



Responsible Research and Innovation 15.12.2021

1. Defining RRI

"A collective commitment of care for the future through responsive stewardship of science and innovation in the present"

Richard Owen et al. A Framework for Responsible Innovation, 2013



RRI pillars

Public engagement → to engage
society in R&I issues

Gender equality → to ensure gender equality both in careers' development and research matters

Science education → to enrich formal and informal activities for scientific education

Open access → to spread access
to knowledge and research outputs
Ethics → to include ethical
issues in R&I processes



Governance → as a transversal pillar to integrate the other 5 in a science governance model

Sustainabi

Inclusion

Justice







RRI dimensions

Anticipation → to foresee R&I impacts

Reflexivity → to question about our own views, perspective, practices and limits about R&I

Deliberation → to include social actors in deliberative processes

Responsivity \rightarrow to integrate and to institutionalise processes to support innovation policies

Trasparency → to foster data access, preferebly in open formats, to enable the collaboration among stakeholders



The continued relevance of RRI



























http://pathways2019.eu/declaration/

2. From H2020 to Horizon Europe

Horizon Europe scheme

Pillar 1 **Excellent Science**

European Research Council

Marie Skłodowska-Curie **Actions**

Research Infrastructures

Pillar 2

Global Challenges and European Industrial Competitiveness

- Health
- · Culture, Creativity and **Inclusive Society**

- Inclusive Society
 Civil Security for Society
 Digital, Industry and Space
 Climate, Energy and Mobility
 - · Food, Bioeconomy, Natural Resources, Agriculture and Environment

Joint Research Centre

Pillar 3

Innovative Europe

European Innovation Council

European innovation ecosystems

European Institute of Innovation and Technology

Widening Participation and Strengthening the European Research Area

Widening participation and spreading excellence

Reforming and Enhancing the European R&I system

A new set of keywords

Lessons Learnedfrom Horizon 2020 Interim Evaluation

Key Novelties in Horizon Europe



Support breakthrough innovation



European Innovation Council



Create more impact through mission-orientation and citizens' involvement



R&I Missions



Strengthen international cooperation



Extended association possibilities



Reinforce openness



Open science policy



Rationalise the funding landscape



New approach to Partnerships



Encourage participation



Spreading Excellence

Source: European Commission

Mission-oriented approach



«To find a way to bring together the triple objectives of smart innovation-led growth, inclusion and sustainability, we must first answer the critical question of how to direct innovation to solve the pressing global challenges of our time»

Mission-oriented approach

Bold, inspirational with wide societal relevance \rightarrow engage the public

A clear direction: targeted, measurable and time-bound → well framed

Ambitious but realistic research & innovation actions → work on research «additionality»

Cross-disciplinary, cross-sectoral and cross-actor innovation \rightarrow new forms of partnerships for co-design and co-creation

Multiple, bottom-up solutions \rightarrow more than a single development path

Openness

Open Science

Open Innovation

Open to the world

Open Science: an umbrella concept



Is openness (another) key?



Increased openness, quality and performance of the EU R&I system

Consolidation of the Open Research Europe (ORE) publishing platform

> Better and more societal engagement in R&I

Improved overall capacities within the European Research Area to conduct open science and implement it as a modus operandi of modern science



Increased trust of society in science

Development and consolidation of the European Open Science Cloud (EOSC)

Establishment of an open repository for research objects from Horizon Europe projects

Improved reproducibility of research results and minimized duplication of effort



Source: European Commission



3. Some concrete examples





Change









FIT4RRI in a nutshell

Activation of **institutional change** processes to permanently embed RRI and OS in RFPOs thanks to:

- Co-creation experiments comparative report https://doi.org/10.5281/zenodo.4182183
- Training and content mapping
 RRI taxonomy https://doi.org/10.5281/zenodo.1252296
- Guidelines on governance settings for RRI&OS executive summary https://doi.org/10.5281/zenodo.3768457
 https://doi.org/10.5281/zenodo.3768457



FIT4RRI co-creation experiment

Sapienza co-creation experiment aimed at implementing, within an ongoing Sapienza project named Saperi&Co., a responsible governance capable of strengthening the university's capacity of generating social impact and value. Among the envisaged values to be conveyed by the experiment there was also sustainability.

Responsibility should be seen as a governance dimension, to be considered in organisations' management together with the most traditional one such as efficiency, efficacy and costeffectiveness.



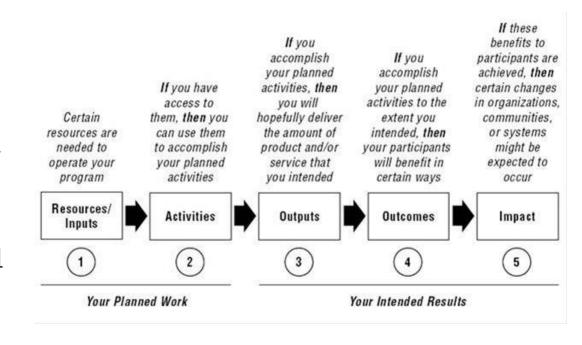
The experiment objectives

- to test in a pilot scale the setting up of a multi-actor, co-created responsible governance in a complex environment, trying to understand its limits and opportunities for a big organization such as Sapienza
- to involve different stakeholders (e.g. scientists, companies, civil society, policy makers) in an open debate about RRI and OS, with a focus on sustainability, circular economy and bio-materials with the attempt of shaping a common agenda
- to engage families and especially school children, letting them experiencing, through hands on experiment, the role of sustainability in their daily life



The governance perspective - phase1

- Internal and external stakeholders
- to
 collaborativel
 y design the
 core elements
 of a RRI-based
 research
 centre
- through TOC





First outcomes

- the set up of responsible governance in RFPOs needs that scientific matters are informed by RRI
- responsible governance in RFPOs is by definition open to society and to external stakeholders to receive their feedbacks and contributions
- -responsible governance in RFPOs needs the establishment of common language, platforms and procedures to link the internal community, and to develop fruitful science&society relations
- among the main results of responsible governance in RFPOs should be included: real institutional change and the bridging of profit and no-profit R&I actions
- responsible governance should be based on a **shared set of values**, reflected in simple but effective guidelines with proper indicators aimed at stressing the social value of R&I



The governance perspective - phase 2

Objective: To "formalise"

the concrete

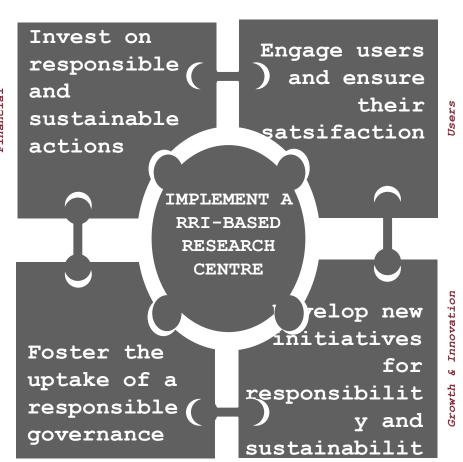
implementation of a
responsible governance

Tool: a Balanced

Scorecard (BSC) Framework to define and measure the strategy to be implemented

Four dimensions (each of them guided by a specific objective):

- financial
- users perspective
- internal processes
- growth and innovation





A matter of sustainability





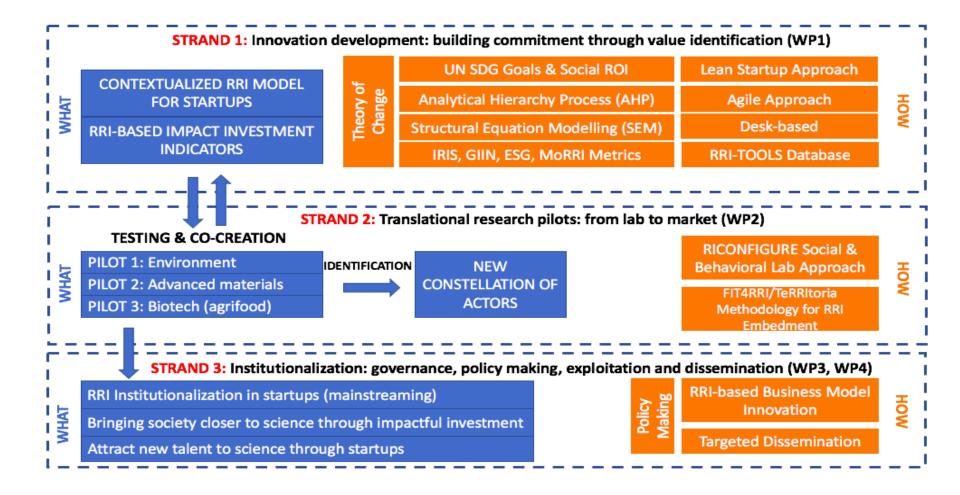
RRIStart in a nutshell

The project relies on 4 specific objectives:

- Contextualize and test an RRI model tailored for STEM start-ups
- Research & adapt an **RRI-based** indicators set for impact investment
- Research & design a novel constellation of actors to enable RRI-based start-ups and impact investment
- Pilot this **novel ecosystem** in real settings



The project strands





Our (desired) recipe RRIstart

- To engage and put into relation all the actors involved in science and innovation (quadruple helix)
- To address relevant scientific issues through real use cases based on **co-creation**
- To foster **transdisciplinarity** by spreading the word of responsibility also in the so-called hard science
- To promote **transparency and openness**, also by producing open tools and resources
- To focus on **governance dimension** of organisations to pave the way for **institutional change** supported by RRI and OS

Yuval Noah Harari 21 Lessons

for the

21st Century

"So what should we be teaching? Many pedagogical experts argue that schools should switch to teaching 'the four Cs' - critical thinking, communication, collaboration and creativity. More broadly, schools should downplay technical skills and emphasise general purpose lifeskills. Most important of all will be the ability do deal with change, to learn new things, and to preserve your mental balance in unfamiliar situations. In order to keep up with the world of 2050, you will not merely need to invent new ideas and products - you will above all need to reinvent yourself again and again"

Thank You!

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