



Ethics Management Plan

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Abstract	<p>This deliverable outlines the principles and guidelines for ethical conduct within the SoFAIR project. The plan ensures that all project members are aware of their responsibilities and obligations, adhere to recognized ethical practices, and maintain transparency and integrity throughout the research process. It aims to promote ethical behaviour, protect participants' rights, and uphold the reputation of the research community. By implementing this Ethics Management Plan, the SoFAIR team aims to uphold the highest ethical standards, safeguard the well-being of participants, and maintain the trust and integrity of the research endeavour.</p>

Version and Revision History

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1.0	28.03.2024	Nikodem Wołczuk (Author)	Final version for submission

List of Acronyms

CLARIN	Common Language Resources & Technology Infrastructure
CORE	COncecting REpositories
DARIAH	Digital Research Infrastructure for the Arts and Humanities
DoW	Description of Work
EC	European Commission
EMP	Ethics Management Plan
EOSC	European Open Science Cloud
EU	European Union
Europe PMC	Europe PubMed Central
FAIR	Findability, Accessibility, Interoperability, Reusability
GA	Grant Agreement
GDPR	General Data Protection Regulation
GROBID	GeneRation Of Bibliographic Data
HAL	Hyper Articles en Ligne
ML	Machine learning
PID	Persistent identifier
SoFAIR	Software FAIR
SWH-ID	SoftWare Heritage persistent IDentifier

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Executive Summary

This document presents the Ethics Management Plan (EMP) which serves as a comprehensive framework to ensure the ethical integrity of the SoFAIR project. Designed to guide the research team in upholding the highest standards of ethical conduct, this plan addresses key ethical considerations across all stages of the project.

The foundation of this Ethics Management Plan lies in adherence to established ethical principles, including respect for human dignity, integrity, transparency, and accountability. Recognizing the potential impact of research on individuals, communities, and society at large, we commit to prioritizing ethical considerations throughout the project lifecycle.

The EMP is envisaged as a living document that will be updated throughout the life of the project. This approach ensures that it can respond to potentially changing conditions. Three documents have been chosen as the basis for this plan: *The European Charter for Researchers*¹ defined in the SoFAIR proposal, ALLEA's *The European Code of Conduct for Research Integrity*², and European Commission guidelines *How to complete your ethics self-assessment*³. Based on these, an analysis of potential ethical issues in the project was made, sensitive areas were identified and commented on.

¹ European Commission (2005) The European Charter for Researchers. The Code of Conduct for the Recruitment of Researchers. Luxembourg.

https://euraxess.ec.europa.eu/sites/default/files/brochures/am509774cee_en_e4.pdf

² ALLEA (2023) The European Code of Conduct for Research Integrity – Revised Edition 2023. Berlin.

<https://doi.org/10.26356/ECOC>

³ European Commission (2021) EU Grants. How to complete your ethics self-assessment, Version 2.0.

https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/common/guidance/how-to-complete-your-ethics-self-assessment_en.pdf

1. Introduction

1.1 Project description

The SoFAIR project aims to significantly enhance the visibility, attribution, and reusability of open research software, thereby fostering a more FAIR research ecosystem. Currently, much open research software remains hidden within research papers, hindering its visibility and accessibility. To enhance the management of research software, the SoFAIR project proposes to extend existing scholarly infrastructures and tools operated by the consortium partners. This extension will involve:

1. Utilising machine learning (ML) to identify research software assets within scholarly papers.
2. Validating identified assets with authors.
3. Registering software assets with persistent identifiers (PIDs) for improved findability, accessibility, interoperability, and reusability (FAIR principles).

The solution will be optimised for deployment across open repositories aggregated by CORE, which hosts a vast collection of open access documents. ML software for asset extraction and disambiguation will be integrated into the GROBID tool. The project will adhere to established protocols such as OpenAIRE Guidelines v4.0, RIOXX v3, and Codemeta to encode information about software assets and their connections to research manuscripts, ensuring an interoperable and extensible workflow. This workflow will connect open repositories (represented by HAL), aggregators (represented by CORE), and software archives (represented by Software Heritage).

Validation of the developed tools and workflow will occur through three use cases:

1. A life sciences demonstrator focusing on Europe PMC.
2. A multi-disciplinary demonstrator targeting institutional repositories (represented by HAL).
3. A digital humanities case study with links to DARIAH and EOSC.

SoFAIR aims to enhance and partially automate the process of identifying, describing, registering, and archiving research software, ensuring each receives a Software Heritage persistent identifier (SWH-ID). Leveraging widely used open source tools like GROBID and open scholarly infrastructures such as CORE, Europe PMC, HAL, and Software Heritage operated by consortium members, the solution ensures rapid and extensive adoption across the global scholarly ecosystem of open repositories, providing clear pathways to impact.

Aligned with the FAIR agenda, Horizon Europe initiatives on open research data and software, and European infrastructures like EOSC, CLARIN, and DARIAH, the project employs various open protocols and recommended scholarly metadata standards (e.g., CodeMeta, OpenAire Guidelines, Rioxx, and Signposting). These standards describe identified, enriched, and curated research software assets as interoperable metadata, linking them explicitly to research manuscripts.

Additionally, the project will establish a new reference gold dataset, manually annotated for training machine learning tools. These tools will advance the state-of-the-art in automatic identification, enrichment, and disambiguation of software mentions.

By reducing barriers for research software to adhere to FAIR principles, the project aims to revolutionise the discovery, accessibility, and referencing of research software. This not only fosters software reuse and reproducibility but also encourages the creation of new research software.

1.2 Deliverable Description

The purpose of this deliverable is to ensure that all research activities in the SoFAIR project are conducted in an ethically responsible manner, adhering to relevant laws, regulations, and ethical standards. The EMP is designed to promote transparency in decision-making processes, help to identify and mitigate ethical risks, enhance stakeholder trust, assign responsibilities for ethics management, and foster continuous improvement in ethical conduct. It serves to guide the ethical conduct of research activities, ensuring integrity and benefiting society while respecting the rights and welfare of all stakeholders involved.

The main documents on which this document is based is the Description of Work (DoW). Additional information on ethical issues was obtained from the European Commission's guidance documents on the subject and CHIST-ERA recommendations. Details of these documents are provided in section 2. Relevant regulations.

This document is the result of work in T1.4 Management of ethics.

1.3 Preparation & Methodology

In preparation for the work on the EMP, Description of Work was analysed as the underlying document of the SoFAIR project. Based on these, documents were selected to provide a baseline set of guidelines and instructions on potential ethical issues that may arise during project implementation. A description of the documents underpinning the identification of ethical risks is provided in section 2. Relevant regulations.

The project used a self-assessment check approach, based on potential ethical risks identified in guidelines from the European Commission, among others.

The Ethics Management Plan is being developed in close conjunction with the Data Management Plan, particularly with regard to the management of potentially sensitive data.

In the SoFAIR project, the EMP is intended as a living document. This concept refers to a dynamic framework that evolves over time to guide ethical behaviour within a project. Unlike static documents, a living document emphasises continuous improvement through regular review and updates, offering flexibility to address emerging ethical challenges. Treating an EMP as a living document ensures ongoing engagement, adaptation, and improvement to foster a culture of ethics and integrity within the SoFAIR project.

2. Relevant regulations

SoFAIR project follows principles and regulations laid down by three key documents: *The European Charter for Researchers* defined in the SoFAIR proposal, ALLEA's *The European Code of Conduct for Research Integrity*, and European Commission guidelines *How to complete your ethics self-assessment*. These documents are a set of significant ethical guidelines applicable to scientific projects.

The European Charter for Researchers

Created by European Commission *The European Charter for Researchers* serves as a comprehensive framework delineating the roles, responsibilities, and entitlements of researchers, employers, and funders across all stages of their careers and in various sectors within the European Union. Its primary objective is to foster conducive relationships between researchers and their employers or funders, promoting successful knowledge generation, transfer, and career development. Emphasising the significance of mobility for professional growth, the Charter encourages responsible conduct and professionalism within the working environment, fostering mutual recognition among stakeholders. Acknowledging the multifaceted roles of researchers, including research, development, supervision, mentoring, and administrative tasks, the Charter underscores adherence to national or regional legislation while upholding existing favourable statuses and rights. By aligning with this Charter, researchers, employers, and funders uphold fundamental rights and principles outlined in the Charter of Fundamental Rights of the European Union, thus promoting a conducive and ethical research environment.

The European Code of Conduct for Research Integrity

The European Code of Conduct for Research Integrity is a comprehensive guideline designed to uphold the principles of integrity, responsibility, and quality in all fields of scientific and scholarly research across academic, industrial, and other sectors. It emphasises the importance of research as a collaborative endeavour that should remain free from external pressures, whether ideological, economic, or political, in order to ensure impartiality and reliability. The code underscores the responsibility of the research community to define and adhere to proper research behaviour, maximise the quality and reliability of research outcomes, and address threats to good research practices effectively. It encompasses various stakeholders, including individual researchers, research teams, institutions, funders, academies, publishers, and other relevant entities, outlining their respective roles and responsibilities. The code evolves to address emerging concerns and developments in research practices, such as technological advancements, data management practices, Open Science initiatives, and the importance of research culture. It serves as a framework for self-regulation within the research community, promoting ethical conduct and guiding policies and guidelines at local, national, and disciplinary levels. Developed by the European Federation of Academies of Sciences and Humanities (ALLEA), the code undergoes periodic updates to remain relevant and effective in promoting good research practices.

EU Grants. How to complete your ethics self-assessment

The document provides comprehensive guidance for applicants and beneficiaries of EU projects to ensure the ethical compliance of their proposals. Primarily aimed at Horizon Europe, Digital Europe, and European Defence Fund programs, it extends its applicability to other EU initiatives necessitating ethics reviews for funding authorization. The guidance assists in identifying and addressing ethics issues that may arise during project implementation, aiding in the completion of applications. Emphasising the importance of an ethics self-assessment, it mandates the inclusion of descriptions and proposed solutions for identified issues, alongside relevant documentation. Stressing the significance of this assessment, it highlights its integration into the Grant Agreement, thereby imposing binding obligations subject to ethics checks, reviews, or audits. Recognizing the diverse areas where ethics concerns may emerge, from medical research to social sciences and AI deployment, the document underscores proactive consideration of ethics during proposal design to ensure legal compliance, facilitate selection procedures, enhance project implementation, and ease dissemination of project results. Ultimately, it advocates for an "ethics by design" approach, encouraging early engagement with ethical considerations to safeguard project stakeholders and promote responsible research conduct.

3. Ethical Issues Relevant in SoFAIR

The project used a self-assessment check approach. The basis for carrying out the identification of potential ethical issues is the EC guidelines *EU Grants: How to complete your ethics self-assessment*. The aforementioned document lists 10 sections on ethical issues, which are compared to the subject matter of the work carried out in the project. Of the sections, those that could potentially be significantly related to the subject matter of the project work were selected, followed by a more detailed analysis and self-assessment based on the checklists provided by the EC for each section. A list of the section names is provided below (Tab. 1.).

Tab. 1. EC guidelines ethical issues list

Sections from <i>EU Grants: How to complete your ethics self-assessment</i>
1. Human embryonic stem cells (hESCs) and human embryos (hEs)
2. Humans
3. Human cells or tissues
4. Personal data
5. Animals
6. Non-EU countries
7. Environment, health and safety
8. Artificial intelligence
9. Other ethics issues
10. Cross Cutting issue: potential misuse of results

After analysing the EC document and comparing the self-assessment checks contained therein, it was found that the vast majority of cases do not relate to the activities undertaken in the project. Comments on each section are set out below.

1. Human embryonic stem cells (hESCs) and human embryos (hEs)

Non applicable

2. Humans

Non applicable. For Personal data issues see Point 4 “Personal data”.

3. Human cells or tissues

Non applicable

4. Personal data

The SoFAIR project does not intend to collect and process any sensitive personal data. Only email addresses of authors of publicly available scientific articles will be processed. As the project will potentially generate connections between data on publications and authors and the software (e.g. personal GitHub accounts), the visibility of these connections will be managed properly, respecting the ethical workflows implemented in infrastructures demonstrating project's results (e.g. repositories). All actions will be taken in accordance with the General Data Protection Regulation (GDPR). For more information on the data to be processed, please see the SoFAIR Data Management Plan.

5. Animals

Non applicable

6. Non-EU countries

The project involves partners from countries outside the European Union (United Kingdom), but this does not involve any potential ethical risks.

7. Environment, health and safety

Non applicable

8. Artificial intelligence

The project intends to use LM models to extract software mentions. This matter does not raise ethical issues, however, during the project activities emphasis will be placed on checking for potential implicit biases in the trained model.

9. Other ethics issues

Non applicable

10. Cross Cutting issue: potential misuse of results

Non applicable

In case of significant developments in any sections during the project, this document will be updated accordingly.

The project plans to outsource the annotation activities to an external entity. Those in charge of the outsourcing will make sure that an entity is selected that has the welfare of the staff in mind and respects ethical issues. The cooperation of project staff with external annotators will also respect all ethical principles.

The European Charter for Researchers has been identified as one of the documents underpinning the project on scientific ethics. The guidelines indicated there significantly apply to scientific project activities, so the following is the approach of project members to the sections listed in the *General Principles and Requirements applicable to Researchers* chapter.

- **Research Freedom:** Project members are aware that researchers should focus their research for the good of mankind and for expanding scientific knowledge, while enjoying the freedom of thought and expression and adhering to recognized ethical principles and practices.
- **Ethical principles:** Project members understand that researchers should adhere to recognized ethical practices and fundamental principles appropriate to their discipline, as well as to ethical standards documented in national, sectoral, or institutional Codes of Ethics.
- **Professional responsibility:** Project members are aware that researchers must ensure their research is relevant to society, avoid plagiarism, and validate new observations. They must also ensure delegated work is carried out competently.
- **Professional attitude:** Project members understand that researchers should be familiar with strategic goals, seek necessary approvals, and inform relevant parties about project status or changes.
- **Contractual and legal obligations:** Project members are aware that researchers must be familiar with regulations governing training, working conditions, and intellectual property rights. They must adhere to contractual requirements and deliver required results.
- **Accountability:** Project members understand that researchers are accountable to employers, funders, and society as a whole. They must adhere to principles of financial management and cooperate with audits.
- **Good practice in research:** Project members know that researchers should adopt safe working practices, comply with legal requirements, and protect data confidentiality.
- **Dissemination, exploitation of results:** Project members understand that researchers must disseminate and exploit research results as per contractual arrangements.
- **Public engagement:** Project members recognize the importance of researchers making their activities known to society in an understandable manner, engaging with the public, and understanding public interests and concerns.
- **Relation with supervisors:** Project members are aware of the importance of establishing a structured relationship with supervisors, keeping records of progress, obtaining feedback, and adhering to agreed schedules and milestones.
- **Supervision and managerial duties:** Project members understand that senior researchers have a multi-faceted role and should perform supervisory tasks to the highest professional standards.
- **Continuing Professional Development:** Project members understand the importance of researchers continually improving their skills and competencies through various means, such as formal training and workshops.

The project also recognizes the value of and follows the principles and good research practices indicated in the document *The European Code of Conduct for Research Integrity*.

4. Procedures of Ethics Management in SoFAIR

In order to ensure that all project participants adhere to the ethical guidelines and to raise awareness of potential ethical issues, this deliverable and all the documents mentioned in it were presented at a meeting of all project members and also has been made available in the project data space to be available to all partners. These documents will be available to all members at every stage of the project and the coordinating persons will be ready to provide any information on ethical issues. It should be emphasised that, in line with the idea of a living document, when project work changes, then self-assessment check will be repeated and if any ethical risks arise, the EMP will be adapted to the current situation and any changes will be communicated to all partners for information. The EMP coordinating members undertake to monitor the project situation in order to identify potential issues and address them in the SoFAIR EMP.

List of References

ALLEA (2023). *The European Code of Conduct for Research Integrity – Revised Edition 2023*. Berlin. <https://doi.org/10.26356/ECOC>

European Commission (2021). *EU Grants. How to complete your ethics self-assessment, Version 2.0*.
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Tab. 1. EC guidelines ethical issues list – p. 11.