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**EUROPEAN RESEARCH INFRASTRUCTURE
FOR HERITAGE SCIENCE**

E-RIHS ERIC Ethics Guidelines

Approved by the E-RIHS ERIC General Assembly on 27 May 2025

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E-RIHS ETHICS GUIDELINES

Summary version (Annex VI) of the E-RIHS ERIC Quality System approved by the E-RIHS ERIC General Assembly on 27 May 2025.

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INTRODUCTION

Regardless of their field, those working with or as part of E-RIHS are expected to maintain the highest standards of professional integrity, competence, and compliance with all relevant codes of conduct and ethics. Ethics are important to E-RIHS, since the results generated through research are only as reliable as the strength of, and adherence to, the ethical values and principles underlying them. A strong ethical culture encourages an open, fair, respectful, and inclusive working environment, which permeates into relationships, and influences collective conduct. Finally, E-RIHS, which is humanist in nature and aims to study and preserve culture within the scope of heritage science, will likely have a societal impact on the values attributed to cultural heritage, public policies, and quality of life. Hence, there is a strong connection between the research infrastructure and ethics on many levels.
Although national and EU laws provide legislation to limit or ensure certain behaviours within each country and each E-RIHS provider institution, there are still a variety of behaviours that do not qualify as illegal but are inappropriate from an ethical standpoint. Many provider institutions already have their own set of guidelines and principles, which should also be adhered to. Since not all provider institutions may have such instruction and the E-RIHS community is diverse and continually expanding, the research infrastructure needs to provide a common understanding of ethical conduct. Therefore, these guidelines are not intended to replace existing local guidelines, but to complement them. Ethics within the E-RIHS providership is understood by a set of guidelines, by which all those working within its scope are bound to abide.

The E-RIHS ethical guidelines are constructed with the intention to minimise or, hopefully, eradicate unethical behaviours and practice in research. These guidelines will help to protect the credibility and reputation of E-RIHS. The guidelines have been composed in accordance with the All European Academies (ALLEA) Code of Conduct for Research Integrity. The ENVIRO report on Ethical Guidelines for RIs has been readily consulted and much of the ethical framework has been adopted here. As such, the ethical considerations of E-RIHS have been split into four ethical domains that reflect the levels various scales of ethical conduct: individual, interpersonal, societal, and environmental. For each domain, values considered intrinsic to the behaviour system outlined within the ethical guidelines will be presented and should be observed by all interacting with or, working within, E-RIHS.

1 INDIVIDUAL DOMAIN

Values: Honesty, Integrity, Transparency, Reliability, Competence
The value of the outputs produced by E-RIHS relies completely on the skills, abilities, honesty and integrity of those working for or collaborating with the RI. The quality of the research is closely related to personal skills, which must be maintained, reinforced, and developed to a high level of competence and professionalism. The reliability of E-RIHS research can be ensured by scientists agreeing to adhere to a set of ethical standards that reinforce academic integrity.

1.1 QUALITY

Quality in all its forms should always be one of the pillars of scientific research. E-RIHS researchers and other professionals should strive to remain informed and apply the most recent advances in their field. This will require those working with or collaborating with E-RIHS to undertake regular lifelong training, during which they can continue to maintain and develop their understanding of research approaches. All those working within the context of E-RIHS should also receive training in research ethics and the RI's specific ethics principles to ensure adherence to the regulations described here.

Researchers should demonstrate meticulous organisation in planning, conducting, and participating in research projects, including using instruments of known accuracy and keeping complete laboratory registers. All relevant operations during any service to users under the E-RIHS brand should be covered by a register of dates, installations visited, persons present or contacted, operations or consultations and any other information needed for future reference. In particular, all measurements must be backed by sufficient information to allow an investigation of the causes of any anomaly and the eventual replication of all the experimental procedure (including any specific calibrations) in a different laboratory.

All digital or physical archived data must have a back-up made not more than a week after the original register. The back-up must be stored at a different physical or digital location to be preserved when for any fortuitous reason the original is lost.

While those working with or collaborating with E-RIHS should share ideas and information, they should maintain professional moderation in their conduct and publications, openly communicating limitations and uncertainties relating to the research.

1.2 ACADEMIC INTEGRITY

Conflicts of interest should be disclosed at the earliest opportunity. Researchers should maintain the highest professional standards when designing, conducting, analysing and recording research. This means undertaking research in a well-considered, careful manner, which leads to a high level of accuracy within the results. Researchers should be open, transparent, honest, unbiased and have integrity in all stages of the scientific process.

Experimental procedures should be fully reproducible and the disclosure of results in scientific media should always include all information needed to replicate the experiments or measurements to a reasonable uncertainty. Reporting should include clarification on the use of external services or AI. Conclusions should be based on the critical and objective analysis of the evidence. Questionable conclusions should be presented as hypotheses and premature or exaggerated statements should be absolutely avoided. Scientific misconduct, such as bold or biased conclusions based on insufficient data, fabrication or plagiarism, are incompatible with E-RIHS' ethical principles.

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2 INTERPERSONAL DOMAIN

Values: Respect, Inclusivity, Equity, Reciprocity, Sharing, Cooperation, Safety
The interpersonal domain refers to the relationships formed between the personnel working within the research infrastructure, as well as the wider E-RIHS community. A respectful and inclusive working environment, in which cooperation, reciprocity, trust, and interdisciplinarity are prerequisites, is essential for achieving E-RIHS' shared goals. This can be accomplished by reducing undue pressures that may lead to unacceptable behaviour and balancing professional competition with ethical values that contribute to good research practices.

2.1 RESPECT FOR PERSONS
All those working for or interacting with E-RIHS are entitled to their rights as protected under all applicable laws and regulations. Researchers and other professionals should maintain the highest moral standards irrespective of the difficulties and limitations that might be raised at any moment. They should have concern for others and in general treat them as they would normally want to be treated in likewise conditions.

Professionals should comply with health and safety policies and procedures (and improve them when possible), to safeguard from undue risk and ensure the welfare of students, collaborators, all other team members and themselves. In line with the E-RIHS Risk Management Policy within D3.5 (Risk Management Strategy), this section should include an identification of hazards and a listing of risks. For each risk that may be controlled, the section will also indicate the countermeasures taken. Whenever the likelihood of a risk or the outcome of an occurrence may be reduced through information, the document will state how users are instructed on the avoidance of hazards and on how to address risks should they materialize. The document will also include a list of passive or active protection fixtures and countermeasures available and the contents will have in view, not only external users, but also all personnel involved.

Researchers should treat colleagues throughout the providership respectfully and as equals, fostering mutual understanding and encouraging professional courtesy in team working. They should share ideas openly, in the spirit of goodwill, whenever confidentiality of procedures or results is not at stake and give credit for the contributions of others. E-RIHS providers should participate in cooperative actions that diffuse knowledge by both teaching and learning.

Students should be given as much autonomy of decision in research as possible and treated with the same consideration due to colleagues, respectfully and without exploitation, having only in view the promotion of their learning and professional development in safety and without undue constraints.

2.2 EQUALITY, DIVERSITY AND INCLUSION
Professionals should behave without prejudice against others, treating them likewise irrespective of gender, nationality, ethnicity, religion, age, sexual orientation, gender expression, presence of disabilities, educational background, professional origin or other personal attributes or aspects through which diversity manifests itself. Any behaviour or action contrary to the above, such as, discrimination, bullying, or harassment will not be tolerated.

Efforts should be taken to improve accessibility for individuals with disabilities, health conditions or impairments, which may mean making reasonable adjustments so that obstacles to participation are minimised.

2.3 SAFEGUARDING
Tutelage of students or apprentices is to be regarded as a position of trust. Wherever possible, recognised intermediaries should be used so that students always have two different contact points, e.g., one tutor and one supervisor. This should be strictly adhered to whenever young people under the age of consent or individuals with reduced autonomy are involved.

2.4 PEER REVIEW PROCESS

All activities and their outcomes are to be developed or handled in a fair way, transparent to all participants. Peer review panels should take seriously their responsibility to accurately judge applications, performance, or proposed publications. Whenever possible, there must be clear rules known to those being assessed and all notes should be clearly explained and justified. There should be an established system of appeal involving a third party. Registers of all consequential remarks and decisions should be maintained and made available to those deciding on any claims or appeals.

2.5 ACKNOWLEDGING CONTRIBUTION

Users of E-RIHS are encouraged to disseminate the results of research undertaken via access to E-RIHS services in peer-reviewed publications, acknowledging the contribution and support provided by E-RIHS.

In accordance with good scientific practice, users are encouraged to offer co-authorship to those persons working at E-RIHS facilities who have made genuine scientific contributions to their work. E-RIHS recommends to all researchers within its providership to be generous with students and apprentices giving them, whenever fair, a position as authors that will enhance the development of their careers.

Authorship of papers and similar diffusion media should be based simultaneously on: i) substantial contributions to the conception of the research or the acquisition and interpretation of data for the work; ii) drafting the texts or revising them critically; and iii) approval of the version to be published in a way that makes the person fully accountable for the contents. Unless there is a clear preliminary understanding otherwise, only those meeting the three criteria should be deemed as authors or co-authors; all those not meeting the criteria but having nevertheless significant contributions should be acknowledged. The order of author names has a meaning that varies with the field but should follow clear rules known previously to all in writing and agreed between all team members. Ideally, papers should include an 'Author Contribution Statement' in the final publication.

As per copyright legislation and scientific custom, research outputs must necessarily refer to the persons or organisations, which have originally generated publications, data, or digital tools, or acknowledge the sources of the research lines being pursued.

2.6 INTELLECTUAL PROPERTY RIGHTS

Before any project is started, the researchers involved must ensure that agreements are reached (ideally by a signed contract) regarding any research results and thereafter comply with defined practices for data use, ownership, sharing, and protection under intellectual property rights. By default, and as known to all and agreed between the team, a measure of confidentiality on processes and outcomes must be established before publication.

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3 SOCIETAL DOMAIN

Values: Reputation, Trust, Stewardship, Service, Clarity
E-RIHS play a crucial role in bridging scientific knowledge and societal impact. It is aimed at generating and disseminating excellent science for cultural heritage, which may influence the values attributed to heritage, public policies, and quality of life. In fulfilling these duties, E-RIHS must ensure that its research has a positive impact, foster societal trust, and safeguard its reputation.

3.1 STEWARDSHIP OF HERITAGE VALUES

Working with cultural heritage requires care and respect for the multitude of values that material heritage embodies. E-RIHS researchers and personnel should always collaborate with experts (curators, conservators and other) who can advise on issues and risks related to handling, transport and other aspects that arise during heritage science research. Such experts typically come from institutions entrusted with care for the cultural heritage in question.
The importance of tangible cultural heritage depends on a belief system that attributes significance and relative weight to an asset, be it a cathedral or a ring. A scientist will not put in question, in any manner, an established system of values unless grounded on largely unquestionable research results. Whenever research results contradict, in a relevant manner, values upon which the importance of a heritage asset rests (e.g., by strongly suggesting a different, more recent, chronology) those results must be reassessed. Eventually, the whole instrumental process should be repeated, possibly after a new sampling and by a different team using an alternate technology, before the results are published or made public in any manner. The owner or entity responsible for the asset will be informed in detail of the conclusions and their ground before any dissemination is made.
When analysing cultural heritage that has been removed from its culture of origin, collaboration with representatives from the originating culture is considered best practice, especially where objects are involved in repatriation discussions. Researchers should take time to listen and understand the significance of the object to the community of origin and be transparent about the potential impact of the analysis on the values ascribed to the cultural heritage.

3.2 RESPONSIBLE SAMPLING

If no local institutional guidance exists, E-RIHS experts will abide by the Ethical Sampling Guidance developed by the UK Institute for Conservation (**https://www.icon.org.uk/resource/ethical-sampling-guidance.html**). Sampling for scientific research carries great responsibility due to object value, and when human remains are involved, there are also personal and sometimes religious issues to be aware of. In the selection of the number of samples and their size, and indeed locations where samples could be taken, as well as in all aspects related to the related decision processes, E-RIHS researchers will follow the Ethical Sampling Guidance to avoid any potential risk, reputational or otherwise, to E-RIHS and themselves.
Any sampling of a tangible heritage asset will decrease its value, even if negligibly. Therefore, it must be carefully considered on a basis of potential gain versus potential harm. Sample sizes must be adequate given the asset sampled and the purpose: as small as possible but not so small that they may end up being unfit.
When sampling a physical asset researchers will first seek consent from the owner or the entity responsible for its conservation. On seeking authorization, they will inform on the objective, number and size of samples needed, and method of sampling. They will also establish an agreement on the ultimate destination of the test items and any remainders.
In all cases, the owner or the entity responsible for the conservation will be offered the possibility to witness the sampling procedure and thenceforward be considered primary stakeholders of the research, be informed of the results before any dissemination and, if not co-authors, their participation will be acknowledged in publications using the results.

Samples of heritage assets, test items obtained thereof, and remainders are themselves heritage assets with associated values and must be treated as such, in particular caring that all information related to the sampling is obtained and kept traceable to each sample.

If applicable, scientists should aim at the preservation of test items and remainders associated with the information pertaining to the sampling and instrumental procedures applied, towards their future availability for further research without the need to re-sample. This will also broaden the possibilities of ARCHLAB.

3.3 BENEFICENCE (DO GOOD)

The definition of beneficence is linked with outcomes that are beneficial to others and to the society at large. This principle states that research should aim at some positive outcome that will advance knowledge and our understanding of phenomena under the rule of science, towards a positive purpose such as the enhancement of some of the values of cultural heritage or the improvement of heritage science training provision. To ensure that research activities are beneficial to society, it is important that those working with or collaborating with E-RIHS weigh up the potential risks and societal implications of their research and mitigate possible negative impacts.

Researchers must take accountability for the research and its wider societal impact. Results should be shared with the research community, decision-makers, and the public at large through diffusion media, with clear explanation regarding errors, probabilities, and uncertainties. Public comments on scientific matters should be made with care and accuracy to avoid misunderstandings and misuse. Questionable conclusions should be presented as hypotheses and premature or exaggerated statements should be absolutely avoided. When talking to the media as a representative of E-RIHS, professional comments must be clearly distinguished from personal opinions.

E-RIHS personnel or users of services must be aware of the role they play in the sequence from academic research, pre-practice research, and practical implementation in management or decision-making. Conclusions made under one context may be misleading and ultimately detrimental, sometimes grievously, when applied in a specific situation. Therefore, researchers should not suggest or propose practical application with insufficient data validation and lack of practical demonstration.

3.4 DATA LIFECYCLE

Data management within E-RIHS must adhere to the FAIR principles, emphasising findability, accessibility, interoperability, and reusability. Researchers must follow a Data Management Plan for data generation, management, and protection, ensuring reproducibility and accountability. Researchers must retain data, metadata, protocols, code, and other research materials.

E-RIHS plays a crucial role in data stewardship and preservation. Primary data preservation involves correct storage, documentation, and processing. Comprehensive metadata, including provenance and quality, ensures interoperability with other databases. E-RIHS will use Persistent Identifiers (PIDs) and Digital Object Identifiers (DOIs).

Balancing openness and accessibility with necessary restrictions is key. E-RIHS must avoid improper data use. Where data is accessible to non-expert users, clear descriptions of potential uses and limitations should accompany it. The manipulation of sensitive data for personal, media, industrial, or commercial purposes should be prevented by access and security policies.

3.5 PERSONAL DATA

Those working as part of E-RIHS must treat personal data responsibly, following the EU GDPR regulation. Data must be processed lawfully, fairly, and transparently. When personal data is obtained, personnel must have a valid reason for processing data, and individuals should be informed about its use.

4 ENVIRONMENTAL DOMAIN

Values: Awareness, Efficiency, Sustainability, Protection, Innovation
E-RIHS must be acutely aware of the interaction between scientific research and the natural environment. The RI has a responsibility to limit its impact on climatic change, ecosystems, and biodiversity.

4.1 DO NO SIGNIFICANT HARM

In line with the European Green Deal objectives, research and innovation activities should comply with the 'do no significant harm' (DNSH) principle according to which the research and innovation activities should not be supporting or carrying out activities that make a significant harm to any of the six environmental objectives ('climate change adaptation', 'climate change mitigation', 'sustainable use and protection of water and marine resources', 'pollution prevention and control', 'transition to a circular economy', and 'protection and restoration of biodiversity and ecosystems'), within the meaning of Article 17, on the establishment of a framework to facilitate sustainable investment (EU Taxonomy Regulation).

In practical terms, E-RIHS personnel and users should comply with all environmental standards, including the disposal of waste and waste products having in view, not only immediate consequences, but also possible risks in the long run. They should also carefully weigh up the environmental impact, cost, and safety of different methods of travel before booking transport to services, training, meetings, or conferences. The suitability of virtual meeting or events should be considered whenever possible. Those working within E-RIHS should always be mindful of efficiency and the minimisation of waste in relation to materials and resources.

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