

# Responsible research and innovation: just a new fashion keyword?

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## Abstract

**Responsible Research & Innovation (RRI)** is a concept developed by the European Commission for the **governance of research and innovation** processes with a view on the **(ethical) acceptability, sustainability and societal desirability** of the innovation process and its marketable products. This work presents the main objectives and intended outcomes of the **Erasmus+ project** (key action 2: strategic associations in the field of higher education) **Responsible Research and Innovation Learning (RRIL)**. The project, including partners from Spain, Finland and Poland, aims to promote RRI aspects in the policy of higher education institutions. The project outcome will be the **development of training materials** in RRI

## Introduction

Key remark regarding educational needs regarding to RRI are:

- aspects of RRI are addressed in HE programs but not linked to RRI
- there is a potential for **co-creating** based on learning communities
- the relevance to **link RRI learning activities to real world problems**

The objective is to develop learning material to introduce RRI, mainly involving actors from outside the academia. We advocate for a combination on transnational and local co-creation of training and learning modules on RRI, taken into account the regional and local idiosyncrasy of the innovation systems

## What is responsible research and innovation?

The **EU developed the definition of Responsible Research and Innovation:**

- **Involving society** in science and innovation upstream to align its outcomes with the values of society
- A wide umbrella connecting different aspects of the relationship between R&I and society: public engagement, open access, gender equality, science education, ethics, and governance (Table 1)
- A paradigmatic change of the governance of the public R&I system: from outcome control to input and structural regulation



Figure 1. Word cloud representing the main concepts of RRI.

## RRIL objectives

Framework for the development of the learning tools for **successful implementation of RRI training for researchers and stakeholders**. The teaching and learning concept of RRIL is based on a **module design**, which permits an individual learning to adapt the RRI principles in accordance to the need of the individual learner and of the respect of organizations RRIL has selected three topics:

- **Public engagement**
- **Gender equality**
- **Ethics**

Table 1. Core elements in RRI.

<b>Public engagement</b>	Foster collaborative and multi actor R&I processes: all societal actors work together to align its outcomes to the values, needs and expectations of society
<b>Gender equality</b>	Promote gender balanced teams, ensuring gender balance in decision-making bodies, and considering always the gender dimension in R&I to improve the quality and social relevance of the results
<b>Ethics</b>	Focus on <b>(1)</b> research integrity: the prevention of unacceptable research and research practices; and <b>(2)</b> science and society: the ethical acceptability of scientific and technological developments
<b>Science education</b>	Focus on <b>(1)</b> enhancing the current education process to better equip citizens with the necessary knowledge and skills so they can participate in R&I debates; and <b>(2)</b> increasing the number of researchers (promote scientific vocations)
<b>Open access</b>	Address accessibility to and ownership of scientific information. Free and earlier access to scientific work improves the quality of scientific research and facilitates fast innovation, constructive collaborations among peers, and productive dialogue with civil society
<b>Governance</b>	Arrangements that lead to acceptable and desirable futures have to <b>(1)</b> be robust and adaptable to the unpredictable development of R&I; <b>(2)</b> be familiar enough to align with existing practices in R&I; <b>(3)</b> share responsibility and accountability among all actors; and <b>(4)</b> provide governance instruments to actually foster this shared responsibility

## RRIL project

The materials will be developed in the following domains, co-creating learning modules and testing them in innovative environments:

- Energy**
- Economy**
- Big data**

The co-creation process consist in informed learning among practitioners considering learners as a knowledgeable and critical partner in designing and implementation of the learning. Under this perspective **the potential learners are considered peers working collaboratively**.

Taking up the RRI-principles, the **training is conceived as multidisciplinary and transversal among different kinds of actors as HEI, research centers, NGO's and cities** pathing the way for knowledge exchange between them

## RRIL outputs

We advocate for a combination on **transnational and local co-creation of training and learning modules** on RRI. The training includes the possibility to combine F2F learning (blended learning):

- **xMOOCs**: focus on the content and lecturer-centered. Modulised units in form of videos, which are accompanied by multiple-choice tests as feedback. Typically they do not include social learning experience
- **cMOOCs**: learner-centered approaches. Social learning experiences and networking among tutors, teachers and peers are highly relevant

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