



Establishment of a FramewORk for Transforming current EPES into a more resilient, reliable and secure system all over its value chain

RRI First report

Document details

Deliverable no	D1.4
Deliverable name	RRI First report
Version	1.0
Release date	21/07/2023
Type	R (DATA / DEC / DEM / R / OTHER)
Dissemination level	PU (EUC / PU / SEN)
Status	Final version (Draft / Final version)
Author	CIRCE- Alfonso Bernad

DISCLAIMER OF WARRANTIES

This document has been prepared by eFORT project partners as an account of work carried out within the framework of the EC-GA contract no. 101075665.

Neither Project Coordinator, nor any signatory party of eFORT Project Consortium Agreement, nor any person acting on behalf of any of them:

- a) makes any warranty or representation whatsoever, expressed or implied,
 - I. with respect to the use of any information, apparatus, method, process, or similar item disclosed in this document, including merchantability and fitness for a particular purpose, or
 - II. that such use does not infringe on or interfere with privately owned rights, including any party's intellectual property, or
 - III. that this document is suitable to any particular user's circumstance;
or
- b) assumes responsibility for any damages or other liability whatsoever (including any consequential damages, even if the Project Coordinator or any representative of a signatory party of the eFORT Project Consortium Agreement has been informed of the possibility of such damages) resulting from your selection or use of this document or any information, apparatus, method, process, or similar item disclosed in this document.

This work has been Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Document history

Version	Date of issue	Content and changes	Edited by
0.1	17/05/2023	ToC	CIRCE
0.2	13/06/2023	Content writing	CIRCE
0.3	21/07/2023	Final version with inputs from partners to be reviewed	CIRCE
1.0	21/07/2023	Final version	CIRCE

Table of contents

Executive summary	8
1 Introduction and objectives	9
1.1 eFORT project	9
1.2 Objective and scope	9
2 Basics of RRI	9
2.1 Themes of RRI	10
2.1.1 Ethics	10
2.1.2 Open access	11
2.1.3 Public engagement	12
2.1.4 Governance	12
2.1.5 Science education	12
2.1.6 Gender	12
2.2 Golden rules for achieving RRI	15
2.3 Some sources of information	15
3 Conclusions.....	15
References	16

List of figures

Figure 1 RRI axis. Reproduced from:..... 10

List of tables

Table 1 Gender distribution table 14

Abbreviations and Acronyms

Acronym	Description
EPES	Electrical Power and Energy Systems
RRI	Responsible Research and Innovation

Executive summary

D1.4 RRI First Report aims to present the first approach towards Responsible Research and Innovation (RRI) within the eFORT project.

The document briefly presents the project, with its objectives. After that, the report provides a small overview of what is RRI, which are the different axes and which of them are currently applicable in this first approach.

RRI will be evaluated at different stages of the project. D1.4 presents the first review, which will be reviewed in M24 and in M36.

1 Introduction and objectives

1.1 eFORT project

Moved by the need to comply with environmental and societal concerns, Electrical Power and Energy Systems (EPES) are undergoing an unprecedented transformation. This transformation is born from two main situations, (i) the systems are becoming more complex due to the increase of the digitalization and cybersecurity threats and (ii) the change from the centralised production paradigm towards a distributed one.

From a network of electromechanical systems with negligible responses and passive loads the system is continuously evolving towards a highly automated grid driven by intelligent devices and technologies, making them more complex and dynamic. The result is a vastly interconnected power grid facing a broad variety of threats (extreme weather events, man-made hazards, equipment failures, etc.) jeopardizing energy supply security.

eFORT is an EU-funded project that will make European power grids more resilient and reliable against failures, cyberattacks, physical disturbances and data privacy issues. eFORT will increase power system stability by developing technologies for identifying, preventing, and mitigating risks and vulnerabilities.

1.2 Objective and scope

The main objective of eFORT is to make European power grids more resilient and reliable. To this end, a set of technological innovations will be developed for the detection, prevention and mitigation of risks and vulnerabilities with positive impacts on power system operation and stability.

The eFORT solutions will be demonstrated at different levels, considering grid operators from different levels. The demonstration will take place at the end of the project in 4 real demonstration grids that are complementarities to tackle the main threats of current European power systems. These demonstrators are distributed also geographically, being Spain, the Netherlands, Italy, and Ukraine the countries where the demos are located.

2 Basics of RRI

Responsible Research and Innovation (RRI) is an approach that considers the societal expectations and the implications that the Research and Innovation may have. The objective is to balance the commercial goals of the research with a wider wellbeing considering all the stakeholders. This approach has been recently promoted by the European Union's Framework Programmes towards scientific research and technological development processes. (ORION project (GA 741527), 2023) (RRI toolkit, 2023) (Wilford S, 2016)

Following what the GREAT project (Governance of Responsible Innovation GA 321480) stated: “*Responsible research and innovation (RRI) is a way of thinking and doing that guides research and development in ethically appropriate ways. It ensures that social as well as commercial benefits are harnessed; and that any harm to the social and physical environment is obviated or minimised*”.

Different institutions are related with RRI. As function of the profile, from policy makers to business or civil society organisations are affected by research and should be considered under the umbrella of RRI. eFORT outcomes should (i) be interoperable, (ii) have an international approach and (iii) ensure the interdisciplinary.

Thus, eFORT will consider RRI to involve society in innovation and to align the outcomes of the project with the expected values. This document presents the different axis from RRI which are considered within the eFORT framework. The eFORT consortium by itself is based on several different institutions, as research centres or large companies, aiming to collect the different sensitivities.

2.1 Themes of RRI

Based on the European Commission orientations, the six policy agendas or axis that should be considered under the application of RRI are presented in the Figure 1. Only some of them are studied deeply in this deliverable. Future versions may consider adding information and measures to the other policies. It is important to state that at the current stage of the project, only some of them will be explored. This living approach will be continued within the project.



Figure 1 RRI axis. Reproduced from: (RRI toolkit, 2023)

2.1.1 Ethics

Ethics is an integral part of research from beginning to end, and ethical compliance is seen as pivotal to achieve research excellence. In this section, issues regarding security of data will be explored.

At the current stage, eFORT focusses on the avoidance of unacceptable research. eFORT does not deal with work in ethical-compromised areas as the investigation of human embryos, humans, or animals. All the personal data used within the frame of the project will follow the EU regulations regarding General Data Protection Regulation, to ensure that the data is protected accordingly.

Nevertheless, eFORT will make use of AI and advanced data to study the grid operation. The impact of AI-based systems developed in eFORT will be minimised because the involved partners will ensure that the different ethical aspects (human autonomy, privacy, data protection, cybersecurity, transparency, accountability, and lack of data bias) are considered and ensured in advance. To do so, workshops or specific meetings are encouraged to take place within the involved partners and experts' stakeholders.

Regarding cybersecurity, one of the main project developments, the Intelligent Platform, will include measures since its definition till its creation, to ensure that no data is compromised.

2.1.2 Open access

eFORT's investigation will follow the "*as open as possible, as closed as necessary*" principle. A lot of information will not be disclosed outside of the consortium to protect the developments while the exploitation and dissemination needs are considered. However, the consortium agreed during its first year to follow the FAIR principles to ensure that the data can be reproduced, share, and be used by external entities when the confidentiality needs potentially disappears.

Public reports, and public information will be presented in the project webpage ([eFORT. Making European power grids more resilient and secure \(efort-project.eu\)](https://efort-project.eu)) and also in the project ZENODO's community ([eFORT: Establishment of a FramewORk for Transforming current EPES into a more resilient, reliable and secure system all over its value chain | Zenodo](https://zenodo.org/record/10000000)). Moreover, information from the project will be shared with newsletters, videos, leaflets, and by means of partners participation at events.

Moreover, eFORT aims to exchange information with several stakeholders. The project already participates in the BRIDGE initiative (<https://bridge-smart-grid-storage-systems-digital-projects.ec.europa.eu/>) and is a member of the European Cluster of Cybersecurity on Critical Infrastructures (<https://www.finsec-project.eu/ecsci> <https://www.finsec-project.eu/ecsci>). Both forums are expected to be information exchange points with different actors from different project and policy actors.

Additionally, the outcomes of the project will come to the technicians that will be employed by the grids thanks to the use of the Control Room of the Future and its training by TUD.

Finally, eFORT will promote the participation of the partners on different events with general stakeholders. From open visits to demo, to participation in specific forums, these actions should be ensured to provide to the society public information from the project. These events are not defined at the current stage of the project and tentative forums will be investigated in the coming months.

2.1.3 Public engagement

eFORT may consider public engagement for specific scenarios as the demonstrator in Spain, which is located near a village. In these scenarios, factors that may affect end users will be considered with them if needed to ensure that their view is considered and feed the innovation process.

This axis will be evaluated in future iterations.

2.1.4 Governance

The core of the project is to develop more resilient and safe power grids in Europe. Currently, the activities regarding how to include the governing bodies, which is considered within the transversal activities of the project, have not started yet.

This axis will be evaluated in future iterations.

2.1.5 Science education

Science education aims to contribute to innovative problem-solving and critical thinking in the society, to enhance citizens to participate in the research and innovation processes. This education will ensure interdisciplinary approaches in the future and a bigger stakeholders' involvement that makes the society more resilient and innovative.

This axis will be evaluated in future iterations.

2.1.6 Gender

eFORT partners are committed to foster gender equality following the commitment in Horizon Europe programme (European Commission, Directorate-General for Research and Innovation, 2021). This commitment aims to have more women participating in research and innovation programmes and to have a better integration of the gender dimension in the research and innovation projects.

The gender perspective is going to be studied along the lifetime of the project from two different perspectives.

- (i) The technologies developed must aim to the extent possible to consider the gender dimension and to avoid any potential discrimination.
- (ii) The eFORT project partners will, to the extent possible, work towards gender balanced teams.

Thus, the KPIs for the gender Equality within the effort project will be:

- (i) Percentage of females over the total workforce of the project
- (ii) Number of entities with a Gender Equity Plan

The Table 1 aims to collect the relevant data according to the indicators and to provide a first view at M12.

Partner	Number of female researchers	Number of male researchers	Number of females in the workforce other than researchers	Number of males in the workforce other than researchers	% of females in total	Gender equity plan? (Yes/No)
CIRCE	9	9	3	4	48	Yes
ENCS	1	2	0	0	33	Yes
TenneT	0	2	1	1	33	Yes
TNO	1	6	1	0	2	Yes
TUD	0	4	3	0	43	Yes
DNV	0	2	1	0	33	Yes
RINA-C	6	9	3	1	47	Yes
SELTA-DP	2	3	0	2	29	No
EDYNA SRL	0	1	0	1	0	Yes
LINKS	2	7	1	1	27	Yes
CUERVA	0	0	2	6	25	Yes
SIA	4	4	0	0	50	No

Partner	Number of female researchers	Number of male researchers	Number of females in the workforce other than researchers	Number of males in the workforce other than researchers	% of females in total	Gender equity plan? (Yes/No)
COM	0	7	1	2	10	Yes
SCHN	0	2	2	2	33	Yes
JSC	0	0	0	3	0	No
ISOL	6	4	5	7	50	No
Fraunhofer	0	2	0	0	0	Yes
UBE	0	1	0	0	0	No
Suite5	1	3	0	0	25	
HYPER	2	1	1	0	75	Yes
CERTH	0	4	1	3	12,5	Yes
JB2B	0	0	1	4	20	Yes
SIN	4	3	2	2	54,5	Yes

Table 1 Gender distribution table

2.2 Golden rules for achieving RRI

Summing up the RRI approach to follow under the framework of the project, the partners need to consider how to include these guides on its work. From (RRI tools coordination team (Daniel García, Eva Zuazua, Belén Perat and Ignasi López (coord.))) it can be stated that there are 5 golden rules to follow to achieve RRI. These rules should be used within eFORT to put in practice the RRI approach.

1. Think about what society wants.
2. Involve a wide range of stakeholders and societal actors.
3. Consider all possible impacts.
4. Be open and transparent.
5. Respond and adapt.

2.3 Some sources of information

This section aims to provide to the partners with sources of information regarding RRI that should be used during the lifetime of the project, to consider this holistic approach when research.

RRI tools: [Home Page - RRI Tools \(rri-tools.eu\)](https://rri-tools.eu)

“A practical Guide to Responsible Research and Innovation: Key lessons from RRI tools” From RRI project [RRI+Tools.+A+practical+guide+to+Responsible+Research+and+Innovation.+Key+Lessons+from+RRI+Tools \(rri-tools.eu\)](https://rri-tools.eu/RRI+Tools.+A+practical+guide+to+Responsible+Research+and+Innovation.+Key+Lessons+from+RRI+Tools)

Self-reflecting tool: [Self-Reflection Tool - RRI Tools \(rri-tools.eu\)](https://rri-tools.eu)

Putting Responsible Research and Innovation into Practice [Putting Responsible Research and Innovation into Practice: A Multi-Stakeholder Approach | SpringerLink](https://www.springer.com/9789400762237)

eFORT ZENODO's community ([eFORT: Establishment of a FramewORk for Transforming current EPES into a more resilient, reliable and secure system all over its value chain | Zenodo](https://zenodo.org/record/1488887))

Enacting RRI in Europe course: [RRI - Aalborg University \(aau.dk\)](https://www.aau.dk/en/education/courses/2018/09/01/rri-in-europe/)

3 Conclusions

The present report has set the basis to consider the RRI within the eFORT project. With this base, the project will track during the project how the good practices from RRI will be applied.

Further work will be tracked and evaluated during the project execution.

References

- European Commission, Directorate-General for Research and Innovation. (2021). *Horizon Europe, gender equality – A strengthened commitment in Horizon Europe*. Brussels: Publications Office. doi:<https://data.europa.eu/doi/10.2777/97891>
- ORION project (GA 741527). (2023, 06 13). *Orion Open Science*. Retrieved from <https://www.orion-openscience.eu/resources/rri>
- RRI toolkit*. (2023, April 17). Retrieved from <https://rri-tools.eu/>
- RRI tools coordination team (Daniel García, Eva Zuazua, Belén Perat and Ignasi López (coord.)). (n.d.). *A Practical Guide to Responsible Research and Innovations: Key Lessons from RRI tools*. Report, LaCaixa Foundation. Retrieved 06 13, 2023, from <https://rri-tools.eu/documents/10184/16301/RRI+Tools.+A+practical+guide+to+Responsible+Research+and+Innovation.+Key+Lessons+from+RRI+Tools>
- Wilford S, F. M. (2016). *Guidelines for Responsible Reseach and Innovation*. Deliverable, Monfort University, Centre for Computing and Social Responsibility. Retrieved 06 13, 203, from <https://www.great-project.eu/Deliverables10>