RRI Tools: Project Briefing Sheet

www.rri-tools.eu

Bringing Responsible Research and Innovation to life

The Responsible Research and Innovation Tools project (RRI Tools) is funded by the European Commission's Framework 7 programme. It has developed a working definition of 'responsible research and innovation' and generated a catalogue of practices that illustrate what RRI should look like in everyday life. It has explored the opportunities offered by RRI for a variety of stakeholders, as well as looking at the obstacles that may stand in the way of carrying it out. As a result, the project has identified actions and support needed, and produced a Toolkit that will assist anyone looking to bring responsibility into their research and innovation processes. RRI Tools is providing training and educational resources for others to develop their own training programmes. RRI Tools - its partners and its 'community of practice' – acts as an advocate for responsibility and a source of information about what is happening in the field.

Why is RRI so important?

Not a day goes past without us being affected by science and technology. From our hospitals to our shops, from our towns to our countryside, from our homes to our workplaces, research and innovation have changed our world and our lives, and will continue to do so. Many of these changes have positive impact on human welfare and wellbeing.

But science and technology, and the way that new products and practices are envisaged and generated, also create new risks and ethical dilemmas we have not faced before. Researchers and innovators do not always succeed in solving the problems they are meant to, and sometimes projects lead to unexpected results, create controversy, and reinforce inequality.

Over the past few decades, various public engagement exercises have involved European citizens in discussions and policy decisions regarding science. Collaborations between scientists, ethicists, and social scientists have been set up. Experiments have been carried out with open source research data, user-driven innovation, citizen science, and much more besides.

These efforts have led to a European-wide approach in Horizon 2020 called *Responsible Research and Innovation (RRI)*. RRI seeks to bring issues related to research and innovation into the open, to anticipate the consequences of research and innovation, and to involve society in discussing how science and technology can help create the kind of world and the kind of society we want for generations to come.

RRI Tools has developed an RRI Training and Dissemination Toolkit and is putting it to use through a Community of Practice. The Toolkit contains a set of tools intended for a variety of uses: raising awareness about RRI and training; implementing and disseminating; and advocating RRI in Europe.

RRI Tools started as a multidisciplinary consortium with 26 partners and 19 Hubs operating in 30 European countries. Its Community of Practice now has well over 1,000 followers.

The word is most definitely spreading.

FACTS ON RRI TOOLS - Fostering Responsible Research and Innovation

GOAL
Creating 'responsibility' in the governance of science and technology, public and private, by making and disseminating a RRI Toolkit for policymakers, researchers, innovative industries, CSOs and educators.

COORDINATOR
'la Caixa' Foundation

PARTNERS
26 institutions, active in 30 European countries

DURATION
3 years (01/2014-12/2016)

BUDGET
€ 6.9 million

What is RRI?

RRI's aim is to create a society in which research and innovation practices work towards sustainable, ethically acceptable, and socially desirable outcomes. The responsibility for our future should be shared by all of the people and institutions affected by, and involved in, research and innovation practices. RRI addresses a number of agendas needed for a fair and just society. And it involves all the key stakeholders: policy-makers; researchers; industry and commerce; science educators; and civil society organisations; as well as the public at large. The RRI Tools project has come up with a working definition:

Responsible Research and Innovation is a dynamic, iterative process by which all stakeholders involved in the R&I practice become mutually responsive and share responsibility for both the outcomes and processes involved.

RRI Tools has broken down Responsible Research and Innovation into four component parts: outcomes; process dimensions; policy agendas; and stakeholders.

Outcomes

RRI is driven by a focus on the right outcomes. We have developed a simple breakdown of RRI outcomes into three categories:

1. Learning Outcomes	2. R&I Outcomes	3. Solutions to Societal Challenges
Engaged publics Responsible actors Responsible institutions	Ethically acceptable Sustainable Socially desirable	Seven 'Grand Challenges' (EU)

1. Learning Outcomes

RRI should lead to empowered, responsible actors across the whole range of our socio-technical systems (scientists, policy-makers, CSOs, businesses and innovators, educators). Structures and organisations involved should provide opportunities and support for actors to be responsible, ensuring that RRI becomes - and remains - a solid and continuous reality.

2. R&I Outcomes

RRI practices should strive for ethically acceptable, sustainable, and socially desirable outcomes. Solutions can be found by opening up science through continuous, meaningful deliberation with societal actors. In the end, incorporating societal voices in R&I will lead to more relevant applications of science.

3. Solutions to Societal Challenges

Today's societies face several challenges. The European Commission has formulated seven 'Grand Challenges' as one of the three main pillars of the Horizon 2020 programme:

Grand Challenges

- Health, demographic change, and wellbeing.

- Food security, sustainable agriculture and forestry, marine, maritime and inland water research, and the bio-economy.

- Secure, clean, and efficient energy.

- Smart, green, and integrated transport.

- Climate action, environment, resource efficiency, and raw materials.

- Europe in a changing world - inclusive, innovative, and reflective societies.

- Secure societies - protecting freedom and security of Europe and its citizens.

Process Dimensions

A number of processes are important if RRI outcomes are to be achieved. We have identified eight dimensions and divided them into four clusters.
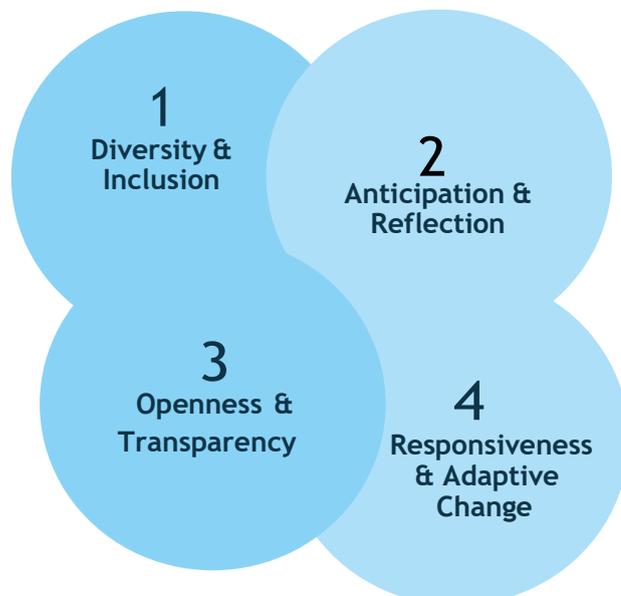
1. Diversity & Inclusion

Diverse and inclusive RRI processes should involve a wide range of stakeholders in the early development of science and technology, both for democratic reasons, and to broaden and diversify the sources of expertise and perspectives involved in science. In this respect, inclusive practices should lead to diverse practices. In reverse, diverse practices are more likely to be inclusive.

2. Anticipation & Reflection

Anticipation means understanding that there will be impacts of research and innovation – intended or otherwise – and making it possible to explore how will they affect different groups and individuals in society. Reflection means thinking about the motivation, purposes, and potential implications of R&I, including the uncertainties that are involved with it, and how they are shaping what is being proposed and what is being done.

3. Openness & Transparency

Openness and transparency are conditions for accountability, liability, and thus responsibility. This is an important factor in establishing public trust in R&I. More openness does not automatically lead to more trust. But it allows groups and individuals not normally involved in R&I to make their opinions known, even if they disagree with the researchers and innovators concerned.

4. Responsiveness & Adaptive Change

Responsiveness means being able to take account of what society needs and wants. RRI involves a capacity to change or shape existing routines of thought and behaviour, as well as the overlying organisational structures and systems, in response to changing circumstances, new insights, and stakeholder and public values.

RRI is about anticipating how decisions about research and innovation might shape our future (i.e., how they impact on both the environment and the society we live in). RRI requires us to reflect on our actions, and be open and transparent about the decisions we make, the actions we take, and the impacts these might have. It builds on the belief that science and innovation don't just take place in society, but that they take place for, and with, society.

Policy agendas

The European Commission has identified six powerful policy agendas that each have their own potential to realise responsibility in research and innovation. Taken together they will help to make RRI greater than the sum of its parts, and to ensure that we work together to achieve this.

GOVERNANCE

PUBLIC ENGAGEMENT

SCIENCE EDUCATION

RRI

GENDER

ETHICS

OPEN ACCESS
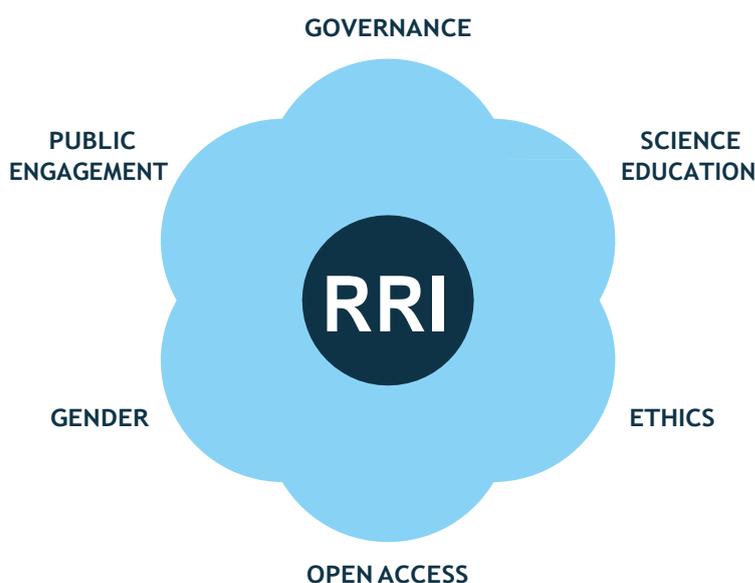
ETHICS: Focuses on (1) research integrity: the prevention of unacceptable research and research practices; and (2) science and society: the ethical acceptability of scientific and technological developments.

GENDER: Gender equality in RRI is about promoting gender-balanced teams, ensuring gender balance in decision-making bodies, and always considering the gender dimension in research and innovation to improve the quality and social relevance of the results.

GOVERNANCE: To reach futures that are both acceptable and desirable, governance arrangements have to be (1) robust and sufficiently adaptable to the unpredictable development of research and innovation (de facto governance); (2) be familiar enough to align with existing practices in research and innovation; and (3) share responsibility and accountability among a large variety of actors, and provide instruments to foster this shared responsibility.

OPEN ACCESS: Addresses issues of accessibility ownership of scientific information. Free and earlier access to scientific work might improve the quality of scientific research and facilitate fast innovation, constructive collaborations among peers, and productive dialogue with civil society.

PUBLIC ENGAGEMENT: The process of R&I is collaborative and multi actor. All societal actors (researchers, citizens, policymakers, industry, educators, etc.) should work together during the whole research and innovation process in order to align its outcomes to the values, needs, and expectations of European society.

SCIENCE EDUCATION: Focuses on (1) enhancing the current education process to better equip citizens with the necessary knowledge and skills so they can participate in research and innovation debates; and (2) increasing the number of researchers (promote scientific vocations).

Stakeholders: the key players in RRI

The challenging outcomes and multiple agendas that RRI addresses cannot be tackled without the involvement of key groups of people, in addition to European citizens as a whole. RRI Tools sets out to bring Responsible Research and Innovation to life for five main sets of stakeholders:

1.Policy-Makers

From funders to policy officers, research centre directors, and representatives of learned societies; whether at a European, national, or local scale, all those making decisions about the shape of research and innovation belong to this group.

2. Research Community

Researchers, innovators, research managers, public affairs and communication officers, and all those people involved in the diverse aspects of the Research and Innovation system belong to this group.

3.Education Community

Teachers, students, science museums staff, families, and all those concerned with education at all levels, from elementary schools to postgraduate studies, belong to this group.

4.Business and Industry

From contractors and Small and Medium Enterprises (SMEs) to big transnational companies, if research and innovation are the basis of the business those involved in R&I belong to this group.

5.Civil Society Organisations

From individuals to organisations - trades unions, NGOs, or the media - civil society wears many hats, all of them crucial to shape the research and innovation our society needs. They make up RRI Tools' final stakeholder group.

What about 'fundamental' research?

Fundamental research is not aimed exclusively at meeting the immediate, material needs of society. The deep insights into the world where we live – from sub-atomic to universal scales, from the micro-biotic to the global environment – are a vital part of human culture. RRI applies to all stages and aspects of research, including fundamental research.

RRI Tools: our resources

Catalogue of Promising Practices

Based on suggestions from our Hubs, RRI Tools has created a *Catalogue of Promising Practices*, with 31 examples that show how the processes of RRI work in practice and lead to societally important outcomes. Some of these have been developed further into 'RRI Showcases' that can be used for training purposes.

Opportunities, Obstacles, and Needs

The RRI Tools' *Report on the Opportunities, Obstacles and needs of the Stakeholder Groups in RRI practices in Europe* is now a must-read document throughout Europe. This report has been constructed as a result of over 400 RRI stakeholders meeting across 30 countries. As one of its key highlights, the chance to work with representatives from other walks of life, is seen as a source of great new opportunities for research programmes and developing new products.

The RRI Toolkit

With some 300 entries – tools, inspiring practices, RRI projects, and library entries – the RRI Tools Toolkit provides a one-stop shop for all those who need to understand and work with research and innovation activities. The Toolkit can be expanded by members of the RRI Tools Community of Practice adding their own entries.

Training Modules

In order to help advocate and build a Community of Practice confident in explaining what we mean by responsibility in research and innovation, RRI Tools is constructing a series of training modules that can be used and adapted according to local conditions and the nature of the group who are looking for training in RRI. As well as modules introducing RRI, and providing exercises to make use of the Toolkit, there are scenario workshops that make use of the RRI Showcases to bring RRI to life for all stakeholders. To strengthen RRI in Europe, the project is offering training courses through its various Hubs.

Materials for Dissemination and Advocacy

RRI Tools also provides a one-stop shop for those wanting to find out what is happening with RRI. Our dissemination activities make use of both 'traditional' and social media to keep the community up-to-date with what is happening within the project and others both in Europe and across the world. In order to build the community further, RRI Tools has produced advocacy briefing sheets to target key policy-makers, research communities, and innovation enterprises, making them aware of 'what's in it' for them, as well as what might happen if they do not take heed.

For all this and more go to our website: www.rri-tools.eu.

Examples from the RRI Toolkit

Tool: Action Catalogue

The Action Catalogue, developed by the Engage2020 project, is a catalogue of tools to support researchers, policy makers and others in finding the best methods for conducting inclusive research. Searching a database of 57 different methods, this tool provides a clear overview of the methods relevant for your project's needs.

Inspiring: EPSRC AREA framework

The Engineering and Physical Sciences Research Council (EPSRC), one of the largest research funders in the UK, has adopted a Framework for Responsible Innovation that involves the 'AREA process' – Anticipate, Reflect, Engage and Act – to help researchers consider societal issues that may be involved with, or flow from, their work. As a result, researchers funded by the EPSRC are expected to ensure that the work they carry out is socially responsive and responsible.

Project: Res-AGorA

The Res-Agora project has produced a normative and comprehensive governance framework for RRI. Among other things, this is done by examining RRI in a series of case studies across technological domains, and a number of co-constructive workshops bringing together key stakeholders.

Library element: Winning Horizon 2020 with Open Science?

Open science offers researchers tools and workflows for transparency, reproducibility, dissemination and transfer of knowledge. This brief shows why and how Open Science can optimize a Horizon 2020 proposal evaluation. It can help in formulating the societal impact section that answers the overarching political agendas and initiatives, and it provides tips for effectively communicating research results to both users and the market.

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