



D6.1 Evaluation report about the implementation of the ETHNA System

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ABSTRACT: This deliverable presents the findings from the critical evaluation of the ETHNA System implementation process in six organisations. It identifies barriers, drivers and good practices that can be derived from the experiment. The report draws first conclusions about the potential scope and form of institutional changes induced by the application of the ETHNA System in organisations similar to the ones included in the implementation and describes the necessary conditions required to support and implement the new RRI management system and processes, supported by a set of advisable actions and activities.

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Abbreviation	
ARC Fund	Applied Research and Communications Fund
CEGP	Code of Ethics and Good Practices
CEO	Chief executive officer
CERSU	Ethics and Social Responsibility University Commission
CTS	Centre of Technology and Systems
EC	European Commission
Espatec	Science, Technology and Business Park
EU	European Union
GMO	Genetically Modified Organism
H2020	Horizon 2020
Harno	Education and Youth Board
HRS4R	HR Excellence in Research
IEEE	Institute of Electrical and Electronics Engineers
IFAC	International Federation of Automatic Control
IFIP	International Federation for Information Processing
IFR	Department of Philosophy and Religious Studies
NTNU	Norwegian University of Science and Technology
OPAQ	Quality Promotion and Assessment Office
PAE	Programme for Applied Ethics
R&D	Research and Development
R&I	Research and Innovation
RFO	Research Funding Organisation
RPO	Research Performing Organisation
RRI	Responsible Research and Innovation
UJI	University Jaume I
UNINOVA	Institute for the Development of New Technologies

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EXECUTIVE SUMMARY

This report presents the main findings and outcomes from the critical evaluation of the ETHNA System implementation process. The ETHNA System, a flexible ethics governance system, has been experimentally implemented in six organisations from four different Responsible Research and Innovation (RRI) contexts (higher education, research funder, innovation ecosystem, research centre).

The six organisations are: the University Jaume I (UJI) from Spain, the Norwegian University of Science and Technology (NTNU), the Education and Youth Board (Harno) from Estonia, the Science, Technology and Business Park (Espaitec) from Spain, the Institute for the Development of New Technologies (UNINOVA) from Portugal, and the Applied Research and Communications Fund (ARC Fund) from Bulgaria.

The implementation process followed the ETHNA Lab methodology (the living lab methodology adapted to the ETHNA System). The ETHNA Lab process was divided into six stages (planning; construction; consultation; refinement; testing; review) and lasted approximately one year (November 2021 – October 2022).¹ The diversity of organisations, which implemented the ETHNA System, the different approaches they undertook, and the wide range of outcomes they have achieved, provide a good basis for a realistic assessment of the ETHNA System viability.

The initial evaluation, presented in this report, has taken place while the implementation process was still in its final stage in some of the organisations, or has just ended in others. For this reason, it is very difficult to assess the width and depth of the institutional changes induced by the application of the ETHNA System in six organisations, as the true impact of this process will only become visible in the near future. The current report therefore draws only some preliminary conclusions about the potential scope and form of the institutional changes that the ETHNA System could facilitate in organisations similar to the ones included in the implementation process.

The report presents the most common barriers and drivers of implementation, highlights some of the good practices that have emerged from the process, and outlines the necessary conditions required to support and implement the ethics governance system.

The evaluation is based on the following sources:

1. Evaluative statements collected during two participatory evaluation workshops with the ETHNA System implementing partners held in September 2022 and included in the D5.4 Report of ETHNA System Implementation Analysis² and D5.5 Report Collecting the Difficulties Found in the Implementation Process.³
2. Online self-evaluation questionnaire completed by the Lab Managers from the six implementers in late October and early November 2022.
3. Presentations and discussions of the first results of the ETHNA System implementation at a workshop, organised in November 2022 in Sofia.

The six implementing organisations had a different starting point. At Harno and Espaitec, the idea to set up a governance structure similar to the ETHNA System emerged only after the two organisations joined the project. At UNINOVA, a rather vague idea that an ethics governance structure could be beneficial existed, but there were no concrete plans how to implement it. ARC Fund had a well-developed plan to implement an ethics governance structure, but for different reasons this has not been carried out until the involvement in the ETHNA System project. UJI already had some key ethics management instruments in place, such as the Ethics Code, several committees related to ethical issues and the Ethics Line, but there

¹ Vedel Neuhaus, Sigrid et al (2022). *D5.3: ETHNA System Implementation Co-design Requirements Guiding Paper – The ETHNA Lab*. https://ethnasystem.eu/wp-content/uploads/2022/05/D5.3_ETHNA_lab-method-guide.pdf

² Alves, Elsa (2022). D5.4 Report on the ETHNA System Implementation Analysis. <https://zenodo.org/record/7501007#.Y7QJo3bMLrc>

³ Alves, Elsa (2022). D5.5 Report on the difficulties found in the implementation processes. <https://zenodo.org/record/7501022#.Y7QMBnbMLrc>

was also awareness that these structures needed to be renewed and some new ones developed. At NTNU, a well-established ethics governance structure was already in existence before the commencement of the project.

All six implementing organisations have selected their Lab Managers. Their responsibility was to plan, coordinate and facilitate the ETHNA System implementation process, or ETHNA Lab. The Lab Managers supported all other participants in the process, for example the working groups tasked with the writing of the Code of Ethics or other relevant documents. They were responsible for the preparation of the Implementation Plan (or Action Plan) and for monitoring of all stages of the process. The Lab Managers also recruited and engaged internal and external stakeholders for different activities (interviews, focus groups, workshops, webinars, trainings, etc.), maintained communication with the senior management, and reported to the project consortium on the process in their organisations.

The progress towards achieving institutional changes was monitored and measured through the application of relevant progress and performance indicators. Most of these indicators have been proposed by the implementation methodology and were therefore common for all implementers, but some were added to correspond with specific activities and goals of individual implementing organisations.

The implementing organisations identified different challenges and barriers for implementation of the ETHNA System and also proposed measures to overcome these barriers. Neither the barriers nor the measures are necessarily valid or applicable to all implementation contexts – the table below presents the overview of the most important ones.

Challenges and barriers	Possible measures to overcome the barriers
If the methodology is applied too rigidly and “to the letter”, it might be perceived as imposed on researchers from the top.	A common understanding of the implementation plan should be established within the organisation. Implementation process should be flexible and allow for the necessary changes and adjustments.
The lack of resources (e.g. human resources, time, financing) necessary for the implementation can delay or prevent implementation despite the good intentions.	A group or a committee that meets regularly to discuss the implementation of the ETHNA System can be set up. The implementation can be linked with other activities or projects.
Insufficient understanding of the RRI concept and scepticism concerning its added value.	Simplification of the RRI concept and the ETHNA System methodology. RRI agenda should be applied in a way that does not impose limitations on researchers and their work.
The lack of support from the senior management (no feedback or guidance).	Regular meetings with the management.
Inadequate communication and cooperation between units (resistance based on hierarchy, experience, competition, professional “jealousy”, etc.).	Co-creation is crucial for changing the culture and the “business as usual”. Stakeholders of the institution (staff and the management) need to take ownership and become engaged in the process.
Reluctance to implement changes and reforms in the organisation (can be present both among the staff and the management).	Use of awards and incentives (prizes and awards for best practices). The implementation may start as a top-down approach, but sustainability ultimately relies on the bottom-up approach.
Difficulties to engage the external stakeholders.	Building networks with external stakeholders.

Lesson learned from the ETHNA System implementation process:

1. Co-creation process is essential: Fruitful and enriching debates involving a large variety of internal stakeholders not only improve the quality and relevance of the process, but also guarantee that the achieved results are not seen by the personnel as something imposed on them from the top.
2. Less is more – plan realistically: When planning the process, it is crucial to be modest and realistic about the objectives to be achieved, keeping in mind also the availability of resources. It is also important to be flexible and to make the necessary changes as the implementation process unfolds.

3. Focus on what is important for your context: ETHNA is a *flexible* ethics governance system. It is neither required, nor even recommended to adopt it in its entirety. The most effective approach is to focus on those aspects that are (perceived as) important for the organisation.
4. Do not reinvent the wheel – reform and update: Many organisations already have their Ethics Code, Gender Equality Policy, Ethics Committee and other resources similar to the ones included in the ETHNA System. The ETHNA System provides an excellent opportunity to rethink and reassess the current organisational units and documents, and to update and reform them if needed.
5. Mind the gap between approval and engagement: Colleagues and management might recognise the relevance and benefits of the ETHNA System, but this does not necessarily mean that there will be an army of volunteers wanting to contribute to the implementation. Be realistic and do not set targets that go beyond the available resources, needs and ambitions of the organisation.
6. Results and impacts need a longer period of time to become visible: A realistic assessment of the ETHNA System implementation and its performance is not possible within the first year after the start of the process.
7. One size does not fit all: The ETHNA System Guide to the Ethics Governance of RRI⁴ is a very practical document, with useful and step-by-step instructions about how to implement the ETHNA System and develop its tools. Most of the steps in the ETHNA System Guide are voluntary and can be easily adapted to organisational context and needs. As such, the ETHNA System can be easily applied in research-performing and research-funding organisations of all types and sizes. In large organisations such as universities, the ETHNA System might be more appropriate for smaller units, such as departments or faculties.

The necessary requirements and conditions that organisations need to fulfil to implement the ETHNA System:

1. Analyse the internal organisational situation and based on this analysis decide about the level and type of implementation, and whether the organisation has the necessary resources (including human) to conduct the process.
2. The organisation needs to be committed and convinced that the adoption of ethics management tools is important. It is crucial to involve the organisation's leadership in the process.
3. The organisation must set up a work team that actively leads the implementation process. The team can be relatively small, but it needs to be committed, proactive and able to adapt the ETHNA System tools to the needs of the organisation.
4. In organisations, which have no financial or other resources to support a position such as the RRI Officer, implementation of the ETHNA System is only possible if someone is willing to take up the responsibility to plan, execute and monitor the process.
5. If the implementing entity is a smaller unit within a larger institution (a department within a faculty, or a faculty within a university), it needs to have a very clear communication with the higher organisational levels, and proceed with the implementation only after obtaining the necessary approval.
6. It is very important to find the right way of involving the researchers and allowing them the space to adapt the ETHNA System to their real needs and ethical priorities. The researchers have to be convinced about the benefits of adhering to the ethical conduct of scientific investigation.
7. External incentives, such as the EU funding requirements (e.g. in case of a Gender Equality Plan) or participation in a project such as the ETHNA System, can kickstart the process and even assure that certain objectives are implemented, but they alone cannot guarantee the sustainability of the institutional changes.
8. The organisation should not approach the ETHNA System with the thought that the more instruments are adopted, the better the result will be. If the ETHNA System can work as a tool for reflection that helps the organisation to articulate their most urgent ethical priorities, this is an excellent result in itself. A small but sustainable change is better than an overambitious plan for change that never comes to fruition.

⁴ González-Esteban, Elsa et al (2021). *The ETHNA System - A Guide to the Ethical Governance of RRI in Innovation and Research in Research Performing Organisations and Research Funding Organisations*. https://ethnasystem.eu/wp-content/uploads/2022/07/D4.2_ETHNA_2022_guide_220210_incl_toolbox_neu.pdf

Introduction

This report presents the main findings and outcomes from the critical examination of the ETHNA System implementation process. It identifies the most important barriers, drivers and good practices that have emerged during the experimental implementation of the ETHNA System in two universities (UJI and NTNU), one higher education funding agency (Harno), one science, technology and business park (Espaitec), one applied research institute (UNINOVA) and one private research centre (ARC Fund).

The ETHNA System, an ethics governance structure based on the Responsible Research and Innovation (RRI) framework and four of its keys (research integrity, gender perspective, public engagement, and open access), aims to support organisations involved in research and innovation (R&I) activities to develop and implement R&I procedures that are socially responsible and desirable. In order to test the practical applicability of the ETHNA System in different types of organisations, it was experimentally implemented in six different institutions from five countries and four R&I contexts. The implementation started in November 2021 and was planned to conclude in October 2022. While some implementers were successful in completing the implementation process within the foreseen timeline, others have experienced certain delays and the successful finalisation of the process is expected in early 2023.

The implementation process was divided into six main stages, during which the implementers developed, tested and refined the ETHNA System to adapt it to the needs of their institutions. Different actors, both internal and external to the organisation, were involved throughout these six lab stages. The overall process was coordinated and supervised by the Lab Manager – a person actively involved in the ETHNA System project.

The diversity of organisations that implemented the ETHNA System, the different approaches they undertook, and the wide range of outcomes they have achieved, provide a good basis for a realistic assessment of the ETHNA System viability. The initial evaluation, presented in this report, has taken place while the implementation process was still in its completion stage in some of the organisations, or has just ended in others. This makes it quite impossible to truly assess the width and depth of the institutional changes induced by the application of the ETHNA System in six organisations, as this is a process that will most likely take at least another year to truly bear fruit. Nevertheless, even at this early stage it was possible to draw the first conclusions about the potential scope and form of institutional changes that the ETHNA System could facilitate in organisations similar to the ones included in the testing.

The report also addresses the most common implementation risks and describes the necessary conditions required to support and implement the ethics governance system.

The evaluation is based on the following sources:

1. Evaluative statements collected during two participatory evaluation workshops with the ETHNA System implementing partners held in September 2022 and included in the D5.4 Report of ETHNA System Implementation Analysis and D5.5 Report Collecting the Difficulties Found in the Implementation Process.
2. Online self-evaluation questionnaire completed by the Lab Managers from six implementers in late October and early November 2022.
3. Presentations and discussions of the first results of the ETHNA System implementation at a workshop, organised in November 2022 in Sofia.

The information collected through these sources enables a realistic assessment of the viability and sustainability of the ETHNA System and its implementation tools. It also helps to describe the necessary conditions required to support and implement it in different R&I organisations.

To grasp the full extent of the lessons learned from the implementation process, the readers of this report are also advised to read the following three reports:

- D5.4 Report on the ETHNA System Implementation Analysis
- D5.5 Report collecting the difficulties found in the implementation processes

- D4.3 Blueprint for institutional change to implement an effective RRI governance

The work, which resulted in the current report and the three reports listed above, run in parallel and contributed to the overall evaluation the ETHNA System implementation process.

D5.4 Report on the ETHNA System Implementation Analysis presents the structured statements made by the representatives of the implementing organisations during the two participatory evaluation workshops held online on 15 and 16 September 2022. The main focus of the report is a comparison between the implementers' initial planned goals and activities, and the actual achievements towards the end of the implementation cycle. Positive impacts of the process are highlighted, for example increased awareness of the importance of ethics in research among researchers and other staff, creation of quality training materials and update of the existing ethics codes and other relevant documents. The report also presents some reflections regarding the ETHNA System legacy in the implementing organisations.

D5.5 Report collecting the difficulties found in the implementation processes provides a detailed account of the most notable problems and challenges that emerged during the implementation processes and shared/discussed on four online workshops. The main recommendations made by the implementers were the need for the ETHNA System implementation method to be flexible, based on co-creation and target-specific.

D4.3 Blueprint for institutional change to implement an effective RRI governance delivers recommendations on what should organisations planning to implement an effective RRI governance system focus on when planning this step. It highlights the most relevant drivers of the process, presents the most challenging barriers and offers some good implementation practices as examples to follow. Based on the experience of the six implementing organisations, the Blueprint give the following recommendations on how to design a plan to implement an effective RRI governance system:

- Approval and support of the leadership is crucial.
- Long-term impact depends on the support structures.
- Certain structural barriers will never disappear – you must deal with them.
- Co-creation is a must but should be tailored to different organisational realities.
- Feasible goals can only be set by understanding your organisational context.
- An incremental approach can lead to substantial changes.

1. Implementing organisations

1.1 Universities

The Universitat Jaume I (UJI) in Castellón (Spain), founded in 1991, is a public university hosting over 14,000 students and approximately 1,400 researchers distributed in 27 university departments and 14 research institutes.

The Norwegian University of Science and Technology (NTNU) is Norway's largest university and primary institution for educating engineers and scientists. NTNU encompasses 7 faculties and 53 departments, and has approximately 40,000 students, and 7,000 employees. The ETHNA System was implemented at the Philosophy department, which has 50 employees.

1.2 Higher education funding agency

The Education and Youth Board (Harno) is a government agency of the Ministry of Education and Research of Estonia and is responsible for the implementation of Estonian education and youth policy. Harno was set up in August 2020, after the merger of Foundation Innove, Foundation Archimedes, Information Technology Foundation for Education and Estonian Youth Work Centre. Harno has about 350 employees.

1.3 Innovation ecosystem

Science, Technology and Business Park (Espaitec) at UJI brings together innovative technology-based companies, research groups and public organisations. It was established in 2007 to support and encourage innovative business initiatives to grow, and to facilitate active technology transfer with the University. Espaitec is one of the main Innovation Global Ecosystem agents in the Castellon province, establishing all the necessary links with industry and institutions in the territory. It has 14 employees.

Institute for the Development of New Technologies (UNINOVA) is a multidisciplinary, independent, and non-profit research institute with around 180 employees. Formed in 1986, UNINOVA collaborates closely with industry and universities to transfer technological innovations into profitable business concepts. Its main aim is to pursue excellence in scientific research, technical development, advanced training, and education. The ETHNA System was implemented at UNINOVA's Centre of Technology and Systems (CTS).

1.4 Applied research centres

Established in 1991, the Applied Research and Communications Fund (ARC Fund) is a research and innovation policy institute and a not-for-profit organisation acting for the public benefit. ARC Fund conducts applied policy research and analysis, education and training, and various forms of liaison with governmental and non-governmental agencies (expert commentary, policy advice, and contribution to public debate, civil society capacity building and network development). Its main aim is to support the knowledge-based economy and research, development and innovation policy. It has less than 20 employees.

2. Points of departure and implementation hypotheses

Six implementing organisations had a different starting point. Two of them (Harno and Espaitec) have not considered the need to implement a governance structure similar to the ETHNA System (in its entirety or partially) before their participation in the project. It can be said that only the project requirements placed this issue on their agenda.

In one implementing organisation (UNINOVA), there was a rather vague idea that a governance structure similar to the ETHNA System could be beneficial, but there were no concrete plans how to implement it before participation in the project.

ARC Fund had a well-developed plan to implement an ethics governance structure, but for different reasons this has not been carried out until the ETHNA System implementation process offered the opportunity to realise the plan.

UJI represents a somewhat ambiguous case. The university already had some key ethics management instruments in place, such as the Ethics Code, the Deontological Committee, the Wellness and Animal Testing Committee, and the Ethics Line. Nevertheless, there was a clear awareness about the need to boost and renew these structures and to develop new ones, such as the Code of Good Practices. Before the start of the project, there was no specific plan about how to implement the novelties.

At NTNU, a well-established ethics governance structure was already in existence before the commencement of the project.

Taking into consideration these different premises, it can be assumed that the implementation process will also follow different trajectories:

1. An organisation, which has not considered such a step before and is not actively looking for a “know how” about implementation of the ethics governance structure, needs to be somehow informed and convinced about the benefits of such decision. In a way, they need to be made aware that the ETHNA System is something they never knew they needed. If the idea is “bought,” a positive and successful implementation can be expected. If approval is lukewarm and passive, most likely the planned activities will be implemented partially or will resemble a tick-box exercise that will not result in a meaningful change. In case of outright rejection, the implementation of the ETHNA System would be of course impossible.
2. At organisations that already have a good and operational ethics governance structure in place, an invitation to introduce the ETHNA System can be met with two potential reactions. One is negative – indeed, why implement something which is essentially not very different from the existing structures? However, if properly presented and explained, the ETHNA System can also trigger the rethinking of the current situation and the decision to reinvigorate it.
3. In theory, the ETHNA System implementation should be easiest in those organisations that already had at least a vague idea about introducing an ethics governance structure or even had their own implementation plan, which for different reasons has not yet come to fruition. For such organisations, the ETHNA System can represent a ready-made model to follow.

The evaluation of the implementation process presented in the following chapters will seek to confirm (or refute) these hypotheses.

3. Necessary conditions required to support and implement the ETHNA System

The potential scenarios discussed above can lead to positive outcomes only if certain necessary conditions have been fulfilled.

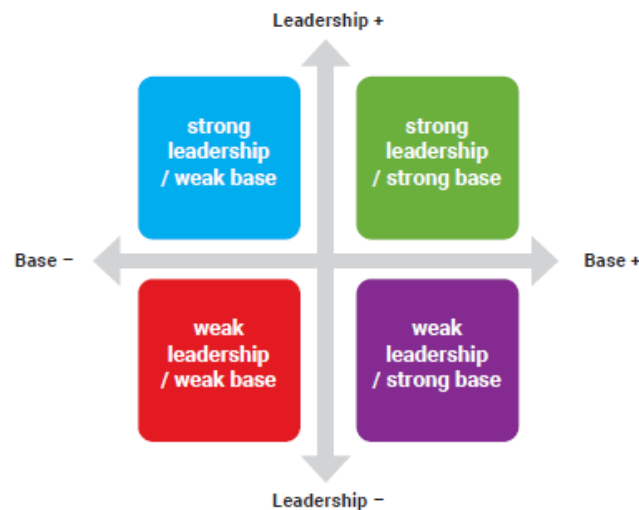


Figure 1: ETHNA RRI Institutionalisation Quadrants - leadership and the base

Source: González-Esteban, Elsa et al (2021). The ETHNA System - A Guide to the Ethical Governance of RRI in Innovation and Research in Research Performing Organisations and Research Funding Organisations, p. 15. https://ethnasystem.eu/wp-content/uploads/2022/07/D4.2_ETHNA_2022_guide_220210_incl_toolbox_neu.pdf

The ETHNA System is designed to work for all quadrants except the lower left one, i.e. weak leadership in combination with a weak base.⁵ The prerequisite for the ETHNA System to work is that at least one dimension needs to be somewhat strong, otherwise there is nothing to build on.

At UJI, the starting conditions were the most favourable ones – a strong and determined leadership of the process and a strong base to work with. The University’s Senior Management Team was deeply committed to the process – especially noted was the support of the Research Vice-rector. Regarding the base, before the start of the project, UJI has already had a number of relevant documents in place (Ethics Code, Code of Good Practices and University Governance, the PhD School’s Code of Good Practices, Social Responsibility Report). Ethics related units and different positions related to ethics management, such as open access, gender equality, conflict resolution and research integrity, have also been a long-established practice. They include the Deontological Committee (body in charge of evaluating and reporting on research projects and academic research work, PhD theses and master’s thesis concerning procedures involving human patients) and Ethics and Social Responsibility University Commission (CERSU; body assessing, evaluating, monitoring and controlling the University Social Responsibility system and promoting ethics). It is worth noting that participation in both Commissions is voluntary and non-remunerated. UJI also has its Ethics Line – a communication channel through which the academic community can report any infringements of the Ethics Code. Not surprisingly, UJI selected the Level 3 of institutional commitment to the ETHNA System,⁶ using it as an opportunity to review and revise the Code

⁵ In the frame of the ETHNA System project, “base” is a term referring to the organisation’s resources, including internal documents, units and departments, and research staff along with their values, awareness, skills, knowledge, and practices.

⁶ The ETHNA System has three level of institutional commitment:

Level 1: The organisation appoints the RRI Office or the RRI Officer and supports its activity. The RRI Office(r) will be in charge of disseminating the ETHNA System concepts, promoting awareness of principles and values, establishing activities

of Ethics and Good Practices in R&I, upgrade the Ethics Committee on R&I and the Ethics Line, and appoint an RRI officer.

Interestingly, the situation was less straightforward at the other implementing university, NTNU. NTNU undoubtedly has a strong base (Code of Ethics for employees at NTNU, Guidelines for Policy on Open Science, Policy for Gender Equality and Diversity, Research Ethics Committee, Ethics Portal). Most of these tools and mechanisms clearly address several of the RRI keys and display relevant similarities with the ETHNA columns. Moreover, the Philosophy department where ETHNA System was implemented has a Programme for Applied Ethics (PAE) that has been involved in the creation of some of the abovementioned tools and is in fact running the Ethics Portal.⁷ The RRI leadership at NTNU can equally be regarded as strong. Somewhat surprisingly, these conditions did not result in a strong support for the ETHNA System implementation. The existence of so many initiatives at university level led to the question whether ETHNA System is at all needed. The opinions were divided – some strongly supported the introduction of a tool which would strengthen the RRI uptake in the department and lead to a needed organisational change, while others dismissed the idea as redundant and as an unnecessary intrusion into their core work. The leadership was similarly ambivalent, worrying about staff not endorsing it, about duplication of existing initiatives, and about the appropriateness of the departmental level for the ETHNA System. On the other hand, some saw this as an opportunity to address important issues and improve things. The outcome of this ambivalent attitude was the decision to implement level 1 – the only one among the six implementers to do so. The role of the appointed RRI Officer was mostly focused on the mapping of what was already in place at the organisation, and reporting what could be the most relevant next steps for the department.

Despite the turbulent period that followed its establishment through the merger of several organisations (three different general directors in a two-year period), Harno falls into the strong leadership / strong base quadrant. All three general directors and the entire management actively supported the implementation process. It was agreed that as a government institution, Harno's employees will follow the most important values stipulated in the Code of Ethics of the Ministry of Education and Science (Harno operates under its jurisdiction): legality, people-centeredness, reliability, expertise, impartiality, openness and cooperation. As far as the existing structures are concerned, Harno has its general rules of conduct, rules for preventing corruption, the position of data protection specialist and considerable experience with public engagement (taking decisions with and considering those who are affected by these decisions). Harno decided to implement level 2 – to appoint the RRI Officer, to develop the Code of Ethics and Good Practices in R&I covering all four RRI keys, and to create an independent body to act as an Ethics Committee at the Estonian Research Council.

UNINOVA is the only implementing organisation, which placed itself in the self-evaluation questionnaire into the strong leadership / weak base quadrant. This decision seems to be based on the fact that the organisation is deeply committed to the respect and promotion of good research practices, but lacks a formalised model and wider adoption. Not having its own legislative base, UNINOVA adheres to external requirements and principles, such as commitments towards the Portuguese research funding agency.

and performance indicators for the three-year Action Plan for continuous improvement, and monitoring the progress of the ETHNA System in the organisation through progress indicators.

Level 2: The organisation appoints the RRI Office or the RRI Officer and implements some of the Column Blocks (the Code of Ethics and Good Practices in R&I, the Ethics Committee on R&I, the Ethics Line). The Action Plan should incorporate at least one of the four major RRI keys: research integrity, gender perspective, open access, and public engagement.

Level 3: The organisation fully develops the ETHNA System. It designates the RRI Office(r), implements all three Column Blocks and applies a proactive attitude in all RRI key areas: research integrity, gender perspective, public engagement, and open access.

See González-Esteban, Elsa et al (2021). *The ETHNA System - A Guide to the Ethical Governance of RRI in Innovation and Research in Research Performing Organisations and Research Funding Organisations*. https://ethnasystem.eu/wp-content/uploads/2022/07/D4.2_ETHNA_2022_guide_220210_incl_toolbox_neu.pdf

⁷ See <https://www.ntnu.edu/ethics-portal>.

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Documents such as Ethics Code of IEEE⁸ are amply disseminated among researchers and PhD students. UNINOVA's Centre of Technology and Systems (CTS), where the ETHNA System was implemented, had already had a very good awareness regarding RRI in all of its key areas due to its mission to promote excellent research and innovation practices in Portugal. There are ongoing initiatives regarding research ethics and integrity, such as support of good research practices or RRI awareness among PhD students. These resources were essential for determining the CTS position regarding RRI and for taking a decision to implement level 2 of the ETHNA System (the Code of Ethics and Good Practices in R&I, the Ethics Committee on R&I, and a small informal ad hoc committee to play the role of the RRI Officer).

The last two implementers, Espaitec and ARC Fund, are both placed in the weak leadership / strong base quadrant. In case of Espaitec, there was a basic knowledge about RRI, but RRI principles have never been considered or included in any kind of norms or rules to be followed by the personnel. Espaitec selected the level 2 commitment – to implement the RRI Office and develop a Code of Ethics and Good Practices in Gender Perspective, as they considered that this was the one area that could be applied most effectively in all organisation's activities and that could be useful to all the companies that participate in the Park.

Certain RRI keys, such as public engagement, open access, ethics and gender equality have been ingrained into ARC Fund's practices and objectives from the earliest years of its activity. Several internal organisational documents deal with some RRI aspects: Statute of ARC Fund, Code of Ethics, Code of Conduct, Rules and Order for Performing Publicly Beneficial Activities, Rules for the Processing and Protection of Personal Data, and Internal Child Protection Policy. ARC Fund has several bodies that can provide support for RRI uptake: Data Protection Officer, Public Council on Safer Internet Use and Innovation Council. However, due to its small size, ARC Fund has no specific department, team or position dedicated to any of the RRI keys, nor the RRI framework as such. The ETHNA System project provided an excellent opportunity for implementing a comprehensive ethics governance structure for conducting socially responsible and relevant research. Unfortunately, the progress has been much slower as expected due to certain reservations from the top management. While approving the process on the declarative level, the management's practical support for the implementation was negligible. ARC Fund opted for the implementation level 2 – to establish the RRI Officer position, to develop the Code of Ethics and Good Practices in R&I and to set up an Research Ethics Board.

4. The role of Lab Manager

All six implementing organisations have selected their Lab Managers. Their responsibility was to plan, coordinate and facilitate the ETHNA System implementation process, or ETHNA Lab. The Lab Managers supported all other participants in the process, for example the working groups tasked with the writing of the Ethics Code or other relevant documents. They (alone or in cooperation with other colleagues) drafted the Implementation Plan (or Action Plan) and were responsible for implementation and monitoring of all stages of the process, as outlined in the Plan. The Lab Managers also recruited and engaged internal and external stakeholders in different activities (interviews, focus groups, workshops, webinars, trainings, etc.), maintained communication with the senior management, and reported to the project consortium on the process in their organisations.

The importance of the Lab Managers can hardly be overstated. The ETHNA System cannot be implemented without a dedicated and committed person that is willing and able to plan, execute and monitor the process. Such expert should preferably have considerable experience in RRI topics (or at least some of the RRI key areas), given the central place of the RRI principles in the structure of the ETHNA System. The unfamiliarity with the topic might make it difficult to comprehend and follow some of the processes applied in the methodology. The Lab Manager should also be respected by management, colleagues and other internal and external stakeholder of the organisation. Organisational, communication and leadership skills are essential for the proper management of the working groups, involved in

⁸ The Institute of Electrical and Electronics Engineers. <https://www.ieee.org/content/dam/ieee-org/ieee/web/org/about/corporate/ieee-code-of-ethics.pdf>

preparation of different documents, for “selling” the ETHNA system to the management, and for engaging organisation’s staff in different activities, such as interviews, focus groups and trainings.

Of course, the Lab Manager should not be expected to do everything by one’s self. The evaluation clearly shows that implementation was most successful and fruitful in those organisations in which the Lab Managers were actively supported by a wide variety of actors (UJI and Harno). In contrast, the most modest progress was achieved in those institutions, where the Lab Managers received mostly verbal support, and had to rely mainly on their own capabilities and resourcefulness (UNINOVA and NTNU). On the other hand, to underline again the crucial role of the Lab Manager, we can use the example of ARC Fund, where the Lab Manager at some point started to “run out of steam” due to numerous other tasks and obligations, which considerably hampered the implementation process.

Finally (more as a side note than as a conclusion with high relevance for the potential future implementers of ETHNA System), it should be mentioned that the six Lab Managers had another challenge – constant switching between roles of ETHNA System project partners and of persons responsible for the implementation in their organisations. Both roles were essential and sometimes quite difficult to combine, as both required high level of involvement and effort.

The Lab Managers at UJI, NTNU, Harno and ARC Fund had substantial previous experience with the RRI framework, mostly through their work on RRI-focused research projects, or previous academic experience in topics related to scientific integrity, open access or gender equality. The Lab Manager at UJI is also a member of the Deontology Committee, of the Research Committee and of the newly established Ethics Committee.

UNINOVA’s Lab Manager had only limited previous experience with RRI issues, mostly dealing with authorship rules, conflicts of interest and open access issues.

There was no previous experience with RRI at Espaitec. This was identified as one of the main risks for the implementation process. Additional challenge was the fact that Espaitec is not a R&D centre, but acts as a facilitator between different innovation ecosystem agents (start-ups, spinoffs, entrepreneurs and university researchers) promoting cooperation. Establishing how to make the best use of the ETHNA System was rather difficult due to their limited capacity to influence the governance of its stakeholders.

After the completion of the Living Lab, several Lab Managers continued (or planned to do so) to work on further consolidation of the ETHNA System in their organisations as the RRI Officers.

5. The role of the RRI Officer

At the time of writing of this report, UNINOVA, ARC Fund and Espaitec have not yet formalised the designation of the RRI Officer.

At NTNU, the Lab Manager continued to support the integration of the ETHNA System in the role of the RRI Officer at the Department of Philosophy and Religious Studies (IFR).

Director General of Harno has formally appointed the RRI Officer in December 2021. The core tasks of the RRI Officer are:

- development of Harno’s good practice guidelines (ethics, gender, open access and public engagement);
- development of the training plan in accordance with the interests of the target groups in cooperation with personnel manager;
- development and implementation of the procedure for answering inquiries, complaints and questions;
- informing Harno's target groups about RRI-related activities through various information channels;
- development of the three-year action plan with performance indicators;
- periodic monitoring and presentation of the monitoring report to Harno's senior management (at least twice a year).

The RRI Officer designated at UJI is a person who participated in the implementation process, writing the new Ethical and Integrity Committee's regulations. Main tasks and responsibilities of the RRI Officer are:

- providing researchers with RRI advice and offering information, training and support;
- continuous internal coordination with other relevant departments on topics such as Data Protection;
- coordination of relations with national and international institutions, such as the Spanish Ethics Research Committees Network, or the European Commission Ethics Officer;
- be proactive regarding new regulations that can affect the different topics such as gender perspective, biosecurity, and animal wellness and testing;
- coordination of the various research ethics committees.

6. The role of other persons involved in the implementation process

In addition to the Lab Managers (and in the later stages of implementation the RRI Officers in some cases), a different number of other people also contributed to the ETHNA System testing.

Not surprisingly, given the fact that it is at the same time a large university and the ETHNA System project coordinator, the highest number of people were actively involved in a participatory and collaborative process at UJI. In the initial phase, a survey was carried out through the Quality Promotion and Assessment Office (OPAQ), covering five thematic blocks: open access, gender equality, research malpractice, knowledge about research ethics, and ethical governance of the institution. Out of a total number of 1,030 employees, 539 researchers participated in the survey (52.33%). The input from the survey was used for the preparation of the first draft of the Code of Good Practice. Five internal working groups were formed: on governance, communication and public engagement, research integrity, open access, and gender. In addition, a working group with external stakeholders was also set up. A total of 43 members of the UJI community and 7 external members participated in these working groups. Finally, several other researchers and experts contributed to the writing of specific sections of the Code, or have reviewed the text.

In a marked contrast, no other people apart from the Lab Manager had an active role in the implementation process at the NTNU. However, it should be noted that NTNU was the only organisation opting for the level 1 implementation.

The implementation process at UNINOVA involved a small team consisting of three experts.

Harno relied on the practical knowledge from several external experts – the head of the research ethics working group at the Ministry of Education and Research; the head of the Ethics Centre of the University of Tartu; the Equal Opportunities and Gender Equality Advisor of the Ministry of Social Affairs; the Data Librarian from the University of Tartu; and an expert in gender equality issues from Analysis Department of Estonian Research Council.

Similarly to Harno, Espatec also relied on external expertise, due to the limited knowledge in this field within the organisation. The two people who have helped with the implementation were a researcher from UJI and a member of the Isonomía Foundation.

At ARC Fund, a four-member working group wrote the draft of the Code of Ethics and Good Research Practices. Eight internal stakeholders (three representatives of the senior management, three representatives of the middle-level management and two project managers) were interviewed and nine staff members from various expert and managerial positions participated in the focus group. The purpose of interviews and focus groups was to assess the RRI-related situation in the organisation, and identify important aspects to be included in the Code. The entire staff of ARC Fund attended the presentation and training on the Code of Ethics and Good Research Practices in July 2022.

7. Implementation process – barriers, drivers and good practices

This chapter lists the main barriers, drivers and good practices identified during the ETHNA System implementation process in the six organisations. Each section is preceded by a short summary of the most typical or common barriers, drives and good practices.

7.1 Barriers

Each implementing organisation has identified the most important barriers faced during the implementation process. While some are specific to each organisation, several common traits can be outlined. In the first place, it seems that the methodology and the implementation plans designed at the start of the process considerably underestimated the effort and time that needed to be invested into the process. In all cases, the envisaged activities proved to be more demanding and time-consuming than expected.

Another common barrier was the need to balance between the project requirements and the needs and priorities of the organisations. The ETHNA System methodology is based on the premise that organisations want and need to implement such an ethics governance system, and that stakeholders are eager to get engaged in such process. The reality is that some organisations already have similar arrangements in place and see no need to rethink or change them, or are interested only in certain elements and not the “entire package.”

As far as researchers are concerned, most of them are under sufficient strain as it is (teaching, publishing, research and other obligations) and are far from enthusiastic about being involved in additional activities, particularly if uncertain about potential benefits of such engagement. Senior staff are especially reluctant to participate in endeavours they perceive as a violation of their autonomy and an additional burden. There is an almost universal displeasure with initiatives that are seen as being imposed from the top or suspected of generating additional bureaucracy.

Most organisations are complex – even the relatively small ones. It is not easy to find the common ground between different faculties, departments, units and/or programmes and overcome the diverging and sometimes conflicting needs, priorities and opinions.

One of the most difficult challenges is engagement of the external stakeholders, who have little vested interest in the internal processes in the implementing organisations. At best, they can be mobilised to attend events that can serve as a learning experience or sharing of good practices.

7.1.1 Research centre context

ARC Fund

Internal diversity – different needs and priorities	ARC Fund has three thematic programmes. They have very different foci, they work with different stakeholder groups and have different goals. It was a challenge to design an Implementation Plan that was applicable for all three programmes. However, it was established that RRI could provide a common frame for the three programmes, as most keys were already implicitly and sometimes explicitly embedded into their activities.
Limited organisational and human resources – slow progress	ARC Fund has no departments or bodies that would be responsible for the governance, management, and evaluation of policies and practices, pertaining to different RRI keys or the entire framework. This means that all people involved in the implementation had to accommodate these tasks within their very busy work schedule. In general, the considerable workload and the time constraints related to the project-based work, which is based on strict deadlines, were an important barrier, which affected the timely implementation of actions foreseen in the Plan.

Busy and elusive internal stakeholders	In the methodology, several workshops with the internal stakeholders were planned. However, the small number of internal stakeholders (ARC Fund is a very small organisation) and the already mentioned busy schedule meant that it was very difficult to actually organise the workshops. Instead, one round of interviews was conducted (eight interviewees), one focus group (nine participants) and only one workshop (presentation and training on the Code of Ethics and Good Research Practices (all staff members attended)).
Attitude of internal stakeholders	ARC Fund has been involved in several RRI-focused projects since 2015. Due to the small size of personnel, practically all staff members have been involved in some capacity in RRI activities, either as researchers or research subjects. There was a certain amount of displeasure of having to discuss “the same topics” all over again.

7.1.2 Higher education context

NTNU

Internal diversity – different needs and priorities	In large universities (or other large organisations consisting of numerous programmes/departments), it can be a serious challenge even to identify the suitable institute, faculty or department that is well suited to implement the ETHNA System. Such unit needs to have the appropriate size, available human resources and the right motivation. The ETHNA System was implemented in the Department of Philosophy and Religious Studies (IFR) after prolonged negotiations with the department leadership and an agreement to run an adapted version of the living lab, targeted to the circumstances of IFR.
Attitude of internal stakeholders	The attitude of internal stakeholders to the implementation of the ETHNA System was very mixed. Some supported the idea, others were very sceptical. Senior staff were especially reluctant to accept changes and be involved in something they perceived as infringement of their residual space of independence and of research time. The ETHNA System was seen by some employees as a top-down imposition.
Busy and elusive internal stakeholders	Difficulty to mobilise the staff (internal stakeholders) to attend meetings and workshops remained a barrier throughout the process. There are several reasons for this: the intense workload (teaching), the pandemic (all teaching activities were moved online) and recent organisational changes within NTNU that have imposed more demands and requirements to staff (reducing their available time for research).
External stakeholders	Identifying and involving external stakeholders was even more challenging, as very few external stakeholders have stakes in the department. After some unsuccessful attempts to mobilise them, a decision was made to focus on internal stakeholders.
Duplication of existing structures	NTNU has several structures already in place that mirror some of the ETHNA structures. In some respects this can be a driver, but at the same time it is an obstacle, because it makes the ETHNA System appear as duplication or as a redundant structure.

UJI

Project versus organisation	As the coordinator of the ETHNA System project, the implementing team at UJI had to balance between the needs of the ETHNA project and the needs of UJI, which did not always coincide. This situation has slowed down the implementation process and necessitated changes and adaptations to the original Action Plan.
Implementation was more demanding than anticipated	The effort needed to implement the Action Plan was larger than anticipated. The writing of the Ethics Code and the Code of Good Practices, the review of the Deontology Committee, and the reorganisation of the Ethics Line were all much more demanding than previously expected. The lack of knowledge about the topics tackled by the project among some researchers required numerous awareness-raising and dissemination activities.
Internal diversity –	The project covers very different topics (the four RRI key topics). Some stakeholders are more interested and knowledgeable about certain aspects, and other

different needs and priorities	stakeholders prefer to focus on different ones. Considerable effort was needed to bridge these differences, to find a common ground for diverging and sometimes even conflicting opinions, and to get all relevant stakeholders on board.
Attitude of internal stakeholders	Internal stakeholders are often sceptical or even suspicious of “external plans” (a plan based on requirements and objectives of a project, and not the organisation). They therefore need to be convinced that the process is beneficial for them and for the organisation, otherwise they will not commit to the process.

7.1.3 Innovation Ecosystem context

UNINOVA

Attitude of internal stakeholders	The ETHNA System was perceived by the internal stakeholders as being too bureaucratic and complex, and as something that was being imposed on them by the management.
Busy and elusive internal stakeholders	The implementation was based on the wrong assumption, namely that the stakeholders were eager to adopt these ideas and get engaged. This was not the case – researchers are busy with their own projects.
Rigid implementation methodology	A successful ETHNA System implementation necessitates a change of the culture within the organisation, but the implementation methodology is not very helpful in this respect. The process was designed as a “one way” approach. Instead of being implemented as co-creation, the “designers” of the process instructed the implementers what to do and how. There was no possibility to adapt the process to different realities.

ESPAITEC

Lack of awareness and understanding	For Espaitec, as a Science and Technology Park, it was very difficult to establish and promote the potential benefits of the ETHNA System. The staff lacked awareness and/or understanding about specific RRI key areas. It was also difficult to identify those elements of the ETHNA System that would have a high added value for the organisation. For this reason, implementation at Espaitec focused on gender as a Column Block and preparation of the Gender Equality Plan.
External stakeholders	It was quite difficult to obtain feedback and recommendations from the main companies participating in the Science and Technology Park in order to improve the contents of Code of Ethics that was being elaborated.

7.1.4 Research Funding Organisation context

Harno

Internal diversity – different needs and priorities	Harno was established when the project was already being implemented, as a result of a merger of four organisations with different work cultures, backgrounds and values. In a short period of time, several general directors changed, and lay-offs took place.
Busy and elusive internal stakeholders	Although the majority of internal stakeholders expressed support for the ETHNA System implementation, few were ready to contribute actively, pointing out their heavy workload and the need to secure one's position in an uncertain situation. The entire workload of implementation was on the shoulders of the RRI Officer.
Attitude of internal stakeholders	Despite the fact that the steering committees of the funding programmes and the managerial staff had a good attitude towards ETHNA, specific amendments were treated with caution. The main concern was that the concept would lead to additional bureaucracy.

7.1.5 Overview of barriers

	ARC Fund	NTNU	UJI	UNINOVA	ESPAITEC	Harno
Attitude of internal stakeholders	✓	✓	✓	✓		✓
Internal diversity – different needs and priorities	✓	✓	✓			✓
Busy and elusive internal stakeholders	✓	✓		✓		✓
External stakeholders		✓			✓	
Limited organisational and human resources – slow progress	✓					
Duplication of existing structures		✓				
Project versus organisation			✓			
Implementation was more demanding than anticipated			✓			
Rigid implementation methodology				✓		
Lack of awareness and understanding					✓	

7.2 Drivers

Despite the differences, the implementing organisations share several drivers. In the first place, the importance of institutional and managerial support was underlined. Another important driver was the previous experience and knowledge of RRI related topics, generated in different ways (participation in EU funded projects or other research activities, existing bodies/units responsible for specific RRI keys). External incentives were also recognised as very important. They can include the requirements of funding bodies, umbrella organisations, partners, or other commitments (such as the need to fulfil certain criteria in order to obtain a seal of quality or other recognition). Sensibility towards issues like research ethics and integrity, and gender issues among researchers and management is also an important driver.

7.2.1 Research centre context

ARC Fund

Previous experience	The previous participation in H2020-funded projects focused on RRI helped the planning considerably. The favourable past experiences gave credibility to the proposal to formalise ARC Fund's commitment to the RRI principles in a comprehensive document (Code of Ethics) and to establish an Ethics Board.
A strong base	Some RRI keys have already been included in the existing ARC Fund's documents, which regulate the work at the organisation (Statute, the Code of Conduct and the Code of Ethics). These documents served as the basis and inspiration for the writing of the Code of Ethics and Good Research Practices, along with the Toolbox to Implement the ETHNA System and the ETHNA System Guide to the Ethical Governance of RRI. ⁹
Requirements of the funding programmes	The requirements of the funding programmes – for example the Open Access requirement and the obligatory Gender Equality Plan for organisations wanting to participate in Horizon Europe projects, were an important driver of implementation.
Good internal relations and communication	The small size of the ARC Fund collective means that everyone knows all their colleagues personally, which helped with the communication and organisation of the consultation activities. The staff members who participated in the interviews and focus group were also eager to take the opportunity to make constructive suggestions and recommendations – something they are not able to do very often due to the workload and the daily rush everyone at ARC Fund is affected by.

7.2.2 Higher education context

NTNU

A strong base	The fact that NTNU has already had in place several structures for ethics governance was in some respect a driver. Since similar structures (with one exception) do not operate at the department level, there was interest in understanding how they could be made more effective and usable in the department. Knowing that there was no need to start from the scratch made the process to appear less demanding.
Previous experience	Another driver was the presence of a large Programme for Applied Ethics at IFR. Several members of this group have experience with the RRI and hence many within the department have been exposed to these ideas and its basic concepts.

⁹ Both documents, the Toolbox and the Guide, are included in González-Esteban, Elsa et al (2021). *The ETHNA System - A Guide to the Ethical Governance of RRI in Innovation and Research in Research Performing Organisations and Research Funding Organisations*. https://ethnasystem.eu/wp-content/uploads/2022/07/D4.2_ETHNA_2022_guide_220210_incl_toolbox_neu.pdf

Sensibility and care for ethical issues	The most important driver was the sensibility and care for ethical issues and the learning process triggered by the recent turmoil caused within the department by the emergence of the problem of gender imbalance. Philosophers and religion scholars have a strong disciplinary engagement with ethics and are willing to engage in reflection and critical self-reflection.
Good internal relations and communication	The staff was willing to participate in the interviews and in became very engaged during the interviews. This has provided some very valuable material.

UJI

Management support	Institutional support was very strong from the start of the process. There was a general awareness about the importance and relevance of the ethics management within the university management bodies. The university provided specific resources for a support grant aimed at performing the tasks of the RRI Officer. After the initial grant, the RRI Officer was hired on a job contract.
Previous experience	Previous experience regarding specific ethics tools (management units specialised in Open Access, Public Engagement and Gender Equality Policies) eased the process. Some internal stakeholder with relevant experience, like the members of the Deontological Committee, supported the implementation process from the very beginning. The Equality Office provided support for conducting a prior research about perceptions and worries among researchers regarding Ethics in Research and the four RRI axes.
Requirements of the funding programmes	UJI's commitment with the accreditation process on quality "HR Excellence in Research (HRS4R)" and the principles of the European Charter reinforced the commitment of the Senior Management Team. UJI was granted the European seal of quality.
Good internal relations and communication	A large number of people at the university from different knowledge areas were willing to collaborate.

7.2.3 Innovation Ecosystem context

UNINOVA

Management support	The implementation was facilitated by the fact that the Director of CTS was also the coordinator of the RRI Committee.
Requirements of the funding programmes	The identified actions contribute to fulfil CTS commitments towards the Portuguese research funding agency. Such commitments have to be demonstrated during the evaluation of all national centres by that agency. Most CTS researchers are members of international and national scientific and technical societies (e.g., IEEE, IFIP, IFAC, Socolnet, National Engineers Association) and, as such, need to comply with the Code of Ethics of such associations.
A strong base	Most of CTS researchers' are employed at organisations (e.g., NOVA University of Lisbon, Poytechnic Institutes, etc.) that have already established ethics governance committees, and promote good research and innovation practices, gender and inclusion. This has helped to raise the awareness about RRI related aspects.
Well-designed methodology	The proposed ETHNA System implementation methodology, which was carefully designed, well detailed, documented and explained, was useful to give a broad view of the process.

ESPAITEC


Support of external stakeholders	The constant support from two UJI experts were exceptionally important for planning and implementing all the elements required by the project.
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7.2.4 Research Funding Organisation context**Harno**

Management support	The top management (including all general directors) fully supported the process during all its stages.
Support of external stakeholders	Support and advice from external stakeholders and partners, such as Erasmus+ Agency was extremely valuable.
Being a frontrunner	The incentive that Harno will be the first research-funding organisation in Estonia with its own Code of Ethics and Good Practices (in addition to the Estonian Code of Conduct for Research Integrity) was also an important driver.

7.2.5 Overview of drivers

	ARC Fund	NTNU	UJI	UNINOVA	ESPAITEC	Harno
Previous experience	✓	✓	✓			
A strong base	✓	✓		✓		
Requirements of the funding programmes	✓		✓	✓		
Good internal relations and communication	✓	✓	✓			
Sensibility and care for ethical issues		✓				
Well-designed methodology				✓		
Management support			✓	✓		✓
Support of external stakeholders					✓	✓

Being a frontrunner							
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7.3 Good practices

As good practise are very case specific, no attempt to summarise them will be made. They are listed below as described by the implementing organisations.

7.3.1 Research centre context

ARC Fund

Continuity and consistency in engagement with RRI	RRI framework is one of the main focus areas ARC Fund has been working on since 2015. The continuity and consistency in engagement with RRI has immensely eased the work on the ETHNA System implementation at ARC Fund. All people involved in the process had good knowledge and substantial experience with RRI related themes and there was no need to convince them about the benefits of adopting the ethics governance structure in the organisation. The work was undertaken in the spirit of mutual cooperation and support.
Forum for the employees to share concerns and suggest solutions	Interviews and the focus group clearly demonstrated how important it was to provide a forum for the employees to share their concerns and suggest solutions. In the past, ARC Fund used to organise annual meetings of the entire personnel – this was very beneficial for internal communication, team-building and definition of common organisational goals. For some reason, such meetings have not been organised in the past several years, which negatively affected the synergy between the programmes, including coordination, cooperation and sharing of resources. Most of the interviewees welcomed the development of the Code of Ethics and Good Practices, but noted that efficient integration of RRI into the existing processes within the organisation will be a slow process, and the drafting of the Code can only represent the first step.

7.3.2 Higher education context

NTNU

Forum for the employees to share concerns and suggest solutions	The semi-structured interviews with staff members proved to be a valuable alternative to workshops, given the difficulty of having the needed attendance. One-to-one interviews gave people the opportunity to reflect more calmly, to feel free and safe in speaking their mind and voice criticisms. Interviews were also a good way to let a very broad variety of views, criticisms and suggestions emerge. Finally, they also raised awareness and interest – most participants showed curiosity about the results of the interviews.
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UJI

Positive effects of collaboration	The collaboration between the participation of the ETHNA project members and members of UJI's Senior Management was highly positive for everyone involved and had a positive impact in the university. Involving very different individuals in the implementation process without overwhelming them has provided them with a relevant role within the process. The writing of a truly original and differentiating Code of Good Practices through the participative process was a rewarding experience for all involved.
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Benefits of a neutral facilitator	Introduction of the figure of a neutral facilitator who knew the ETHNA Lab methodology and the whole process guaranteed a totally open debate space for participants, not affected by the opinions of the authors of the drafted documents.
Glossary of complex RRI concepts	Especially important was the addition of a glossary of complex concepts in RRI to the Code, which proved to be very useful for the UJI community. This is something that no other Code has and was very much appreciated by UJI researchers.

7.3.3 Innovation Ecosystem context

UNINOVA

From learning to engagement	Elaboration of new actions (first drafts of key documents) by RRI Committee, followed by consultation and refinement involving all relevant stakeholders of the organisation was an effective way of engaging CTS members in a participatory process.
Glossary of complex RRI concepts	The complicated ETHNA System jargon was adapted to internal reality and constraints of the organisation.
Preparation for external evaluation	Implementation process was connected to the preparation for evaluation of CTS by the national funding agency (which eased the potential internal “political” barriers).

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	No good practices were identified.
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7.3.4 Research Funding Organisation context

Harno

Positive effects of collaboration	<p>Good communication is essential for RPOs. A good experience was a joint meeting with the TalTech Ethics Committee, whose chairman is at the same time the chairman of the board of one of the Harno programmes.</p> <p>The suggestion of an Erasmus colleague to connect ETHNA's activities with initiatives of interest to Harno's staff was a great help. The discussions on the topic of diversity and engagement was combined with the contest “We respect differences,” announced by the Estonian Human Rights Centre.</p> <p>Good cooperation was also established with the Estonian Research Council.</p>
Impact and legacy	During the formation of the organisation it is very important to talk about soft values and the ETHNA project provided a good opportunity for this. The impact of ETHNA workshop discussions can be seen in various work areas (HR department, communication and marketing, data protection, programmes).

8. Results of the implementation process

In this section, the progress of the implementing organisations is assessed against the objectives of their Action Plans: which actions have been achieved within the planned timeframe, which were achieved with a delay, and which have not been completed. The scope and form of institutional changes induced by the application of the ETHNA System is also evaluated.

8.1 UJI

Most of the objectives set in the Action Plan have been achieved without major delays. The most prominent exception is the final approval of the regulations and the Code, which has been delayed for several months due to a clash with the university's electoral process. However, this was only a temporary setback and the Code has been approved in September 2022.¹⁰ Other pending objectives, yet to be accomplished, are those that have been identified and added during the implementation (creation of a specific committee focused on the evaluation of research projects/proposals about GMO; elaboration of a complete guide for the research community about the functioning of the different Ethics Committees; specific ethical criteria linked to the inclusion of AI in new research projects; ethics and methodological review of the use of students in research).

Some planned objectives have been partially achieved – the process has started, but needs to be further consolidated. For example, the Ethics Line has been reviewed and some details have been put into the context of the description of this tool, but the proposed improvements have yet to be implemented. These include an information campaign to make the Ethics Line well known in the university community, and a better delimitation of responsibilities and interrelation among the different units of UJI, which are involved in the operation of the Line (University Social Responsibility Committee, Ethics and Integrity Research Committee, Equality Unit, etc.).

An additional pending challenge is to consolidate a systematic procedure for training researchers in Research Ethics, including a training to promote the Code of Good Practices and the Ethical Committees. At the moment, UJI offers some training aimed at PhD students.

Scope and form of institutional changes:

- Elaboration and implementing of the Code of Good Practices in Research and Doctorate Studies.
- Creation of new structures for Ethics Governance: Ethics and Integrity Committee; Ethics in Research in Humans Committee; the Ethics Committee, the RRI Officer.
- New structure of the website on research ethics at UJI to ease the coordination and increase transparency.
- Coordination with the person responsible for the Animal Testing Service and proposal of new action to strengthen transparency.
- Development of an advisory system for the UJI research community.
- Updating of certain features of the Ethics Line.

8.2 NTNU

The Action Plan reflected the fact that there was no agreement about the fittingness and benefit of applying the ETHNA System at departmental level. It was therefore decided that the RRI Officer should be given the task of inquiring more in depth whether the building blocks of the ETHNA System would still provide

¹⁰ The Code can be accessed on the following link:
<https://www.uji.es/organs/ouag/sg/docs/cbp/?urlRedirect=https://www.uji.es/organs/ouag/sg/docs/cbp/&url=/organs/ouag/sg/docs/cbp/>

benefits in a context where most aspects of RRI have already been addressed by existing instruments at NTNU and activities within the department. The action plan was therefore focused on the following steps:

- a) A detailed analysis of the main five RRI instruments realised at NTNU.
- b) An in-depth analysis of internal stakeholders' ethical needs and attitudes towards the RRI keys, and their awareness and use of the existing RRI instruments at NTNU.
- c) Scoping of external stakeholders' expectations and experience in their interactions with the department.
- d) Preparation of a report about the possible benefits of adopting the ETHNA System or elements thereof.
- e) Presentation and discussion of the report with the leadership and with interested members of staff.

The original timeframe was not respected and delays were accumulated. Steps a) and b) have been completed, step c) was not completed, steps d) and e) are in the process of completion.

Scope and form of institutional changes:

Because of the long process needed to find a sub-organisation (department) within NTNU to run the Living Lab, the implementation process has been limited and delayed. So, at this time there are no sustainable institutional changes to be reported.

8.3 Harno

Of the 16 actions provided in the Action Plan, 12 have been completed. The foreseen timeframe for the completion of the latest version of the Code of Ethics and Good Practices was too optimistic. It was planned for July 2022, but completed in November 2022. The approval of the Code by the top management was planned for August 2022, however, it is due to take place in December 2022. Likewise, the publication of the Code, planned for September 2022, has also been postponed to December 2022. The final activity, foreseen in the Plan, is the monitoring – it will be carried out as planned in February 2023.

Scope and form of institutional changes:

This is still an ongoing process. The first actions were made in HR department, and in connection with communication, marketing and data protection. As the new funding programmes begin, negotiations are underway to include RRI elements in the application guidelines.

8.4 Espaitec

The Action Plan elaborated by Espaitec consisted of 23 actions. By the time of preparation of this report, 12 actions have been successfully executed. The most recent action to be completed is the launch of a participatory process with stakeholders from Espaitec to discuss the first draft of the Code of Ethics and Good Practices (CEGP).

Implementation at Espaitec started later than at other implementers, as the organisation joined the process subsequently to replace another organisation. Not being involved in the preparation of the implementation process, Espaitec needed time to analyse how to implement the ETHNA System and to adapt the methodology guide to its needs and circumstances. The limited human resources, time and knowledge on the subject additionally slowed down the process.

In November 2022, when the implementation process was planned to be completed, Espaitec continued to work on the first draft of the CEGP. After consulting with stakeholders and interest groups, the implementing team decided to adapt the proposed measures and make sure that the CEGP will be adequate to the needs of the organisation and applicable to actions undertaken at Espaitec on a daily basis.

Scope and form of institutional changes:

Since the ETHNA System has not yet been fully integrated into Espaitec, no institutional changes can be reported yet. However, it is expected that once the Gender Plan is put in place, it will incorporate some of the ETHNA added value elements from the Column Block of Gender, enabling substantial changes in the organisation.

8.5 UNINOVA

For the priorities of each goal in the Action Plan, a short-, medium- or long-term time period was assigned. Most of the goals that were not achieved were those for which a longer period of implementation was necessary. The same is true for the actions. The majority have been successfully accomplished, apart from those with the long implementation periods. In the first place, these are all activities related to monitoring the level of compliance of employees and the organisation with the Code of Ethics and Good Practices.

Scope and form of institutional changes:

Considering the specific nature of the research centre, such as UNINOVA, in which most researchers are employees of other institutions (Universities and Polytechnic Institutes) and thus already subject to different ethics regulations, the implementation of the ETHNA System focused mainly on complementarities.

Additionally, considering that all members of UNINOVA are mostly busy with their own research activities and no resources are available to create additional organisational structures, the changes were limited to:

- Creation of a RRI Committee
- Elaboration of a number of key documents on various RRI aspects (Code of Ethics and Good Practices in Research and Innovation, Open Access Guidelines, Gender and Inclusion Equality Plan)
- Establishing a specific awareness-raising section on UNINOVA's web site.
- Organisation of training sessions for young researchers / PhD students.

8.6 ARC Fund

The rather ambitious Action Plan has foreseen 22 different activities. Of these 11 were fully completed, 3 were partially achieved, and 9 have not been finished yet.

Actions achieved within the planned timeframe include the development of the Implementation Plan, meeting with the senior management, selection of the RRI Officer (only informal decision), setting up of a working group to write the Code of Ethics and Good Practices in R&I, mapping of external stakeholders, development of the first draft of the Code of Ethics and Good Practices in R&I, workshop with internal stakeholders, writing of the second draft of Code of Ethics and Good Practices in R&I, recruitment of external stakeholders, workshop with external stakeholders to present/promote the ETHNA System and the draft of the Code of Ethics and Good Practices, and a report about the ETHNA System implementation.

Actions partially completed:

- Final version of ARC Fund's Code of Ethics and Good Practices in R&I (planned for March 2022). The finalised document was presented to the Board of Trustees in August and was rejected with the explanation that it resembled a project deliverable rather than a Code of Ethics the personnel was supposed to follow. A demand was made for a thorough revision of the document and its division into four distinct documents: Code of Ethics and Good Research Practices; Gender Equality Plan; Open Access Policy; and Public Engagement Policy. By November 2022, only the Gender Equality Plan has been finalised and approved. Other three documents are being finalised and pending approval by the Board in early 2023.

- Evaluation of the ETHNA System implementation (planned for August 2020 – an ongoing process, but the first comprehensive evaluation of the process has been completed in November; different evaluation activities will continue not just until the end of the project, but also afterwards as part of the annual evaluation and reporting process at ARC Fund).
- Annual reporting on RRI performance in ARC Fund's annual report (started with the ARC Fund's Annual Report in December 2022 and planned to continue in the forthcoming Annual Reports).

Actions not performed:

- Set up the Advisory Group to discuss the second draft of the Code (planned for February 2022). It was decided that due to the small size of ARC Fund, creation of an Advisory Group would not make sense and instead the entire staff was invited to read and comment on the draft document – this has been accomplished in the period May-June 2022).
- Establish Research Ethics Board (planned for March 2022 – only informal approval of the Board of Trustees has been given, but the formal decision and selection of the members of the Research Ethics Board have yet to take place).
- Training on research ethics for all members of staff (planned for May 2022 – will be organised after the Code of Ethics and Good Research Practices is finalised and endorsed by the Board of Trustees, possibly in February 2023).
- Training of research staff on public engagement methods (planned for June 2022 – will be organised after the Public Engagement Policy is finalised and endorsed by the Board of Trustees, possibly in February 2023).
- Training of research staff on gender equality and diversity issues in research (planned for June 2022 – will be organised in February 2023).
- Training of research staff on open access issues (planned for July 2022 – will be organised after the Open Access policy is finalised and endorsed by the Board of Trustees, possibly in February 2023).
- Review workshop with internal stakeholders (planned for September 2022 – not conducted due to delays in the implementation process, which means that at the planned date, there were no new and important developments to review).
- 'RRI' dialogues with relevant external stakeholders (planned for September 2022 – not conducted due to delays in the implementation process, but also because it was decided that external stakeholders cannot really contribute to the process in a productive way).

Scope and form of institutional changes:

At the time of writing of this report, no actual sustainable institutional changes have taken place yet. Due to the slower than envisaged progress with the implementation, the institutional changes will not occur before the first months of 2023. The senior management (the Board of Trustees) has confirmed its commitment to establish the positions of the RRI Officer and to set up the three-member Research Ethics Board, but this has not yet been formalised. An official decision about both bodies is expected in early 2023.

The Code of Ethics and Good Research Practices of ARC Fund acknowledges the organisation's deep commitment to the principles of Responsible Research and Innovation and builds on the existing organisational documents such as Code of Conduct, Code of Ethics and the Child Protection Policy. The Code will further enhance ARC Fund's adherence to the RRI principles, setting up a flexible ethics governance system for the management of organisation's research activities. The Code of Ethics and Good Research Practices, Gender Equality Plan, Open Access Policy and Public Engagement Policy are expected to be endorsed in the coming months. When this happens, the first stage of the institutional change process will be completed.

9. Evaluation and monitoring of the implementation process

The progress towards achieving institutional changes was monitored and measured through the application of relevant progress and performance indicators. Most of these indicators have been proposed by the implementation methodology and therefore common for all implementers, but some were added to correspond with specific activities and goals of individual implementing organisations. The full list of potential indicators can be seen in the Toolbox to Implement the ETHNA System.¹¹

At UJI, the monitoring has been continuously applied throughout the entire implementation process. The process was supervised by the Senior Management team members and regularly discussed with other relevant experts of UJI. Based on these discussions, amendments and changes were proposed, and the process has been updated.

Monitoring indicators at Harno have been selected from the ones proposed in the Toolbox to Implement the ETHNA System. Monitoring of the process has been carried out by the RRI Officer. The first monitoring report will be presented to the top management in February 2023.

At Espatec, a set of KPIs will be established to monitor the progress of the implementation of the institutional changes induced by the application of the ETHNA System, but this will be done only after these changes have actually occurred.

Similarly, UNINOVA considers that it is not yet possible to measure the impact of the implementation, given the short time since the end of the process. Nevertheless, for specific actions and activities, monitoring and evaluation have been conducted.

At ARC Fund, the progress towards achieving institutional changes was monitored and measured by the Lab Manager, using the indicators proposed in the Toolbox to Implement the ETHNA System.

Progress indicators

The table below lists the progress/performance indicators from the Action Plans of the six implementing organisations and shows which indicators have been achieved during the implementation process.

Table 1: Progress Indicators

Indicator	UJI	NTNU	Harno	Espatec	UNINOVA	ARC Fund
Implementation Plan / Action Plan developed	✓	✓	✓	✓	✓	✓
Meeting with senior management held	✓	✓	✓	✓	✓	✓
Level of commitment to the ETHNA System determined	✓	✓	✓	✓	✓	✓
Self-assessment of the preconditions for the implementation of the ETHNA System done	✓	✓		✓		✓
Self-assessment report written	✓					
Nomination of the RRI Officer	✓	✓	✓	✓	✓	✓
Designation of the RRI Officer	✓	✓	✓	✓	✓	
List of the core duties of the RRI Officer	✓			✓	✓	✓
Actions undertaken by the RRI Officer	✓		✓			
Working group to write the Code of Ethics and Good Practices in R&I (CEGP) formed	✓			✓	✓	✓
Goals, actions, and responsibilities of the working group defined	✓			✓		✓

¹¹ González-Esteban, Elsa et al (2021). *The ETHNA System - A Guide to the Ethical Governance of RRI in Innovation and Research in Research Performing Organisations and Research Funding Organisations*. https://ethnasystem.eu/wp-content/uploads/2022/07/D4.2_ETHNA_2022_guide_220210_incl_toolbox_neu.pdf.

Indicator	UJI	NTNU	Harno	Españtec	UNINOVA	ARC Fund
Meetings of the working group held regularly	✓			✓	✓	✓
Decision made which RRI areas to be covered by CEGP	✓			✓	✓	✓
List of external stakeholders to be involved	✓	✓	✓	✓		✓
First draft of CEGP written	✓			✓	✓	✓
Participatory process with internal stakeholders to discuss the first draft of CEGP launched	✓	✓		✓	✓	✓
Meetings with strategic internal stakeholders to discuss the content of the CEGP	✓			✓	✓	✓
Workshop with internal and external stakeholders to present the first draft of the CEGP and receive feedback	✓			✓	✓	
Suggestions for improving or updating the Code received	✓		✓	✓		✓
External stakeholder consultations	✓	✓	✓	✓		
Second draft of CEGP written	✓			(in process)	✓	✓
CEGP finalised	✓					(in process)
Endorsement of CEGP by the management	✓			(in process)		(in process)
Actions to promote RRI key Ethics and Research Integrity	✓				✓	✓
Actions to promote RRI key Gender Equality and Diversity				✓	✓	✓
Actions to promote RRI key Public Engagement				✓		✓
Actions to promote RRI key Open Access	✓				✓	✓
Research Ethics Board formed and started its work	✓					
Responsibilities and tasks of Research Ethics Board defined	✓					✓
Members of the Board trained to uphold CEGP						
Workshop with external stakeholders to promote the ETHNA System						
Organisation has taken actions to raise internal awareness concerning the Code of Ethics and Good Practices	✓	✓	✓	✓	✓	✓
Organisation and implementation of the training on research ethics	(in process)				✓	
Organisation and implementation of the training on public engagement methods						
Organisation and implementation of the training on gender equality and diversity						
Organisation and implementation of the training on open access issues						
Implementation process evaluated against the indicators	✓	✓	✓	✓	✓	✓
Evaluation results discussed at workshop with internal stakeholders						
Actions to promote the ethics governance of R&I in line with the ETHNA System	✓			✓	✓	

Indicator	UJI	NTNU	Harno	Españtec	UNINOVA	ARC Fund
Actions to boost visibility of the ETHNA System	✓		✓		✓	
Analysis of the content of the existent Ethics Line	✓					
Organisation has designated a person responsible for the Ethics Line	✓					
Operating guide to receive and manage notifications via the Ethics Line produced	✓					
Group of experts or bodies responsible for managing and resolving notifications received via the Ethics Line designated	✓					
The way in which the information collected and managed through the Ethics Line is archived determined	✓					

10. Sustainability of institutional changes

This section describes the measures that have been or will be undertaken to ensure that the institutional changes induced by the ETHNA System will be long-lasting or permanent. It also discusses the wider potential of institutional changes at the six organisations (the effects of the institutional changes on the external stakeholders). It needs to be noted that not enough time has passed since the end of the implementation, making it quite difficult to talk about real sustainability at this point. Nevertheless, this chapter looks at the sustainability plans that can already be envisaged.

10.1 UJI

Sustainability of the adopted institutional changes is ensured because they have been incorporated into the new structure of the university. On top of that, several persons, who were involved in the project have relevant job positions in the different structures (for example, a CERSU member, a member of the Ethics Committee and a Vice-Rector for Social Responsibility, Inclusive Policies and Equality). Another important achievement is the consolidation of the RRI Officer position with a long-time job contract.

For the time being, it is too soon to assess the effects of the institutional changes on the external stakeholders. While it is possible to evaluate certain short-term impacts of the Code and the Ethics Committee towards the internal stakeholders, a considerable time needs to pass before their impact on the external stakeholders can be noticed. The Code of Good Practices is the result that has provoked most reactions to date from different institutions. The Catalan Institute of Classic Archaeology has stated their intention to adhere to UJI's Code, and to use the glossary (especially the gender section) for their own institution.

10.2 NTNU

For NTNU, the issue of sustainability and wider impact of the institutional changes is not applicable, as at the time of writing of this report, there are no substantial institutional changes to be reported, apart from the mapping process that could lead to institutional changes in the long term.

10.3 Harno

Activities of the RRI Officer at Harno will be supported by Data Protection Specialist, Communication Managers, and Personnel Manager, which should support the sustainability of this new position. Harno's CEO has publicly declared his support for ETHNA's activities on several occasions, which among others provides favourable ground for the 2024 budget negotiations.

All external stakeholders (ministries, Estonian Science Agency, representatives of universities) have a positive attitude towards the process implemented at Harno. They have never refused help and have gladly participated at Harno's events for external stakeholder engagement.

10.4 Espaitec

Bearing in mind that Gender Plan of Espaitec and the ETHNA System will be interconnected, the requirement of updating the Gender Plan will foster the sustainability of the system.

10.5 UNINOVA

For UNINOVA and its Centre of Technology and Systems (CTS), the most important and long-lasting measure is the change of culture. This is rather difficult to achieve with older/senior researchers, who have their own habits and autonomy. Therefore, the emphasis was placed on the training of young researchers. CTS hosts about 100 PhD students and all of them have received specific training on RRI, which is expected to be the most effective mechanism for changing the culture.

At a more "political level," the tools provided by the ETHNA System helped CTS to comply with its contractual obligations towards the national research funding agency. In the past, this was a very long process with many "political" hurdles.

Before the ETHNA System implementation, CTS had no experience of discussing RRI with external stakeholders. As a result of the implementation exercise, various contacts and working sessions with external stakeholders took place. The general reaction was quite positive and good feedback was obtained to improve the Centre's key RRI documents and plans. These interactions opened some initial directions for further collaboration (new project proposal, joint conference paper, etc.).

10.6 ARC Fund

Once endorsed, the four documents (Code of Ethics and Good Research Practices; Gender Equality Plan; Open Access Policy; and Public Engagement Policy) will become the fundamental documents guiding the ARC Fund's personnel in all of their professional endeavours and guaranteeing that all their actions are respecting the following values :

- honesty, transparency and research integrity;
- commitment to excellence;
- accountability to the public;
- protection of the rights and interests of data subjects in research;
- beneficence (commitment to the public good);
- non-maleficence (doing no harm or minimising the risk for harm);
- respect for people and their human dignity regardless of their gender, ethnic origin, culture, language, religion, beliefs, abilities, limitations, sexual orientation or social status;
- inclusiveness and social justice;
- support of children's development and well-being; and
- placing the welfare of children above those of individual adults or other stakeholders.

In addition, the sustainability of other changes, such as establishment of the RRI Officer and the Research Ethics Board, will be ensured by their long-term mandates. Two Board members will be selected among ARC Fund's senior management or senior research staff for a period of two years, with a possibility of re-election for another term (two consecutive terms in total). The third Board member will be a renowned representative of the research or business community, possessing both the professional and personal qualities and experience that are prerequisite for such a position. S/he will serve for one two-year term, after which a new external stakeholder will take over the next mandate. The RRI Officer will be appointed for a term of two years, with a possibility of reappointment for another term (two consecutive terms in total).

At this point, with institutional changes still being at their very initial stage, the potential and their effect on external stakeholders cannot be evaluated.

11. Conclusion and Recommendations

The ETHNA System, a flexible ethics governance system, has been experimentally implemented in four different Responsible Research and Innovation (RRI) contexts:

- higher education,
- research funders,
- innovation ecosystem,
- research centre

The implementation process, divided into six stages (planning; construction; consultation; refinement; testing; review) lasted approximately one year (November 2021 – October 2022). In most cases, this originally foreseen duration proved to be insufficient and when the time came for evaluation of the process (November 2022), none of the six implementers was in the position to claim that all the actions and objectives from their Action/Implementation Plan have been completed and/or achieved. This is an important finding in itself – a one year period is not enough to plan, construct, test and successfully implement such an important and far-reaching institutional change. Still, even incomplete, the ETHNA System implementation process has resulted in a large number of valuable insights and recommendations.

Based on the experiences of the six organisations, which tested the implementation of the ETHNA System, the following recommendations for the future users of ETHNA System can be made:

Co-creation process is essential

One of the most rewarding and beneficial aspects of the process was the co-creation – numerous members of all implementing organisations participated in different capacities, co-creating and shaping the final outcome of the process. Interviews, focus groups and surveys were used to obtain information about what works well, what needs to be reformed or updated, and what is missing in the organisation's approach to ethics governance of research and innovation. Enriching debates and a fruitful participation of a large variety of internal stakeholders not only improved the quality and relevance of the Codes of Ethics and other documents developed by the implementers, but also guaranteed that these documents were not seen by the personnel as something imposed on them from the top.

Less is more – plan realistically

When planning the process, it is crucial to be modest and realistic about the objectives to be achieved. Even for large organisations such as universities, trying to simultaneously write a new Code, set up different committees and reform or introduce the Ethics Line is simply too ambitious – especially in a one-year period. Such undertakings require considerable resources in terms of effort, time and budget, dedicated involvement of people tasked with the implementation of the plan, and an unwavering support of the management. It is also important to keep in mind that it is not always possible to bring into practice the foreseen action plan, therefore it is necessary to be flexible and ready to make the needed changes as the implementation process unfolds.

Prioritisation is allowed – focus on what is important for your context

ETHNA is a *flexible* ethics governance system. It is neither required, nor even recommended to adopt it in its entirety. The experience of the implementers shows that the most effective approach is to focus on those aspects that are (perceived as) important for the organisation. To start with, the ETHNA System provides substantial freedom for organisations considering to implement it, offering three levels of implementation and numerous combinations and variations of the use of the building blocks. The methodology for the implementation is likewise not set in stone. If the envisaged discussion workshops are not appropriate for your organisation, you can use other methods such as interviews, focus groups, seminars or webinars to obtain feedback from the (internal and/or external) stakeholders.

Do not reinvent the wheel – reform and update

Many organisations already have their Ethics Code, Gender Equality Policy, Ethics Committee and other resources similar to the ones included in the ETHNA System. The idea of the ETHNA System is by no means to create another complex and bureaucratic organisational structure that would duplicate the work of already existing ones. What the ETHNA System does, however, is to provide an excellent opportunity to rethink and reassess the current organisational units and documents, and – if this is the outcome of the evaluation – to update, reform and reinvigorate them.

The gap between approval and engagement

For most implementers it was fairly easy to convince their colleagues and even the management about the relevance and benefits of the ETHNA System, and the importance of RRI principles in general. This recognition, however, does not necessarily mean that there will be an army of volunteers wanting to contribute to the implementation. Most researchers (and other employees) are busy with their own obligations and tasks and will not be available to participate in all the activities envisaged in the Action Plan (again – be realistic and focus on what is really important!). Despite the approval, the lack of actual engagement of the leadership can also delay or even stop the process.

Everything has been done – so where are the results?

After the long and sometimes exhausting implementation process, those responsible for steering it would most certainly enjoy the opportunity to sit back and observe the results of their hard work. Alas, most of the results and impacts need a longer period of time to become visible. Ethics Committee or Research Ethics Board will not start receiving and solving complaints from Day 1. It takes time for the personnel to recognise, get used to and start communicating with the new unit. The same goes for the RRI Officer, Ethics Code and Ethics Line. A one-year period after their introduction is a minimal time that needs to elapse before the first assessment of their performance is possible. One of the most important long-term goals of the ETHNA System should be the change of culture – a process that usually takes many years.

One size does not fit all

The Toolbox to Implement the ETHNA System and the ETHNA System Guide to the Ethical Governance of RRI are very practical documents, with useful step-by-step instructions about how to implement the ETHNA System and develop its tools. Keeping in mind the recommendations listed above, they can be easily applied in research-performing and research-funding organisations of all types and sizes. However, the Living Lab methodology is applicable only for larger (or at least medium sized) organisations, and does not really work in small institutions. The ambitious cycle of several workshops and trainings foreseen in the methodology necessitates having at your disposal a sufficient number of relevant internal stakeholders. Trying to apply the same model in very small organisations can easily become an additional burden being imposed upon the researchers.

The necessary requirements and conditions that organisations need to fulfil to implement the ETHNA System:

1. Before implementing the ETHNA System in an organisation, it is essential to analyse the internal organisational situation and based on this analysis to make the decision about the level and type of implementation, and whether the organisation has the necessary resources (including human) to conduct the process.
2. The organisation needs to be committed and convinced that the adoption of ethics management tools is important. It is crucial to involve the organisation's leadership in the process.
3. The organisation must set up a work team that actively manages the implementation process. The team can be relatively small, but it needs to be committed, proactive and able to adapt the ETHNA System tools to the needs of the organisation. Adequate financial resources also need to be provided. It should be noted that the team will not be responsible only for implementation, but should be also provided with the jurisdiction and resources to perform continuous monitoring and updates.
4. In organisations with no financial or other resources to support a position such as the RRI Officer, implementation of the ETHNA System is only possible if someone is willing to take up the responsibility to plan, execute and monitor the process. A dedicated expert with considerable experience in RRI topics and research governance is an absolute must.
5. If the implementing entity is a smaller unit within a larger institution (a department within a faculty, or a faculty within a university), it needs to have a very clear communication with the higher organisational levels, and proceed with the implementation only after obtaining the necessary approval. It is very important to discuss which elements of the ETHNA System are appropriate for which organisational level and to have good communication and collaboration between different levels.
6. The already high administrative demands and constraints for staff, heavy workload, lowered job safety and stability, increased international competition – there are many reasons for researchers to be distrustful of initiatives coming from the top, and to perceive them as irrelevant to their needs and priorities. It is therefore very important to find the right way of involving the base and allowing them the space to adapt the ETHNA System to their real needs and ethical priorities. The researchers need to be convinced about the benefits of adhering to the ethical conduct of scientific investigation. The management must find a proper way to stimulate the personnel to take up the RRI principles and engage them in the co-creation process for reforming the 'business-as-usual' approach to research in the organisation.
7. External incentives, such as the EU funding requirements (e.g. in case of a Gender Equality Plan) or participation in a project such as the ETHNA System, can kickstart the process and even assure that certain objectives are implemented, but they alone cannot guarantee the sustainability of the institutional changes.
8. Organisational instruments like the Codes of Conduct, policies and procedures can be a double-edged sword. They can be supportive and empowering, and can provide the background against which important issues can be discussed, but they can also become formalistic, lifeless, and alienating, or may even be perceived as a sign of distrust. To ensure the former and avoid the latter, organisations must make certain that the ETHNA System is not perceived as agenda-setting and as being misaligned with the context and needs of the staff.
9. The organisation should not approach the ETHNA System with the thought that the more instruments are adopted, the better the result. If the ETHNA System can work as a tool for reflection that helps the organisation to articulate their most urgent ethics priorities, this is an excellent result in itself. An ethics governance has to be an empowering governance that fosters a sense of responsibility and ownership of the organisational practices and goals.
10. There is no one-size-fits-all solution. The ETHNA System can be an excellent source for ideas and inspiration, but each organisation should develop its own path towards the RRI-paved institutional change. A small but sustainable change is better than an overambitious plan for change that never comes to fruition.

ANNEX - EVALUATION OF THE IMPLEMENTATION OF THE ETHNA SYSTEM (QUESTIONNAIRE)

Objectives:

1. Identification of the necessary conditions required to implement the ETHNA System;
2. Identification of barriers, risks, drivers and good practices from ETHNA System implementation;
3. Description of actions and activities necessary to support and maintain the new RRI management system and processes;
4. Assessment of potential scope and form of institutional changes induced by the application of the ETHNA System in organisations and evaluation of wider socio-economic potential of institutional changes;
5. Recommendations to other organisations interested in implementing the ETHNA System.

Introduction:

1. Your organisation is:
 - A university
 - A higher education funding agency
 - A technological park
 - An applied research institute
 - A private research centre
2. How many employees does your organisation have? (*Note: If your organisation is a large one, and the Living Lab approach was applied only in one entity (unit, department, faculty, etc.), then provide information for this entity as well*)
 - 1-20
 - 21-50
 - 51-100
 - 101-200
 - 201-500
 - More than 500

Identification of necessary conditions required to support and implement the ETHNA System:

1. Which of the following statements is closest to describing the situation in your organisation:
 - There were no discussions about the need to implement a governance structure similar to ETHNA System (in its entirety or partially) before our participation in the ETHNA System project.
 - There was a vague idea that a governance structure similar to the ETHNA System (in its entirety or partially) could be beneficial, but there were no concrete plans how to implement it before our participation in the ETHNA System project.
 - There was a rather well-developed plan to implement a governance structure similar to ETHNA System (in its entirety or partially), but for different reasons it has not been carried out until our participation in the ETHNA System project.
 - There already was a governance structure similar to ETHNA System (in its entirety or partially) in place in our organisation, and we used the participation in the ETHNA System project to refine and update it.
 - If none of the above statements relates to the situation in your organisation, please describe it in your own words:

2. Where would you place your organisation in the ETHNA RRI Institutionalisation Quadrants figure (see D4.2, p. 15)?

- Strong leadership / strong base quadrant
- Strong leadership / weak base quadrant
- Weak leadership / strong base quadrant
- Weak leadership / weak base quadrant

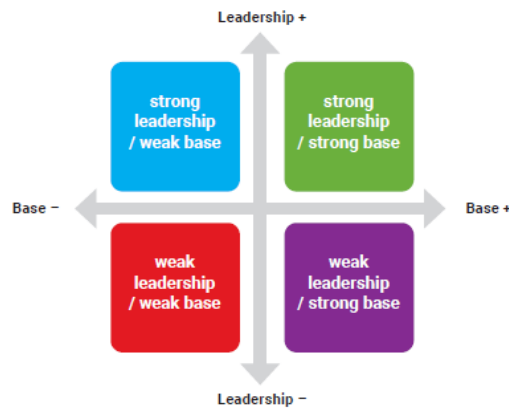


Figure 1|ETHNA RRI Institutionalisation Quadrants - leadership and the base

The ETHNA System is designed to work for all quadrants except the lower left one, i. e. weak leadership in combination with a weak base; the prerequisite for the ETHNA System to work is that at least one dimension needs to be somewhat strong, otherwise there is nothing to build on.

3. Please briefly explain your answer (up to 200 words):

4. Which level of institutional commitment did your organisation choose?

- Level 1 (The organisation appoints an RRI Office(r) and supports its activity).
- Level 2 (The organisation implements some of the Column Blocks: the Code of Ethics and Good Practices in R&I, the Ethics Committee on R&I and/or the Ethics Line).
- Level 3 (The organisation fully develops the ETHNA System).

5. Please briefly explain this decision (up to 200 words):

6. List the ETHNA/RRI related resources that existed in your organisation before the start of the implementation process (e.g. relevant units, departments and/or positions; documents and strategies; practices and projects) and briefly describe how they have contributed to the ETHNA System implementation (up to 300 words):

7. Describe the role of the Lab Manager – previous experience (if any) with the RRI framework, tasks and responsibilities in the implementation process, ETHNA System related duties after the completion of the Living Lab (if any) (up to 200 words):

8. (*Note: This question concerns only those implementing organisations, in which Lab Manager and RRI Officer were different persons*) Describe the role of the RRI Officer – previous experience (if any) with the RRI framework, tasks and responsibilities in the implementation process, ETHNA System related duties after the completion of the Living Lab (if any) (up to 200 words):

9. Describe the role of other persons involved actively in the implementation process – previous experience (if any) with the RRI framework, tasks and responsibilities in the implementation process, ETHNA System related duties after the completion of the Living Lab (if any) (up to 200 words):

Implementation process – barriers, drivers and good practices

For each of the six main implementation stages, describe the main barriers that had to be dealt with and how were they overcome, the main drivers that supported the implementation process, and the main good practices that emerged during the implementation. The description of barriers, drivers and good practices for each implementation stage should not be longer than one page!

Examples of possible barriers: lack of resources (human/financial/time/etc.) to deal with RRI issues; lack of awareness and/or understanding about specific RRI key areas; lack of support from the leadership to launch or implement RRI keys; lack of institutional support structures and practices for certain RRI keys.

Examples of possible drivers: existing initiatives for the institutionalisation of RRI; good knowledge and experience with RRI keys or the entire concept; relevant human, institutional or/and financial resources are available.

Good practices: original solutions emerging during the implementation process to overcome the barriers or make good use of the drivers.

If needed, further ideas for the barriers, drivers and good practices for each stage (from the final version of the ETHNA system concept) can be found at:

<https://docs.google.com/spreadsheets/d/1HHBEg9YRhFvz995usqYyAvPsa140qF12/edit#gid=1838332955>

1. Planning Stage:

Barriers:

Drivers:

Good practices:

2. Construction Stage:

Barriers:

Drivers:

Good practices:

3. Consultation Stage:

Barriers:

Drivers:

Good practices:

4. Refinement Stage:

Barriers:

Drivers:

Good practices:

5. Testing Stage:

Barriers:

Drivers:

Good practices:

6. Review Stage:

Barriers:

Drivers:

Good practices:

Results of the implementation process

1. Action Plan: please revisit the Action Plan you designed during the Planning Stage and make a critical assessment of the Plan's implementation. Which actions have been achieved within the planned timeframe, which were achieved with a delay, which have not been completed? Provide a brief explanation for the delayed or not implemented actions (up to 300 words):
2. Progress and performance indicators: in the table below list the progress and performance indicators from the Action Plan and evaluate the implementation process using these indicators.

Progress Indicator	Realised / Not realised	Quantification (if applicable)	Means of verification (if applicable)
<i>Example: Designation of RRI Officer</i>	Yes		
<i>Example: List of external stakeholders</i>	Yes	25 stakeholders listed	
<i>Example: Workshop with external stakeholders</i>	No		
<i>Add as many rows as needed</i>			

Performance Indicator	Realised / Not realised	Quantification (if applicable)	Means of verification (if applicable)
<i>Example: The level of commitment to ETHNA System determined</i>	Yes		
<i>Example: Actions undertaken by RRI Officer</i>	Yes	6 actions taken	
<i>Example: Suggestions for improving or updating the Code received</i>	No		
<i>Add as many rows as needed</i>			

3. Scope and form of institutional changes induced by the application of the ETHNA System: Describe the most important institutional changes, which occurred in the organisation as a result of the implementation process (up to 400 words):

4. How was the progress towards achieving institutional changes monitored and measured? Which were the main progress and performance indicators? Who monitored and evaluated the process? (up to 400 words):
5. Sustainability of institutional changes: Describe the measures that have been / will be undertaken to ensure that the institutional changes induced by the ETHNA System will be long-lasting or permanent (up to 200 words):
6. Wider potential of institutional changes at your organisation: Describe the effects of the institutional changes at your organisation on the external stakeholders (reactions, comments, opinions, plans) (up to 200 words):
7. In hindsight, what worked well and what would you do differently (up to 300 words):

Recommendations

1. Please describe the necessary requirements and underlying conditions that organisations similar to yours would need to fulfil to implement the ETHNA System (up to 200 words):
2. Do you have any other recommendations for other organisations interested in implementing the ETHNA System in terms of the most important actions and activities they would need to undertake (up to 200 words)?