reporting Initiative (GRI)*, the *UN Global Compact* the *ISO 26000 Social Responsibilities*. Further details on the tools and the selection of tools are given in the report Iatridis K. *Tools Survey and Matrix for RRI in Industry* Deliverable D1.3, Responsible Industry Project

12 Examples are the *ISO 9001 Quality management standard*, *ISO 20000 Information technology service management*. Further details are provided in the report Soraker J. H. et al *Systematic review of industry relevant RRI discourses* Deliverable D1.1, Responsible Industry Project

13 Examples are the *Electronic Industry Citizenship Coalition Code of Conduct* and the *Software Engineering Code of Ethics and professional practices*

14 Examples are the *UN Convention on the Rights of Persons with Disabilities* and the *EU Charter of the rights and responsibilities of older people in need of long-term care and assistance*

15 Refer also to guidance related to the EU regulatory framework for telecommunications, medical devices, and the EU Privacy and Data Protection Directives

**FIG. 4: VOLUNTARY GOVERNANCE TOOLS FOR RRI ALONG THE VALUE CHAIN**

## WHO IS RESPONSIBLE FOR WHAT?

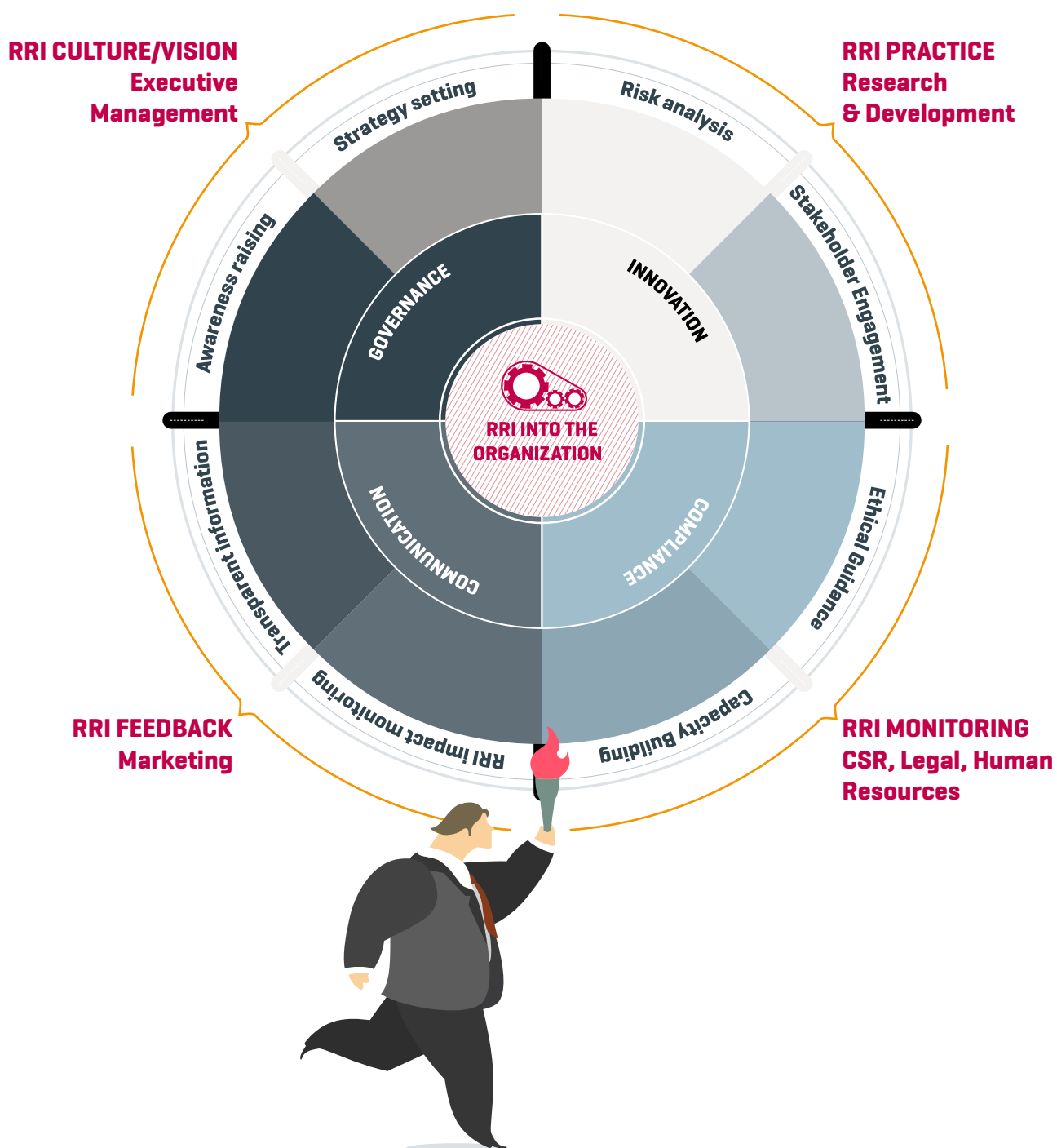
### HOW RESPONSIBILITIES FOR RRI SHOULD BE ALLOCATED IN THE COMPANY WILL DEPEND ON ITS SIZE AND STRUCTURE.

Figure 5 provides a general overview of the roles and responsibilities of the various company functions and offers an indication of how their integrated action could contribute to the implementation of RRI in the organization.

These functions are not always all present in a company and often they are merged together. This is particularly true for SMEs. In any case, as outlined in the following, all involved units need to work in close collaboration and must act in unison, following a common policy/philosophy, to address the different issues that contribute to RRI.



FIG. 5: KEY RESPONSIBILITIES FOR RRI WITHIN THE ORGANIZATION



## EXECUTIVE MANAGEMENT (RRI CULTURE/VISION)

- Set the vision: ensure the development of a strategy for ethical and social impact and risk management
- Recognize RRI as an investment, not a cost
- Align the overall corporate investment strategy and practices with RRI principles
- Ensure commitment/accountability of the organization
- Explicitly include social and ethical risks in corporate/company annual risk assessment reports
- Evaluate the opportunities and benefits of adopting voluntary governance tools for RRI (e.g. code of conduct, global initiatives, standards)
- Ensure that the company is committed to (and accountable) for:
  - risk and ethical assessment of the R&D projects in the early stages
  - integration of RRI principles all along the value chain
  - analysis of the impact and implications of ICT products
  - transparency and open access, where feasible
- Establish (or consult) an ethical monitoring board to oversee the strategy, ensuring appropriate mechanisms to deal with conflict of interest (economic interests vs. ethical/human interests)
- Establish a specific function within the organization to coordinate RRI activities
- Create an “ethical culture” amongst the employees:
  - raise awareness on RRI principles
  - integrate ethical thinking into the design/production process
  - advocate and encourage employees to maintain a responsible attitude
  - discourage/stigmatize unethical behaviour

## RESEARCH & DEVELOPMENT (RRI PRACTICE)

- Engage stakeholders to cooperate in:
  - Performing ethical and societal risk/impact assessment of new applications (from early stages)
  - Identifying technically feasible solutions that avoid/limit any ethical and social risk/impact
  - Testing prototypes
- Define and apply severe prevention measures to avoid data breaches, concerning all data management activities (i.e. “safe by design” approach)
- Favour open innovation processes
- Interact and coordinate activities with CSR and management functions

## HUMAN RESOURCES (RRI MONITORING)

- Ensure selection of people who are willing to engage with RRI principles
- Organize (periodical) ethical training courses for relevant staff

## LEGAL DEPARTMENT (RRI MONITORING)

- Ensure rigorous compliance of the organization with qualified national/international regulation and standards on social and ethical risks/impacts
- Provide the other departments with the legal framework for undertaking R&D responsibly
- Ensure that adequate complaints procedures are in place
- Ensure that supplier and end-user license agreements are consistent with RRI principles
- Keep the organization updated on regulatory developments, anticipate potential regulatory changes

## CORPORATE SOCIAL RESPONSIBILITY (RRI MONITORING)

- Strengthen cooperation with the management function in the implementation of the legal framework for RRI procedures
- Collaborate with R&D and Human Resources departments to ensure implementation of the general management decisions

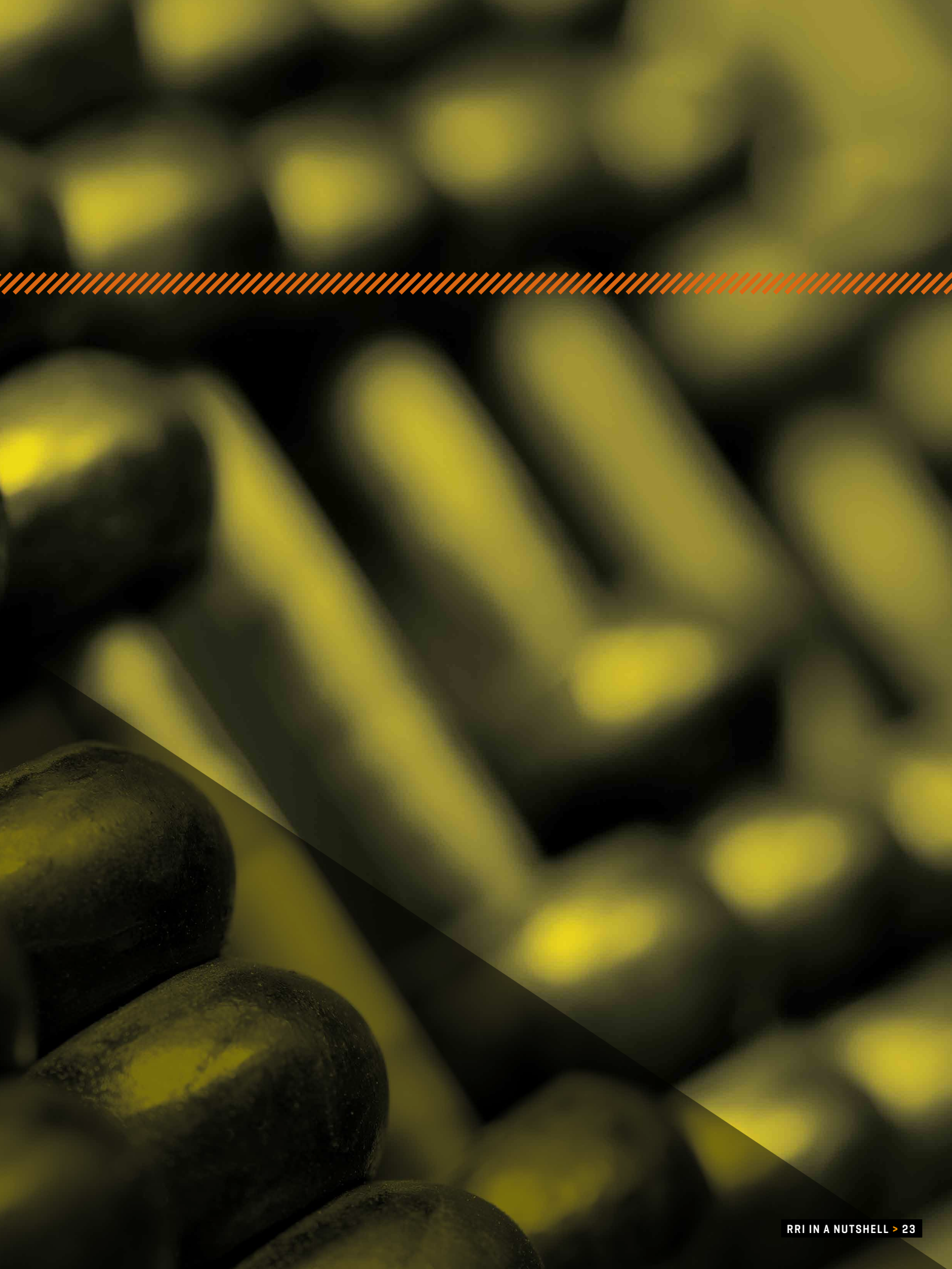
## MARKETING DEPARTMENT (RRI FEEDBACK)

- Monitor user and consumer opinions and feedback on ethical and social issues related to ICT products and services on a regular basis
- Monitor the impact of RRI practice on the final quality of the products, market penetration and user satisfaction
- Observe relevant social phenomena and trends that can inform the company about social desirability and acceptability of products and services
- Foster information, transparency and dialogue on ICT products on the market
- Avoid hidden costs of application and use (e.g. costs for licenses, maintenance of the product/service, advising and training on product functionalities)



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# RRI IN A NUTSHELL



## RRI IN A NUTSHELL

**A**wareness of the RRI concept and RRI approaches and practices is still limited and should be raised.

→ **THE KEY ACTIONS FOR THE IMPLEMENTATION OF RRI ARE SUMMARIZED AS IT FOLLOWS:**

- Reflect on a holistic vision for RRI within the organization, promoting capacity building, and instilling RRI within the culture of the company
- Integrate RRI into existing structures and processes, including R&I, CSR, Human Resources and other company functions
- Promote reflection and awareness of ethical and societal issues related to specific R&I products in ICT for an ageing society
- Perform in-depth ethical analysis of ICT products/services from early stages of the R&I value chain
- Support early identification of appropriate preventive and precautionary measures
- Foster stakeholder engagement, in particular with end users, from early stages of product development
- Pursue open and transparent communication with stakeholders about risks and impacts
- Perform ongoing assessment and management of the impact of ICT products and services, both in the short/medium term and long-term



- Ensure training and professional development opportunities to permit staff to fully participate and take responsibility
- Foster multidisciplinary between engineering, natural sciences and ethics and social sciences
- Promote training and debates in the workplace on ethical aspects of programmes, activities and products
- Apply equality principles in recruitment and career progression

**For more information please check the Responsible Industry website:**

**[www.responsible-industry.eu](http://www.responsible-industry.eu)**



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# GLOSSARY





### → **CROWD-SOURCING**

is process of obtaining needed services, ideas, or content by soliciting contributions from a large group of people, and especially from an online community, rather than from traditional employees or suppliers. It is distinguished from outsourcing in that the work comes from an undefined public rather than being commissioned from a specific, named group. Crowdsourcing can involve division of labor for tedious tasks split to use crowd-based outsourcing, but it can also apply to specific requests, such as crowdfunding, a broad-based competition, and a general search for answers, solutions<sup>16</sup>.

### → **CORPORATE SOCIAL RESPONSIBILITY (CSR)**

has been defined as “a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis”, as well as “the responsibility of enterprises for their impacts on society” [EC, 2011].

### → **DELPHI STUDY**

is a method of structuring a group communication process so that allows a group of individuals, as a whole, to deal

with a complex problem. The goal (and the result) of a Delphi study is to organize a debate, to collect and synthesize opinions and to achieve a degree of convergence on selected themes of exploratory, predictive and even normative nature [Adler & Ziglio, 1996; Dalkey, Brown, & Cochran, 1969; Linstone, Turoff, & Helmer, 1975].

### → **ETHICS**

is the systematic reflection on right and wrong conduct according to norms and values that we believe should be followed. Ethics refers to duties, responsibilities, rights, welfare, justice and the avoidance of harms. Typical moral values include autonomy, freedom, dignity, privacy, justice, well-being and responsibility [Satori project, 2015].

### → **ETHICAL ASPECT**

of some phenomenon is an aspect that raises ethical questions: whether its implications are sufficiently in line with our considered moral values, and whether or not it raises an ethical or moral dilemma: an apparent conflict between two moral principles or norms that somehow should be resolved [Satori project, 2015].

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<sup>16</sup> Wikipedia

→ **ETHICS ASSESSMENT**

is the identification and evaluation of ethical issues relating to specific research undertakings, initiatives or actions

→ **ETHICAL ISSUE**

is an issue that raises questions in terms of moral principles and the different choices that these entail. Moral principles and actions are fluid and influenced by specific regional historical, cultural and legal contexts

→ **FOCUS GROUP**

is a planned discussion among a small group (4-12 persons) of stakeholders facilitated by a skilled moderator. It is designed to obtain information about (various) people's preferences and values pertaining to a defined topic in a permissive, non-threatening environment [Steyaert, 2005].

Focus groups bring together a cross-section of interested parties in an informal discussion group format. The group should include users or their representatives. A facilitator elicits views on relevant topics. Meetings can be recorded for later analysis. Focus groups are useful early in the user requirements specification. They help to identify issues which may need to be tackled, and provide a multi-faceted perspective on them.

→ **HUMAN-CENTERED DESIGN (HCD)**

is characterised by:

- The design is based upon an explicit understanding of users, tasks and environment;
- Users are involved throughout design and development;
- The design is driven and refined by user-centred evaluation;
- The process is iterative;
- The design addresses the whole user experience;
- The design team includes multidisciplinary skills and perspectives. [ISO 9241-210:2010]

→ **HUMAN-DRIVEN DESIGN (HDD)**

is an approach to technology design characterized as follows [Niemelä M., et al. 2014]:

- is collaborative in terms of promoting participatory and co-design methods to empower users and other stakeholders in design and to ensure successful design outcomes by means of deep understanding of the user's needs, values and circumstances.
- is responsible in terms of being aware of human, societal and ethical values related to a particular design and reflecting them in the design in order to make the technology support well-being and activities of people as well as sustainability (social, environmental and economic).

- takes a human and social view to users of technology as individuals and members of human social groups, such as family, organization or community, and as consumers. The starting point in the design is the human being and her or his needs, goals and desires.

#### → **ICT FOR AN AGEING SOCIETY**

Information and Communication Technologies dedicated to services to persons, aimed at making these services more accessible and effective for an ageing population, particularly in terms of health.

#### → **IMPACT ASSESSMENT**

is the assessment of research and innovation for its projected or actual societal impacts [Satori project, 2015]

#### → **PARTICIPATORY DESIGN**

is a “practice of collective creativity” that emphasizes active involvement by the users and all the stakeholders in design and development of new systems [Niemelä M., et al. 2014]

#### → **RISK ASSESSMENT**

A process of evaluation including the identification of the attendant uncertainties, of the likelihood and severity of possible adverse effect (s) /event(s) occurring to man or the environment following exposure

under defined conditions to potential risk source(s). A risk assessment comprises hazard identification, hazard characterization, and exposure assessment and risk characterization<sup>17</sup>.

#### → **SCENARIO WORKSHOP**

is an instrument for participatory planning, based on dialogue and collaboration between a group of citizens, stakeholders, experts and policy makers. The purpose of the scenario workshop is to assess different solutions to a specific problem. The solution can be technical, regulatory or an alternative method to manage a problem. Before the workshop, a set of scenarios is developed and used as visions and inspiration at the scenario workshop. From these the participants develop visions in groups through discussion such as plans of action to solve the problem. It is well suited to the design of new product concepts.

#### → **SCENARIO BUILDING WORKSHOP**

Scenarios consist of visions of future states and paths of development, organised in a systematic way. They can be either extrapolative or normative but should enable participants to build internally consistent pictures of

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<sup>17</sup> definition originally drafted in: Communication on Consumer health and Food Safety, European Commission, 1997

future possibilities and are useful for envisaging the implications of uncertain developments and examining the scope for action. Scenario building engages a group in a process of identifying key issues and then creating and exploring scenarios in order to explore the range of available choices involved in preparing for the future, test how well such choices would succeed in various possible futures and prepare a rough timetable for future events. The method was designed to challenge the mind-set of participants by developing scenarios of alternative futures in order to understand how the world might unfold and how that understanding can be used in strategic planning [Steyaert, 2005].

#### → **SOCIETAL IMPACT**

is divided in several categories, including:

- **Technological impact:** contribution to the creation of product, process and service innovations.
- **Scientific impact:** contribution to the subsequent progress of knowledge, the formation of disciplines, training and capacity building.
- **Economic impact:** contribution to the sale price of products, a firm's costs and revenues (micro level), and economic returns either through economic growth or productivity growth (macro level).
- **Social impact:** contribution to

community welfare, quality of life, behaviour, practices and activities of people and groups.

- **Health impact:** contribution to public health, life expectancy, prevention of illnesses and quality of life.
- **Environmental impact:** contribution to the management of the environment, for example, natural resources, environmental pollution, climate and meteorology.

#### → **SOCIAL IMPACT ASSESSMENT**

is a methodology to review the social effects of infrastructure projects and other development interventions.

#### → **STAKEHOLDERS**

are those entities (groups, organizations, individuals) that may be affected by research and innovation and therefore have an interest in it<sup>18</sup>.

#### → **TECHNOLOGY ASSESSMENT (TA)**

is a scientific, interactive and communicative process which aims to contribute to the formation of public and political opinion on societal aspects of science and technology [TAMI, 2005]

<sup>18</sup> Stakeholders of ICT for an ageing society are identified by the BRAID Project [www.braidproject.eu](http://www.braidproject.eu)



→ **USABILITY**

is the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use [International Standard ISO/IEC 9241-11, 1998]

→ **USER-CENTERED DESIGN (UCD)**

is an approach to interactive system development that focuses specifically on making systems or applications easy to use [International Standard ISO/IEC 13407, 1999]

→ **USER COMMITTEES**

This method involves users and other stakeholders in the formal monitoring and steering of the research and innovation process. Typically, there is a kick-off, a mid-term, and a final workshop [Engage2020 Project, 2014]

EDITING

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