ESTONIAN CODE OF CONDUCT FOR RESEARCH INTEGRITY

2023

Estonian Code of Conduct for Research Integrity

Tartu 2023

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ESTONIAN CODE OF CONDUCT FOR RESEARCH INTEGRITY AGREEMENT

By joining the Estonian Code of Conduct for Research Integrity Agreement, the research institutions confirm that they respect the main values of research and the principles of action described in the text of the Estonian Code of Conduct for Research Integrity finalised in 2017 in cooperation between Estonian research institutions, the Estonian Academy of Sciences, the Estonian Research Council, and the Ministry of Education and Research.

Every research institution retains the right to decide how to raise its members' awareness of the main values and principles of action agreed upon, how to ensure their observance within the institution and what procedural rules to establish in order to deal with cases of misconduct.

The text of the Estonian Code of Conduct for Research Integrity Agreement

By signing the Estonian Code of Conduct for Research Integrity Agreement, we confirm that we respect and observe the following main values of research:

- freedom;
- responsibility;
- honesty and objectivity;
- respect and caring;
- justice;
- openness and cooperation.

By joining the Estonian Code of Conduct for Research Integrity Agreement, we acknowledge the responsibility of individual researchers and research institutions as well as research organisations and financers of research concerning:

- planning of research;
- conduct of research;
- publishing and application of research results;
- identification and resolution of conflicts of interest;
- ensuring of collegiality in the workplace;
- dissemination and promotion of the principles of research integrity.

By joining the Estonian Code of Conduct for Research Integrity Agreement, we promise to observe, disseminate, promote and apply the Estonian Code of Conduct for Research Integrity in our institution and to do everything in our power to prevent misconduct, to uncover cases of misconduct and to deal with cases of misconduct appropriately. We cooperate to apply the Estonian Code of Conduct for Research Integrity and to draw up the rules of procedure for dealing with cases of misconduct to ensure the credibility of research and as equal treatment of members of different research institutions as possible.

Signatories:

Baltic Methodist Theological Seminary
BioCC LLC
Center of Food and Fermentation Technologies
Competence Centre on Health Technologies
Cybernetica AS
Education and Youth Board
Estonian Academy of Arts
Estonian Academy of Music and Theatre
Estonian Aviation Academy
Estonian Biocentre
Estonian Business School
Estonian Crop Research Institute
Estonian Entrepreneurship University of Applied Sciences
Estonian Literary Museum
Estonian National Museum
Estonian Research Council
Estonian University of Life Sciences
Institute of the Estonian Language
Ministry of Education and Research
National Institute for Health Development
National Institute of Chemical Physics and Biophysics
Pallas University of Applied Sciences
STACC OÜ
Tallinn Health Care College
Tallinn University
Tallinn University of Technology
Tartu Health Care College
The Estonian Academy of Security Sciences
The Estonian Free Church Theological Seminary
The Estonian Military Academy
The Institute of Theology of the Estonian Evangelical Lutheran Church
TTK University of Applied Sciences
Under and Tuglas Literature Centre of the Estonian Academy of Sciences
University of Tartu, incl. Tartu Observatory

List of Signatories updated in January 2023

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PREFACE

The aim of the Estonian Code of Conduct for Research Integrity is to support knowledge about, acceptance and entrenchment of research integrity in the Estonian research community. The Code of Conduct for Research Integrity describes the conduct expected from researchers and the responsibility of research institutions in ensuring research integrity, thus contributing to the increase of credibility of research in the eyes of the individual and the public.

The Code of Conduct for Research Integrity is meant to complement the Code of Ethics of Estonian Scientists[1] adopted in 2002. The new document is needed because the development of research has brought forth new themes and perspectives not reflected in the code of ethics, and added new points for consideration. The current document also places greater emphasis on the activities of research institutions, separately pointing out the responsibility of researchers and research institutions,[2] which helps to emphasise that responsibility for ethical research lies with everyone who is active in research. Researchers alone cannot ensure research integrity. So that researchers could behave ethically, the necessary conditions have to be created at the level of the organisation and the system.[3]

The Code of Conduct for Research Integrity has been created as a framework document which provides guidelines to all Estonian research institutions and the researchers working there. The task of the research institution is to elaborate detailed procedural rules which help to increase awareness in the organisation about the principles of research integrity, to monitor the research environment and, if necessary, to interfere and to deal with the cases of misconduct. To ensure as equal treatment of members of different research institutions as possible, research institutions cooperate closely in drafting procedural rules and regulations.

The creation of the document of research integrity was initiated by the Estonian Research Council early in 2016 by forming a work group that included representatives from the Estonian Academy, the Ministry of Education and Research and the Estonian Research Council. The Estonian Research Council entrusted the drafting of the text to the Centre for Ethics at University of Tartu, which had earlier already started writing the research integrity document for the University of Tartu; therefore, the two initiatives were united.[4]

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1 *Code of Ethics of Estonian Scientists* (2002). https://www.akadeemia.ee/wp-content/uploads/2020/06/code_ethics2002-3.pdf (accessed 11 January 2023).

2 The responsibility of researchers and research institutions is differentiated in many codes of ethics regulating research and documents of research integrity. The models for the current document in dividing responsibility were the documents of Denmark and ALLEA, the European Federation of Academies of Sciences and Humanities.

The Danish Code of Conduct for Research Integrity (2014). København: Ministry of Higher Education and Science. https://ufm.dk/en/publications/2014/the-danish-code-of-conduct-for-research-integrity (accessed 11 January 2023).

The European Code of Conduct for Research Integrity. Revised edition (2017). Berlin: ALLEA. https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/european-code-of-conduct-for-research-integrity_horizon_en.pdf (accessed 11 January 2023).

3 In addition to researchers and research institutions, responsibility lies with research journals, financers and assessors of research, researchers' associations and other organisations. As the current document of research integrity has been worked out as an agreement between research institutions, the description of activities is limited to researchers and research institutions.

4 The document was prepared by:
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The work group of the Estonian Research Council: Martin Eessalu, Jüri Engelbrecht, Andres Koppel, Priit Kulu, Katri Ling, Kristi Lõuk, Toivo Maimets, Kadri Mäger, Tanel Mällo, Katrin Niglas, Eha Nurk, Margus Pärtlas, Urve Sinijärv, Margit Sutrop, Tarmo Uustalu.
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We also thank all the others who responded to the call to send corrections to the text during the public commenting period.

The document of research integrity consists of the list of main values of research integrity and principles of action. The chapter on principles of action is divided according to stages of research: planning of research, conduct of research, publishing and application of research results, participation in the research community, and observance of research integrity.

VALUES

The most essential values of research integrity are freedom, responsibility, honesty and objectivity, respect and caring, justice, openness and cooperation. It should be kept in mind that none of these values is absolute – they may come into conflict between one another and, depending on the situation, researchers have to choose which of the conflicting values are more essential in the particular situation. After moral consideration, balance should be found between different values. If setting one of the conflicting values higher in the hierarchy, the protection of the less important value should still be ensured.

1. Freedom means that the researcher

- is free to choose the research problem or hypothesis;
- is free to search for new research ideas and critically assess the existing ones;
- is free to choose the research group, research institution or sources of financing.

2. Responsibility means that the researcher

- is responsible for the results and consequences of the research and is aware that his/her work and decisions can influence other people and future generations;
- avoids harming people, society and nature, and informs the public about potential threats;
- follows all the pertinent rules in research and, in the absence of precise rules, follows the good practice of research;
- is aware that his/her conduct serves as a model for the present and future generations of researchers.

3. Honesty and objectivity mean that the researcher

- is honest, precise and impartial in all aspects of research activities;
- does not forge or fabricate data and does not plagiarise;
- interprets both data and research results objectively, not arbitrarily;
- acknowledges his/her errors and, if necessary, reassesses his/her earlier work in the light of new research results.

4. Respect and caring mean that the researcher

- shows respect to his/her teachers, students, colleagues and cooperation partners and avoids causing unsubstantiated harm to their interests;
- respects the dignity, autonomy and privacy of persons involved in research;
- is caring to experiment animals, avoids unsubstantiated harm to them and ensures their wellbeing;
- respects life and maintains a careful attitude to the environment, biosphere and biodiversity;
- honours cultural diversity and maintains a careful attitude to the material and spiritual heritage of humankind.

5. Justice means that the researcher

- treats all colleagues and cooperation partners equally; while acknowledging colleagues, the researcher considers their actual contribution to research;
- in his/her judgements concerning research, is not influenced by the other person's gender, age, nationality, race, religion, school, status or other features that are not relevant to the judgement;
- is aware of the possible conflicts of interests and gives timely notice of them;
- uses the available resources efficiently, sparingly and purposefully;
- takes care that the distribution of resources is transparent and everyone has equal opportunities to apply for them.

6. Openness and cooperation mean that the researcher

- is open to cooperation with partners;
- takes care for the good creative work environment;
- strives for transparency in research and shares information about the aims, financing and methods of his/her research, and about the course of analysis;
- is open to share ideas, data and research results with others;
- assesses critically his/her own and others' research and is open to substantiated criticism.

PRINCIPLES OF ACTION

The principles of research integrity concentrate on what researchers or research institutions should do to follow the values of research integrity. At the same time, it should be remembered that the activities of individual researchers and research institutions are influenced by many other institutions (e.g., financers and assessors) and the environment where they operate. Researchers can do research in research groups with many partners from home and abroad who can have different objectives and interests. In research groups, each of their members is responsible for following research integrity. Although the leader of the research group may have greater responsibility for the conduct and coordination of research, this does not diminish the responsibility of other group members.

Research integrity contains principles of different concreteness or generality by which conduct of research should be guided. The more concretely formulated principles are those about which there is greater unanimity among the research community or which are derived from valid laws and international agreements. In the case of more generally worded principles, the researcher and the research institution have more freedom to decide how to best achieve the formulated ideal. It should also be considered that actual life is often more complex and diverse than a document that envisages ideals can describe. In the case of conflicts between principles and novel situations not covered by the research integrity document, researchers and research institutions have leeway to make the best possible choice in a complex situation.

The principles of research integrity give instructions how to make choices in research so that they would not harm the reliability of the researcher, the research institution or research as a whole. In such situations, it may be difficult to give a clear and unambiguous assessment of the ethicality of actions and choices. It is essential that all choices would be well-weighed, substantiated and based on the values of research integrity.

1. PLANNING OF RESEARCH

Planning of research includes setting the aim of research, choice of the method, application for resources, and consideration of ethical and legal requirements. While planning, one should consider the useful and harmful impact of research on any of the parties involved in research: the persons involved in research, the future generations, natural and cultural environment, indigenous peoples, humankind and the Estonian society, the research community and research institutions.

RESPONSIBILITY OF THE RESEARCHER

1.1 What are the framework requirements for research integrity?

1.1.1 When planning research, the researcher considers the conventions and requirements of his/her research area.

1.1.2 The researcher acts in conformity with the valid principles of research ethics, standards and legal regulations, and obtains the necessary permits, approvals and consent of the ethics committee.

1.1.3 The researcher takes into consideration that the rules and conditions applying to international partners can differ from those of his/her own research institution and agrees with the partners on the regulations and standards that should be jointly followed and how to prevent potential problems.

1.1.4 During the whole research process, from planning to publication of results, the researcher assesses the conformity of research with valid requirements and regulations. If conflicts emerge, s/he informs colleagues and cooperation partners and ensures the honest and transparent solution of problems.

1.1.5 The researcher avoids agreements which groundlessly limit the application and dissemination of research data or results.

1.1.6 The researcher takes care that the intellectual property created during research receives necessary protection and agrees as early as possible with cooperation partners to whom the corresponding rights belong.

1.2 What should be considered when setting the aims for research?

1.2.1 The researcher weighs how necessary and substantiated the planned research is.

1.2.2 In research, the researcher strives for social benefits and acts for the good of humankind. S/he assesses the potential beneficial and harmful impact of the planned research and whether the expected benefits outweigh the threats of potential damage and misuse.

1.2.3 The researcher keeps in mind the planned and unplanned ways of application of research results, including the possibilities of misuse and double use. In the case of risks, the researcher informs, depending on circumstances, the colleagues, the research institution, the ethics committee, the financers of research and other parties involved in research.

1.2.4 If necessary, the researcher involves in planning, in addition to colleagues, the persons or groups influenced by the planned research.

1.2.5 The researcher is free to decide whether to participate in research if s/he does not agree with its objectives or potential application.

1.2.6 As the leader of a research group, the researcher takes care that all the members of the research group are aware of the objectives of research, its financers, possibilities of application of results and threats of misuse.

1.3 What should be considered when choosing the method?

1.3.1 The researcher decides which methods and which sample are appropriate for achieving the objectives of research, considering data protection regulations and ethical and legal restrictions.

1.3.2 The researcher weighs the potential ethical and research problems related to the method and the sample, uses vulnerable groups or individuals in research only in well-grounded cases and avoids questionable, outdated, misleading and unscientific methods.

1.3.3 The researcher ensures the methodological transparency of research and describes the stages of data collection and their analysis as exactly as possible.

1.3.4 The researcher assesses whether research objectives can be achieved by reuse of data or new data have to be collected. To use public data collections as broadly as possible and to save resources, the researcher prefers reuse of data if research questions make it feasible. If personalised data are reused, the researcher follows the regulations and restrictions of data protection.

1.4 What should be considered when applying for resources?

1.4.1 The researcher assesses the sufficiency of the existing and applied for resources for achieving the aims of research and avoids giving unrealistic promises to financers and the society.

1.4.2 The researcher informs financers about co-financing and avoids applying for double financing for the same activity.

1.4.3 The researcher is free to decide from which partners to accept financing and avoids sources of financing that would compromise the autonomy of the researcher or research group members or harm the impartiality of research results.

1.4.4 The researcher adheres to the conditions related to financing and, in the case of co-financing, informs the financers, colleagues and partners about the potential contradictions between different conditions.

RESPONSIBILITY OF THE RESEARCH INSTITUTION

1.5 What should be considered when planning research?

1.5.1 The research institution honours the researcher's freedom to choose the aims and methods of research. If the research institution considers it necessary to support and direct the researcher's activity by selecting and developing certain prioritary trends of research, the decision process must be involving, clear and transparent, considering the mission and tasks of the research institution, the need to maintain continuity and to create a flexible career model.

1.5.2 The research institution supports open and exploratory research, favouring the research of new themes, new research projects, application of different methods and initiation of new trends in research.

1.5.3 The research institution ensures the protection of intellectual property in its possession and, if necessary, supports researchers in questions related to intellectual property.

1.6 What should be considered to ensure transparent and fair financing?

1.6.1 The research institution provides open and equal access of all researchers to the information about financing.

1.6.2 The rules of the research institution for allocating research funding are substantiated, transparent and public.

1.6.3 The principles of selection of financing and the financer are agreed at the research institution and made public.

1.6.4 The research institution ensures that, if research is conducted jointly by several research groups, the expenses and potential benefits related to research are divided fairly between all the participants.

2. CONDUCT OF RESEARCH

In addition to collection and analysis of data, conduct of research includes the questions of safety, security and ensuring the wellbeing of the persons and animals involved. The rights and interests of persons involved in the research must also be considered.

RESPONSIBILITY OF THE RESEARCHER

2.1 How to treat persons involved in research?

2.1.1 The researcher respects the free will of persons involved in research and ensures the protection of their autonomy, human dignity, privacy and wellbeing, avoiding harming them.

2.1.2 In immediate studies of people and collection of personal data from them, the researcher always asks for their prior informed consent and ensures that the subject's consent is informed and voluntary. Exceptionally, asking for consent is allowed after the collection of data if this is necessary for achieving the aims of research, but then it should be considered that the collection of data would not harm the persons involved in the study, and it would have prior consent from the ethics committee.

2.1.3 The researcher informs the subjects about the research objectives, the benefits and risks, who is conducting the study and who is financing it, which data are collected from them, who can access the data, in what form and how long the data are stored, and what happens to occasional findings.

2.1.4 The researcher informs the subjects about their right not to participate in the study and to withdraw their consent and about any other circumstances that can influence the subject's consent to participate in the study.

2.1.5 The researcher inconveniences the subjects and groups involved in research as little as possible.

2.1.6 The researcher assesses the vulnerability and risks of persons and social groups involved in research, protecting them from potential stigmatisation, marginalisation or damage to their interests. The researcher takes care that the subjects' wellbeing will not suffer after the end of research because of participation in it.

2.1.7 The researcher shares the benefits resulting from research fairly with all participants in research without whose participation or traditional knowledge the benefits of research would not have materialised. S/he ensures that the positive influences of research on vulnerable groups would be realised.

2.1.8 If research is conducted in developing countries, the researcher is obliged to ensure that the benefits resulting from research will reach the community.

2.2 What are the principles of analysis of research data?

2.2.1 The researcher does not falsify data, does not arbitrarily complete incomplete data and does not fabricate data.

2.2.2 When using data, the researcher is critical, does not draw unsubstantiated conclusions from them, does not make unsubstantiated assessments, does not present examples selectively and does not use the analysis of data in a biased way.

2.2.3 The researcher records the collection and analysis of data as precisely as possible and ensures the transparency of data analysis so that the quality of the data could be checked and, if necessary, their analysis be repeated.

2.2.4 The researcher describes and formats the collected data so that they could be used as openly and broadly as possible, and refers to the used data accurately.

2.2.5 In research, the researcher follows the principles and regulations of protection of personal data.

2.2.6 The researcher ensures as broad access to data as possible, considering the substantiated limitations of access to the data resulting from the need to protect personal data, promises given to the subjects and the interests of research.

2.2.7 The researcher, in cooperation with the research institution, stores research data as long as possible; when setting the storage time, s/he considers the value of data for research, the conventions of one's research area, the physical and technological facilities of the research institution and agreements with subjects or holders of data. The researcher stores personalised data as long as necessary and as briefly as possible.

2.2.8 When storing and using data, the researcher ensures their integrity and safety and, if necessary, ensures the safe and proper destruction of data.

2.2.9 The researcher takes care that research data could be found and used as easily as possible.[5]

2.3 How to ensure the safety of research?

2.3.1 In the framework of research, the researcher ensures the protection of health and wellbeing of him-/herself and all the participants in research and persons involved in research.

2.3.2 The researcher is obliged to assess the risks related to research, be aware of them and take measures to prevent risks. S/he also informs the colleagues and the research institution of the potential threats and safety hazards.

2.3.3 If new risks and threats emerge, the researcher assesses whether research can be continued in its earlier form without harming anyone's health and wellbeing and, if necessary, changes the conduct of research.

2.3.4 The researcher is responsible for the safety of the work environment and ensures that unauthorised persons' access to hazardous substances, equipment and organisms and to confidential information is restricted.

2.3.5 The researcher respects the integrity of natural environment and spiritual and material heritage, and removes objects under study from their original environment only in substantiated cases.

2.3.6 The researcher avoids damaging the natural environment and cultural heritage. If endangered species, protected monuments or areas are studied, the researcher applies for the necessary permits and coordinations.

2.4 What should be considered in animal experiments?

2.4.1 The researcher ensures the wellbeing of the animals participating in research, and, in planning and conduct of animal experiments, is guided by the 3R principle[6]: if possible, replaces animal experiments with alternative techniques, reduces the number of animals to the smallest possible and refines the procedures of research to diminish the current and future sufferings and pain caused to animals. If possible, the researcher uses species less sensitive to pain.

2.4.2 The researcher takes care of the good living conditions of experiment animals and ensures their maximum wellbeing during experiments, breeding, keeping and transport.

2.4.3 The researcher conducts experiments with animals only when having the necessary permits.

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5 The guiding principes could be FAIR principes – Findable, Accessible, Interoperable and Re-usable data. *The FAIR data principles*. https://www.force11.org/group/fairgroup/fairprinciples (accessed 24 October 2017).

6 3 R's (the Three R's) Principles is an abbreviation that signifies three principles: Replacement, Reduction, Refinement. *Replacement, Reduction and Refinement – the "Three Rs"*. http://ec.europa.eu/environment/chemicals/lab_animals/3r/alternative_en.htm (accessed 24 October 2017).

RESPONSIBILITY OF THE RESEARCH INSTITUTION

2.5 How to ensure the safety of research?

2.5.1 The research institution ensures that all the handlers of hazardous materials, organisms and equipment have the necessary knowledge, skills and devices for safe conduct of research.

2.5.2 In the case of severe danger, the research institution informs all the endangered persons publicly and acts as quickly as possible for elimination of danger.

2.6 How to support the administration of research data?

2.6.1 The research institution supports the responsible administration of data and research materials by providing the necessary infrastructure, training and guidelines.

2.6.2 The research institution ensures that limitations to the use of data would be substantiated and fair and that information about the usability of the data held by the institution and the corresponding intellectual property rights would be easily accessible.

2.6.3 The research institution ensures that data with essential influence on the society or natural environment are preserved and are available for as long as possible.

3. AUTHORSHIP, PUBLISHING AND APPLICATION OF RESEARCH RESULTS

In publishing and application of research results, it is essential to consider the interests and rights related to authorship, intellectual property and acknowledgement of all the researchers and cooperation partners who have contributed to research. Research results can be applied for social or commercial purposes, including in contribution to innovation, development of teaching, patenting of inventions, cooperation with entrepreneurs and other parties outside the research community. The greater the number of people who have contributed to publishing and application of research results, the more essential it is to reach an agreement on these questions to avoid damage to mutual cooperation and reliability of research.

RESPONSIBILITY OF THE RESEARCHER

3.1 Who is the author of the research publication?

3.1.1 The author(s) of the research publication are the person or persons who have created the work and have been named as its author(s).

3.1.2 The researcher agrees on the authorship of the research publication with persons who contribute to the creation of the publication, generally presuming that they meet all the following criteria:

- *Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND*
- *Drafting the work or revising it critically for important intellectual content; AND*
- *Final approval of the version to be published; AND*
- *Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.*[7]

3.1.3 The researcher can also agree on the authorship of the research on other principles if the contribution of each author is clearly identifiable and pointed out, and each author is individually responsible for his/her part.

3.1.4 The researcher discusses the attribution of authorship of the research publication, the sequence of authors and other questions related to publishing with all colleagues and partners who contribute to the research.

3.1.5 The researcher coordinates the changes made in the manuscript with all the other authors.

3.1.6 The researcher has the right to withdraw authorship if s/he does not agree with some part of research or is not willing to be responsible for the content of the whole publication. Nonetheless, his/her essential contribution should be mentioned, if possible, e.g., in acknowledgements.

3.2 How to acknowledge the contribution of third persons to the research publication?

3.2.1 In the publication, the researcher acknowledges the persons who do not meet the criteria of authorship but who have contributed to the conduct of research and completion of the research publication, and notes their role and contribution.

3.2.2 The researcher does not use authorship in exchange for data, use of equipment or any other benefits.

3.2.3 The researcher publicises the financers and supporters of research, limitations of the research and other information that can influence the reliability of research.

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7 The criteria have been quoted from the recommendations of the International Committee of Medical Journal Editors. *Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals*. (2016) http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html (accessed 24 October 2017).

3.3 What should be considered when publishing research results?

3.3.1 The researcher is responsible for the up-to-date, precise, honest and transparent presentation of research results and data.

3.3.2 The researcher refers accurately to his/her own and other researchers' earlier published and unpublished works according to the conventions of the research area and instructions of the research institution, publication or publisher.

3.3.3 The researcher publicises the repeated use of the same data, interpretation or results in more than one publication, referring to the earlier place of publication.

3.3.4 The researcher also seeks the publication of negative research results to save resources and to avoid needless repetition of research.

3.3.5 The researcher informs the publication or the publisher about errors discovered after publishing. In the case of essential shortcomings, the researcher applies for the retraction of the publication.

3.4 Which recommendations and restrictions should be considered at publishing?

3.4.1 The researcher avoids publishing in a publication if doubts emerge about the reliability of the publication or the publisher or the quality of peer reviewing.

3.4.2 If other conditions are equal, the researcher prefers open-access journals.

3.4.3 The researcher takes care that scholarly thinking and published research results would reach the broad public and, if necessary, cooperates with parties outside the research community to popularise research.

3.5 What should be considered when submitting research results for publication and reviewing?

3.5.1 The reviewer ensures the quality, impartiality and timeliness of reviewing and keeps the research results that have become known to him/her confidential until their publication.

3.5.2 The reviewer does not use his/her position for imposing his/her own research results and publications on the author with the aim to increase citability.

3.5.3 The author of the research publication does not simultaneously submit the same article to several journals for reviewing and publication.

3.5.4 If the research publisher has forwarded the reviewers' feedback and proposals for corrections and promised to publish the corrected publication, the author of the research publication does not change the publisher.

3.6 What is the responsibility of the researcher for the application of research results?

3.6.1 The researcher considers it essential that his/her research results would find socially beneficial application.

3.6.2 The researcher is open for cooperation with other parties to present the possibilities for application of research results and participates in this process if possible.

RESPONSIBILITY OF THE RESEARCH INSTITUTION

3.7 How to support research integrity in publishing?

3.7.1 The research institution supports honest, fair and transparent attribution and acknowledgement of authorship by necessary instructions and training.

3.7.2 The research institution enables to contest authorship and ensures the confidentiality and impartiality of settling of disputes.

3.7.3 The research institution informs researchers about potential threats and gives instructions how to assess the reliability and quality of research journals and publishers.

3.7.4 The research institution provides training and facilities (e.g., plagiarism detector software) for avoiding misconduct and ascertaining it, and supports dealing with such cases.

3.7.5 The research institution encourages researchers to inform about errors discovered later and to correct their errors.

3.7.6 The research institution acknowledges and supports researchers and appreciates the contribution of researchers who popularise their speciality or help to solve problems of social significance.

4. RESEARCHER IN THE RESEARCH COMMUNITY

A conflict of interests can occur at any stage of the researcher's work if the credibility of his/her work or decisions becomes questionable because of competing interests. Decisions not based on the interests of research, use of research resources in private interests, deliberate influencing of the objectivity of decisions, causing deliberate harm to competing researchers or research institutions and more favourable treatment of familiar persons are clearly condemnable. Being aware of potential conflicts of interests is particularly essential as this may be accompanied by the threat of corruption.

The role conflict is a situation where the researcher has to simultaneously consider the conflicting requirements of his/her roles. In addition to being a researcher, the researcher can have other roles in academic or personal life, like being a supervisor, teacher, leader, administrator, expert, populariser of research, parent, spouse, or member of a non-governmental organisation. In these situations, it is very difficult to say which role the researcher should prefer to others. In such cases, it is essential to perform each role as well as possible. Role conflicts tend to grow into conflicts of interests; therefore, they cannot be ignored.

RESPONSIBILITY OF THE RESEARCHER

4.1 How to react if a conflict of interests is suspected?

4.1.1 The researcher always reacts if a conflict of interests is suspected in his/her own or colleagues' activities.

4.1.2 If a conflict of interests is suspected, the researcher avoids solving it alone and, if necessary, asks the colleagues or the research institution for advice how to act in such a situation.

4.1.3 The researcher assesses critically the impact of the conflict of interests on his/her own and the colleagues' decisions, taking into consideration that not all the conflicts have an inappropriate influence on decisions.

4.1.4 The researcher protects the confidential information that has become known to him/her during the disclosure of a conflict of interests.

4.2 How to act in the case of a conflict of interests that concerns oneself?

4.2.1 The researcher develops awareness of risks related to conflicts of interests and prevents them and does everything depending on him/her to ensure the objectivity of his/her decisions.

4.2.2 The researcher discloses all the conflicts of interests related to research in good time and informs colleagues and cooperation partners about conflicts of interests that can occur during research, at the same time considering the possible restrictions resulting from confidentiality.

4.2.3 As an author, the researcher informs the journal or the publisher about all the monetary or other interests and personal relations that can influence the reliability of the research to be published.

4.2.4 As a reviewer, the researcher informs the journal or the publisher about any circumstances that can influence the impartiality or reliability of his/her review. In the case of a significant conflict of interests, the researcher withdraws from reviewing.

4.2.5 As an expert, the researcher informs the institution asking for expert opinion about any competing or private interests that may compromise his/her independence and impartiality.

4.2.6 In the case of an essential conflict of interests, the researcher resigns from the position of a decision-maker, assessor or expert. If the researcher still continues in the role of a decision-maker or assessor, s/he has to substantiate his/her decision to all the parties honestly and clearly.

4.3 How to create and keep good collegial relations?

4.3.1 The researcher develops awareness of his/her different roles and their requirements and addresses the tensions resulting from role conflicts, considering the human dignity of all the parties and the principles of research integrity.

4.3.2 As a colleague, the researcher is helpful, polite and considerate to all colleagues and avoids discriminatory and groundlessly different treatment of colleagues.

4.3.3 The researcher as a teacher and supervisor communicates with students and supervisees cooperatively; agrees on how and in which aspects s/he supports the supervisee, supports the supervisee's development at work and acknowledges the supervisee's progress.

4.3.4 The researcher regards his/her supervisor(s) and supervisee(s) respectfully, acknowledging and thanking them for their support to the research and personal development of the researcher.

4.4 How to promote critical discussion in the university and in the society?

4.4.1 The researcher assesses critically colleagues' research and gives substantiated feedback to their work regardless of the colleagues' academic status, research achievements or work experience.

4.4.2 The researcher acts as an expert only in questions where s/he can rely on scientific knowledge and his/her research, making a difference between personal opinion and expert assessment.

4.4.3 When making presentations to the public, the researcher states clearly whether s/he represents his/her personal views or the official views of the research institution.

RESPONSIBILITY OF THE RESEARCH INSTITUTION

4.5 How to prevent and deal with conflicts of interests?

4.5.1 The research institution consciously prevents conflicts of interests when electing or appointing researchers to their posts, allocating resources and acknowledging researchers.

4.5.2 In decisions regarding the institution, the research institution ensures the transparent, impartial and fair solution of conflicts of interests.

4.5.3 The research institution enables all staff members to report confidentially about conflicts of interests.

4.5.4 The research institution creates instructions and guidelines needed for recognising and dealing with conflicts of interests and provides the necessary training.

4.5.5 The research institution establishes common principles defining in which cases the researcher can work in his/her speciality outside the research institution, and for which research done outside the research institution the researcher can ask for remuneration.

4.6 How to create a good work environment?

4.6.1 The research institution supports open and cooperative organisational culture which supports everyone's development.

4.6.2 The research institution provides favourable conditions to researchers for combining and balancing different roles and obligations.

4.6.3 The research institution ensures a safe work environment and equal treatment to all its staff members, considering any bullying and harassment unacceptable. The research institution establishes a procedure for dealing with breaches of equal treatment and other good collegial relations and bullying at work.

5. OBSERVANCE, PROMOTION AND APPLICATION OF RESEARCH INTEGRITY

Learning and observance of principles of research integrity is the obligation of every researcher. The research institution can support and promote this by shaping an environment that fosters the observance of research integrity. Each researcher can be ultimately responsible only for his/her own choices and decisions. Still, research integrity does not achieve its aims if it is followed only by a few researchers, if researchers are not aware of research integrity, if they consider its observance burdensome or unnecessary. Therefore, the task of the research institution is to support researchers and make sure that the principles of research integrity are actually followed. Researchers must have the possibilities of asking for advice and informing confidentially about possible breaches of principles of research integrity. The research institutions have the right to decide what the fair and proportional reaction is to breaches of principles of research integrity and which procedural rules are the most appropriate for dealing with suspicions of breaches.

RESPONSIBILITY OF THE RESEARCHER

5.1 How to promote the principles of research integrity?

5.1.1 The researcher follows the principles and values of research integrity and presumes that his/her colleagues also follow them.

5.1.2 The researcher keeps him-/herself informed about the principles of research integrity and regulations concerning research.

5.1.3 Colleagues set an example to one another with their behaviour, supervise and advise one another on following the principles of research integrity.

5.1.4 Supervisors and leaders of research groups take care that the research supervised by them is in conformity with the principles of research integrity and ensure that the colleagues supervised by them are aware of the standards and regulations concerning research.

5.2 How to react to probable breaches of principles of research integrity?

5.2.1 The researcher informs colleagues or the research institution about probable breaches of principles of research integrity and, if in doubt, asks for advice.

5.2.2 The researcher avoids baseless malevolent or self-seeking accusations against colleagues and considers such accusations contradictory to integrity of research.

5.2.3 The researcher is open and gives explanations about all suspicions concerning his/her breach of principles of research integrity.

RESPONSIBILITY OF THE RESEARCH INSTITUTION

5.3 How to promote research integrity?

5.3.1 The research institution provides both students and researchers with training and the necessary auxiliary materials and instructions for following the values and action principles of research integrity.

5.3.2 The research institution supports leaders of research groups and supervisors so that they could set an example and be mentors to colleagues in following the principles of research integrity.

5.3.3 The research institution acknowledges researchers who excel in promoting and disseminating research integrity and also communicate their viewpoints to the public.

5.4 How to deal with breaches of principles of research integrity?

5.4.1 The research institution creates clear guidelines for reporting on possible breaches of principles of research integrity and defines clearly who should be approached in the case of suspicions and questions.

5.4.2 The research institution establishes the order of dealing with suspicions of breaches, agrees on sanctions and ensures that the procedures are fair, impartial and transparent. If breaches, including malevolent accusations, are discovered, the research institution applies sanctions agreed upon in relation to the person who breaches research integrity or presents a malevolent accusation.

5.4.3 The research institution protects bona fide whistleblowers, ensures the confidentiality of dealing with possible breaches and protects the dignity and inviolability of private life of all the parties involved.

5.4.4 The research institution reacts to ascertained breaches immediately, considering the severity of the breach, the earlier conduct of the transgressor, and differentiating between deliberate breaches and honest errors.

5.4.5 The research institution ensures access to information about earlier proceedings and ensures that public information honours the privacy and human dignity of all parties.

ANNEX

ANNEX 1. GLOSSARY

Translated from Estonian by the Luisa Tõlkebüroo

This glossary contains the explanations and definitions of terms related to research integrity.

Application means the use of research results for societal or commercial purposes. Application is not limited to the creation of ways of application. It also includes the testing and development of technologies, contributions to knowledge transfer, support of innovation, development of studies and research cooperation with entrepreneurs and other parties outside the field of research.

Benefits and harms mean any direct or indirect consequences of research which affect the parties related to the research. Beneficial effects could involve new or improved knowledge or useful applications that help to improve people's well-being, health, their living environment or their quality of life. Benefits may also be expressed on the societal level, supporting education, public health, social coherence, social well-being and development, economic and technological development, security and the protection of the environment, biodiversity or cultural heritage. Harmful effects violate people's rights and damage health, well-being, the environment, biodiversity, cultural heritage, Estonian society or humanity.

Not all benefits and harms can be foreseen, which is why their assessment must be critical and unbiased. This means that researchers should not overestimate positive effects or promise them to different parties without providing any evidence. Likewise, negative effects should not be underestimated or swept under the rug. When assessing benefits and harms, it is important to consider their probability, the extent of their influence and the parties affected. This is a prerequisite of proper prevention of research-related risks. This also means that researchers do not have to burden themselves with describing unlikely effects but focus on the consequences that they deem important, likely and foreseeable.

A conflict of interest is a situation where the reliability of a researcher or their work or decisions becomes questionable due to their personal and professional interests that are competing with one another. Depending on the decision or situation, the conflict may also be caused by long-term cooperation, family relations or prior supervisory work. Consequently, a conflict of interest is not essentially bad, but it should not be covered up or ignored. However, decisions that are not based on research interests, the use of research resources for private gain, the deliberate influencing of the objectivity of decisions, the deliberate damaging of competing researchers or research institutions and the favouring of persons who are close to you are clearly condemned.

In order to avoid damaging consequences, researchers are required to disclose their conflicts of interest or step down from decision-making positions. Disclosure does not eliminate a conflict of interest, but it helps other decision-makers or colleagues to assess the extent to which it may affect the reliability of decisions. It is necessary to acknowledge possible conflicts of interest, as these may entail a risk of corruption.

Data means any research data regardless of their contents, format, volume, level of processing or analysis, research value or legal status.

> **Raw data** are unprocessed data that the researcher first records in the process of data collection. If data are collected with the help of equipment or software, the preliminary data issued to the researcher by this equipment or software are regarded as raw data. In addition to data that have been

processed to make them presentable and usable, the principles set forth in the Estonian Code of Conduct for Research Integrity with regard to data should also be applied to unprocessed raw data.

Metadata are data about research data. Metadata are needed to describe data and help to ensure their findability and usability. For instance, metadata can contain information on when and by whom the data were collected, when the database was last changed or restrictions on the use of the data.

Personal data are any data relating to a person who has been identified on the basis of these data or can be identified via further processing of the data. Data are not considered personal if they cannot be used in any way to identify the person to whom the data collected apply or if the identification process is unreasonably complicated. Additionally, there are personal data that are legally defined as **special categories of personal data**, the processing of which is subject to stricter restrictions. More information can be found in the General Data Protection Regulation (GDPR) and the Personal Data Protection Act.

Dual use refers to the possibility of using research results for both social and military purposes. Dual-use research requires researchers to acknowledge this topic and, in the case of applied research and development, to assess the risks of dual use. These principles are derived from researchers' general obligation to ensure the security and safety of research. The export of dual use technology and goods is legally regulated in the European Union.

Duplicate publication, which is sometimes referred to as redundant publication, is when the content or the data used in a published text are identical to an earlier published text. There is no one specific way to assess redundancy or duplication. The justification of redundancy depends on the circumstances of each individual case, what is being repeated and to what extent and the reasons for it. The understanding of duplicate publication may also differ by publisher, research field and institution, which is why it is important for authors to provide full details of the circumstances of duplicate publication and provide correct references to prior publications.

Duplicate publication is an important question in publication ethics because the duplication of texts increases the growing volume of information, makes the finding of useful information more difficult, has the potential of amplifying the importance of repeatedly published research results and reduces other authors' chances to publish their text in the case of limited publication volumes. Duplicate publication can also be beneficial to researchers, whose number of publications will increase this way. Hiding duplicate publication from publishers and readers is also frowned upon.

Fabrication is the invention of research data or experiments and presenting them as truth.

Falsification means the amendment and biased or incomplete presentation of data as well as manipulation of equipment or research material. The aim of falsification can, for instance, be the presentation of data in a way that supports the hypothesis by knowingly ignoring the data that refute it.

An incidental finding is an unexpected discovery or new information about a person included in research, which is generally not related to the research objectives but is important in a certain way. For instance, it may have a strong effect on the person's health, well-being, private life or other benefits and rights. Incidental findings are, above all, important in the medical and social sciences where researchers may accidentally discover health problems, illnesses or the probability of their occurrence as well as sensitive private circumstances or cases of violence or offences. In such cases, it is important to pay attention to the person's willingness and consent with regard to dealing with incidental findings. The case is more complicated if an incidental finding affects more people than just the people included in the research.

Indigenous people are minority people living in the world who are distinguished from the native people of countries and regions. Even though the UN passed the Declaration on the Rights of Indigenous People in 2007, no single definition of indigenous people exists. Instead, the UN has pointed out a number of characteristics to serve as a basis for defining indigenous people. These include: self-identification as being distinct from the country's dominant population group and self-identification as a member of an indigenous people; historical continuity with an earlier, pre-colonial community; a strong link to one's territory and surrounding natural environment; a distinct language, culture and beliefs; formation of non-dominant groups of society; and maintenance and reproduction of ancestral living environments and systems. (The Concept of Indigenous People, 2004)

The topic of indigenous people is important in research ethics because their inclusion in research requires the acknowledgement of cultural differences, respecting them and their involvement. For instance, communities' understanding of property, agreements, rights and obligations may differ considerably from how researchers understand these concepts. This in turn complicates the process of obtaining indigenous people's consent to collect personal data or other research material or the fair use, distribution and compensation of benefits derived from **traditional knowledge**. When studying indigenous people, it is also important to proceed from their right of self-determination to decide on the research conducted about them.

Informed consent is a process that involves a person voluntarily agreeing to participate in research after they have been informed of and understood it. Informed consent is required for realising personal autonomy and this applies to both the physical freedom of self-determination and the processing of personal data. The informed consent form must include information, presented in a way that is understandable to the person, about the objectives of the study, funders, what happens with results, how and how long data are stored and who has access to the data collected from the person and what happens in the case of unexpected events, problems or incidental findings. The informed consent must also clearly state that participation in the study is voluntary and the participant may withdraw their consent at any time. The person must also be informed of the possible consequences of the study and how fair compensation for damage is ensured.

Consent is always required when a researcher studies a person directly and collects personal data from them. The process of obtaining consent may differ in cases that involve analysis of secondary data or where research objectives would not be achievable if the person is informed. In exceptional cases where a person's consent is not asked, researchers must conduct their studies in accordance with the law, obtain the required approvals and ensure the taking of measures necessary to protect the rights of persons.

The exact content, format and time of informed consent depends on the research conducted, the method used and data collected. The notification should still include all of the above information even if data collection is anonymous or does not concern personal data.

Misconduct means, above all, any severe ethical violations in research, which include plagiarism, data fabrication and falsification. Misconduct has been defined in various ways in research and some broader definitions include other severe violations of research ethics and research integrity in addition to the above, for instance, the violation of the expression of will of the people included in research, cruelty towards test animals or falsification of permits required for research.

Misuse is the use of data, research results or applications in a way that is harmful to people and the environment.

Open access characterises research results, mainly articles, conference presentations and monographs whose contents are available for readers free of charge. Open access has different forms and in addition to free access, it may grant readers additional rights of use. Open access is based on the idea that

knowledge should be free to distribute and use, which in turn allows them to be applied more extensively for the good of the society.

The topic of open access is linked to open access journals that publish research results that can be accessed free of charge yet may ask for a payment from the authors of the research publication for such access. When it comes to publication, open access has raised a number of questions with regard to the quality of journals and peer-review, copyright, use of research funding, research careers, the number of publications and free distribution of knowledge.

Open data refers to the approach or idea that access to research data should be free of charge in order to facilitate as extensive **re-use of data** as possible. For data to be open, they must be free of charge and not subject to any technical or legal restrictions to their use for personal or research purposes.

A person involved in research is a person from whom or with whom data are collected during research.

Plagiarism occurs when a researcher presents the thoughts, ideas or research results of another person without referring to their initial author. Plagiarism is, above all, focused on referencing, which is why it also involves other questions related to proper referencing.

Publication means making research results or data available to the public in, for example, research journals, conference presentations, documentaries, speeches, monographs, textbooks and educational videos.

Research means, in the context of the Estonian Code of Conduct for Research Integrity, a study carried out using the scientific method and related activities. In addition to collection and analysis of data, research also covers other activities necessary for conducting a study, such as the selection of research topic and method, applying for resources, coordinating research, cooperation with colleagues, agreements with other parties and the publication and application of results.

Research conducted in developing countries may raise additional ethical questions that researchers should first consider. Prior to conducting research, researchers should consider the cultural and social characteristics of the local population, which may influence the process of obtaining consent and collecting data and research material from people. Another issue is the fair distribution of research benefits and expenses. For instance, clinical studies conducted in a developed country may contribute to the development of an important medicine, even though the country itself is not sufficiently wealthy to provide this medicine to its people. In such situations, researchers are responsible for figuring out how to compensate participants for their involvement in research, for instance, by offering them means to continue their treatment, training or improve their quality of life.

Research in developing countries and research involving **indigenous people** are thematically related because both require greater sensibility in relation to social and cultural differences, involvement of the local community, respect towards them and taking into account their possible opposition, contribution to the improvement of their quality of life and fair compensation for participation in research. However, the differences arise from the fact that indigenous people may live in both developed and developing countries and their special status must be taken into account in both cases.

A researcher is, in the context of research integrity, a person who conducts research independently or under supervision either alone or as part of a larger research group. Good research practice applies to everyone who engages in research regardless of their position, institutional belonging or employment relationship. Doctoral students, university students and persons who are engaged in research outside a research institution are also researchers. A researcher's level of responsibility with regard to following good research practice may differ to an extent depending on their position and experience. For instance,

the head of a research group or a supervisor of doctoral students, who should serve as an example to their colleagues, are subject to a greater responsibility to follow good research practice. Students engaged in research, who are still studying and practising research, are subject to a somewhat smaller level of responsibility. However, this does not mean young researchers or students are completely exempt from responsibility due to their inexperience.

A research institution is, in the context of the Estonian Code of Conduct for Research Integrity, an institution that is focused on research and employs the necessary researchers and which may additionally distribute research knowledge via teaching, publication or technology transfer. All of the positively evaluated research and development institutions in Estonia are research institutions.

The Estonian Code of Conduct for Research Integrity does not treat funding, regulatory and controlling institutions, publishers or other research-related parties as research institutions, which is why they are not subject to the principles of research institutions' responsibility set forth in practice. This does not mean that these institutions are not important to research or that they cannot follow the principles of research integrity in their work.

In certain cases, researchers may work in several research institutions, in Estonia and abroad, or in institutions whose main activity is not research. This, however, does not reduce researcher's responsibility to follow the principles of research integrity. If different institutions have different principles with regard to conducting research, stricter principles should be followed where possible.

Research integrity is a general and abstract concept, which refers to responsible conduct of research. In a narrower sense this refers to following rules and regulations, proper design of research and avoiding misconduct. In a broader sense research integrity refers to all the different aspects of responsible conduct, including public accountability and social responsibility, and covers all different areas of academic life. Integrity is ascribed to research in general or to individual researchers. Some aspects of research integrity are the responsibility of research institutions, for instance teaching, supervising, training, guidance, support, handling misconduct, reviewing, assessment and promoting environment that fosters integrity.[1]

Re-use of data occurs when an author uses data that are collected and already published or analysed by them or someone else for new research. The prerequisites of re-use of data are free access to data and the right to use them for research and that the data are sufficiently described and processed in a way that allows them to be used for research. In order to be re-used, data must be managed correctly and their origin must be properly indicated.

A role conflict occurs when a researcher must simultaneously consider the conflicting requirements of their different roles. In addition to the role of a researcher, researchers have other roles related to their academic or personal life, such as the role of a supervisor, lecturer, manager, administrator, expert, science promoter, parent, spouse or member of a non-governmental organisation. In such situations, it is very difficult to say which role the researcher should prefer to others. In this case, it is important to fulfil each role as well as possible under the circumstances. Role conflicts have a tendency to develop into conflicts of interest, which is why they should always be addressed.

Secondary use of data is a special case of data re-use, where the data that researchers use for their research are collected by someone else and could have been initially collected for a purpose other than research. For instance, the data may originate from national, public or private databases. In the case of

1 This definition is taken from Parder, M-L. and Juurik, M. (2019) Deliverable 1.1 *Reporting on existing Codes and Guidelines* of the EC Horizon2020 project PROmoting ethics and integrity in non-medical RESearch; p 36.

secondary use of data, it is important to consider the initial data collection and its methodology in order to assess the reliability of secondary data and their usability for research purposes.

Vulnerable groups or **vulnerable persons** is a general term for persons and groups who are characterised by higher than average vulnerability. Vulnerability can be understood in two ways in the context of research. First, vulnerability characterises a person's inability or incapability to express their will freely, for instance, if they are forced to do so or if they are not capable of understanding the content of their expression of will. Secondly, vulnerability characterises susceptibility to damage, for instance, natural disasters, health risks or legal discrimination. The causes of susceptibility to damage are generally of a social and economic nature and are expressed in restricted access to education, healthcare or the labour market, which in turn limits the opportunities of these persons and groups to prevent or cope with damage.

There is no single specific list of vulnerable groups, but these generally include minorities, the poor and any politically oppressed groups that are marginalised in society. Depending on the situation, people with restricted ability to act or decide may include children, seniors and people with chronic illnesses or disabilities.

In the context of research, researchers are required to consider the vulnerability of people included in research when assessing damage and benefits as well as when obtaining their consent for participation in research. The significance of assessing vulnerability may vary depending on the research. In the case of human research, it is always important to consider the vulnerability of persons in the context of research design and when obtaining informed consent and to assess to what extent the consent is voluntary and to what extent it is influenced by other persons, limited knowledge or opportunities. The topic of vulnerability is also important in developing countries and in the case of research conducted with traditional communities, where problems that arise from poverty and possible discrimination must be considered.

Traditional knowledge (indigenous knowledge) is a folkloric collection of knowledge, skills and practices characteristic to indigenous people, which might be unique in the global context and therefore valuable research material. Depending on the situation, traditional knowledge can also be material and intellectual heritage, language, life organisation or the beliefs of indigenous people. Traditional knowledge is an important topic of research ethics because it is not protected under intellectual property rights, even though the results of research and development work based on it can be valuable and legally protected. Consequently, researchers are responsible for ensuring that indigenous people are fairly compensated for the use of their traditional knowledge for research, commercial or other purposes. Researchers must also ensure that the interests of indigenous people are not damaged in the course of the collection of traditional knowledge and its further use and that they retain the right to use such knowledge.

ANNEX 2. EXPLANATIONS OF VALUES

Freedom and responsibility

Freedom from both external and internal limitations is the precondition and guarantee for striving for new knowledge. Still, the freedom of research is not unlimited; it must consider social and cultural norms which can be criticised and reassessed from time to time, but researchers should not arbitrarily surpass them. Freedom of research means understanding that greater freedom is a privilege that is accompanied by greater responsibility.

Freedom of research means that no unsubstantiated limitations are set to researcher's research and the researcher is free to study any problems or hypotheses, and that search for new ideas or criticising of old ones should not be hindered by unsubstantiated limitations by the state, the society or the research community. Freedom to choose research themes helps to form new schools and trends of thought and to avoid dogmatisation of research. Freedom of research means that search for new ideas or criticising of old ones should not be hindered by unsubstantiated limitations by the state, the society or the research community.

Responsibility means responsible research which is needed for ensuring the credibility of research. In his/her work, the researcher follows all the relevant rules and the highest standards of research integrity. The researcher is aware that his/her conduct serves as a model for future generations of researchers.

Responsibility means being aware of one's obligations to nature and society. The researcher is responsible for his/her own research and its results and weighs the potential benefits and harms of new knowledge for the society, including when the potential applications and undesirable influences of new knowledge are not known for certain or are difficult to assess. In such cases, the researcher assesses the potential impact objectively, does not hide essential information about research and informs the public about the potential threats.

Honesty and objectivity

Honesty as a principal value results from the aims of research itself and striving for truthful and evidence-based knowledge. The achievement of these aims is notably hampered by fabrication and falsification of data or research results. Interpretation of results is more complicated, as one should remain objective and critical, but different research areas and disciplines can have different traditions and standards for drawing conclusions.

Honesty also presumes **precision, impartiality and independence** at all stages of research. The researcher has to be precise to avoid errors in data or results caused by carelessness. Precision is also necessary for critical assessment of the research of others to discover errors and contradictions. The impartial researcher does not assess applications or candidates for positions or does not interpret research results according to personal likes or dislikes for people or schools. Independence means that the researcher does not allow his/her research to be influenced and will not conduct research in the interests of a company, interest group or public institution if these are not in accord with research interests. Although full independence is not possible, the researcher should always be attentive and critical of his/her own work and avoid potential conflicts of interests.

Honesty means honesty to oneself. The researcher dares to admit his/her errors to others and to reassess his/her earlier conclusions. It is important to differentiate deliberate falsification and fabrication from

making of errors. Making of errors is human and they should be admitted. Deliberate denial of errors, however, can be as harmful for research as falsification or fabrication of data.

For the researcher, honesty means telling the truth and striving for transparency. All participants in research, from students to partners outside the institution, should clearly understand for which purpose, for whose money and how research is conducted. Transparency is important in managerial decisions like recruitment of researchers, allocation of pay and bonuses, formation of research groups and use of research funding. Transparency is also essential in each researcher's own work, particularly concerning data, methods and results. This creates preconditions for the research community to assess research critically.

Objectivity means that the researcher's work is always based on evidence and s/he also requires this from colleagues. The researcher makes a clear distinction between factual statements, assessments and personal opinions. When presenting facts, the researcher is precise and refers to their source. In the case of assessments, the researcher explains what his/her assessments are based on. The researcher indicates clearly in which area s/he has expertise and does not act as a researcher or expert in questions that are outside the scope of his/her research.

Respect and caring

Respect as a fundamental value results from each person's right to life, equal treatment and dignity, and it also includes the more general reverence for life. For the researcher, dignity means respect for and regardful treatment of subjects of research, colleagues and cooperation partners. Dignity is particularly important in these research areas where people and their health are studied, animal experiments are conducted, or where nature is involved.

Respect means honouring people' s autonomy and privacy. The researcher has to respect the subjects' will, inform them about the research and their rights as subjects. The researcher observes the rules and principles of data protection and informs the subjects about any collection, application and storage of personal data. Dignity presupposes caring and polite communication with persons participating in research. The researcher pays particular attention to human dignity when dealing with children or other persons belonging to vulnerable groups.

Respect means reverence for life, which includes caring treatment of experiment animals. The researcher avoids unsubstantiated harm to experiment animals and causes tortures to animals only if there are no alternatives. Respect presupposes carefulness when using any living resources. The researcher takes care that living resources are used purposefully, to necessary extent and are not wasted.

Respect means protection and careful use of cultural and historical heritage. The researcher supports cultural diversity and ensures the preservation of material and spiritual heritage of humankind for future generations.

Justice

Justice means both fair treatment of people and fair distribution of resources. In treatment of people, the researcher observes the principle of equality. **Equality** means that a person's actual contribution to work and his/her existing knowledge or skill are taken into consideration, not personal relations or favours. In acknowledging and ascribing of authorship, everyone's actual contribution to research is taken into consideration. Equal treatment also means avoiding discrimination – no one should be preferred or disadvantaged because of their research school, worldview, gender, age, nationality, race, religious or political convictions.

The researcher shares resources sparingly, selflessly and justly. Depending on the situation, this can mean either equal treatment of all parties or special treatment based on substantiated needs. When establishing the needs, the researcher is impartial and objective and considers the interests and needs of all the parties without unsubstantiated preference of one to some other. The researcher must strive for greater transparency of the decision-making process and careful consideration and substantiation of decisions.

Justice also means that the researcher should be aware of all kinds of **conflicts of interests**, try to avoid them and inform others about them. It is particularly essential to avoid conflicts of interests in decisions affecting research and its results, like distribution of research funding, election and appointment of staff, granting of coordinations, permits and agreements, reviewing of publications and giving expert assessments. Conflicts of interests may arise from earlier joint research, parallel research, interests of financers and from personal connections with some enterprise or organisation.

Justice also means that the researcher takes all the obligations and roles seriously and strives for their balance. The researcher does not give empty promises and does not take on obligations that s/he cannot fulfil. The researcher should avoid situations where some of his/her roles (researcher, teacher, supervisor, administrator) are neglected.

Openness and cooperation

Openness means that the researcher dares to think differently, seek for new knowledge and doubt earlier knowledge. The researcher is open to cooperation with researchers from other countries, research institutions and disciplines.

The researcher is open to cooperation with different partners for the purposes of research, higher education, knowledge transfer and popularisation of research. When communicating with different parties, the researcher is ready to explain the essence and aims of research. In the situation where different partners have opposite interests, the researcher always observes the interests of the society and research.

Cooperation in research is of particular importance when research is done in large research groups and several research institutions in cooperation with the private sector or within the framework of interdisciplinary research projects. The value of cooperation emphasises the researcher's need to consider different interests and to ensure trusting relations with colleagues, partners and the broader society.

Cooperation also means openness and sharing of ideas, data and research results with cooperation partners and colleagues. Free spread of knowledge is a precondition for critical assessment of the newest knowledge by the research community. Simultaneously, researchers should be aware that, resulting from the need to protect intellectual property, privacy, security or some other value, limitations can apply to conducting research and distribution of results. It is the researcher's obligation to observe such limitations and agreements between partners and to respect the confidentiality of all the cooperation parties.

The researcher promotes a good creative atmosphere, acknowledges the success of colleagues and helps them as much as practicable. A precondition for good research is that the researcher is critical of his/her own and colleagues' work. The researcher does not abstain from substantiated criticism even if it concerns close colleagues or renowned researchers. In criticism, the researcher is always impartial and precise and presents his/her standpoint benevolently, politely and well-groundedly. The researcher takes care that the requirements of research integrity are followed and, in the case of breaches of them, draws the colleagues' attention to it.

ANNEX 3. EXAMPLES OF CASES

The part about the examples of cases in the Code of Conduct for Research Integrity consists of five situations with value choices and possible solutions for those situations. The solutions are constructed in a way that the last (sixth) option would describe the recommended behaviour. However, it must be kept in mind that most of value dilemmas in real life depend on context and that is why it is more important to learn to recognise deliberation points and to discuss and give reasons for value choices, rather than learn the specific recommendations. For that reason, in the courses and trainings about research ethics it is appropriate to use these cases in a way that none of the solutions is ideal (look at the choices from one to five) to instigate active discussion.

I The example case about research planning

Ficticious Research

Professor Pikk happened to read the grant proposal submitted by professor Lühike. Both professors had worked in Estonia on similar topics for many years. Yet, Professor Pikk had never heard about the phenomenon that Professor Lühike's proposal promised to study. Professor Pikk talked to other colleagues who had also never heard about Professor Lühike's research topic. Accordingly, no one believed that the proposal would be selected for funding.

Professor Pikk submitted a grant proposal for the same round of funding as well but that proposal focused on studying much more common phenomena and developing new practical applications. Later, it became known that Professor Lühike received funding but Professor Pikk did not. Professor Pikk began to suspect that the other research group received funding for studying a fictitious topic.

What would you do if you were in Professor Pikk's position?

1. I'd notify the grant providers about my suspicions and ask them to review the application of Professor Lühike once again.
2. I'd go directly to Professor Lühike and inquire about their research topic.
3. I'd openly criticise the division of research funds in the media and stress the unjustness of giving funds to sketchy research projects instead of applied research.
4. I'd trust the evaluation panel and do nothing.
5. I'd voice my concern in a letter to the research institution that employs Professor Lühike and ask them to reprimand the professor.

6. *It's important to talk to all parties to understand the circumstances of the case. Undoubtedly the division of research funds creates tension between competing applicants, but that doesn't mean the fund managers should prefer projects that have already proven their worth or applied research of up-and-comers. That's why we should try to understand Professor Lühike's research topic and, first and foremost, talk to them about the issue. It's also important to notify the fund managers of the suspicions, especially if it's an expert in the field who's doubtful. In that case, further responsibility lies with the funding provider, who must ensure the decisions are unbiased, justified and transparent.*

II The example case about conduct of research

Two PhD students

Doctoral student Tali has gathered tons of video material on their research topic. Before gathering data, PhD student Tali asked all interviewees for written consent confirming that the material would only be used in the dissertation and not shown to third parties. Its contents would remain confidential. The consent form didn't address any further research.

The PhD student gathered data for two years. After some time, doctoral student Tiugu, who is researching the same field, turns to doctoral student Tali, asking to use their video material. Tiugu finds that the material contains valuable data, and gathering this information again would be a pointless waste of resources. Tali refuses to share the material, referring to the agreement with the subjects of the research. Tali is willing to make an exception if Tiugu names them co-author in all publications that use Tali's data. Tiugu refuses that offer and goes to their supervisor, who also supervises PhD student Tali.

If you were the supervisor, how would you respond?

1. I'd support PhD student Tali and assure them they have every right to turn down Tiugu's proposal.
2. I'd tell PhD student Tali that consent can be interpreted in many ways – they could agree to the other student's proposal.
3. I'd make it clear to Tiugu that every researcher has to comprise their own data set – you can't make your life easier at the expense of others.
4. I'd try to convince PhD student Tali that sharing data is a common practice – they don't deserve to be a co-author.
5. I'd make it clear to both students that this is a personal conflict they have to work out among themselves.

6. *The supervisor's task is to support students, which is why I'd speak with both of them and try to explain the complexity of the situation. I'd spell out to PhD student Tiugu that agreements with the interviewees always have to be honoured and if data is used in a new project, the subjects have to be notified and they must give consent. I'd advise PhD student Tali to consider if they could collaborate with PhD student Tiugu and publish a co-authored paper that both have contributed to equally.*

III The example case about authorship, publishing and application of research results

Plagiarism Among the Faculty

A reviewer of research proposals notices that an applicant has used materials from other authors without citing them. The application is rejected and the reviewing committee decides to notify the applicant's university. They send the full review including the list of related works which should have been cited to the dean of the faculty of the initial applicant.

The applicant is an internationally respected researcher and a prominent figure in his discipline who has helped and supported the faculty throughout his long, prolific career. In addition, he is in charge of planning further research projects and associated with several others. As a senior researcher at the university he has supervised many of the faculty's employees.

During the applicant's long career, there have been rumors as well as few overt accusations concerning plagiarism. However, all of them have been refuted as false accusations.

What would you do if you were the dean of the faculty?

1. I'd decide to solve the case myself. I'd have a private conversation with the researcher, listen to their viewpoint and condemn them for their carelessness.
2. I'd decide to gather more information on the researcher's previous projects. I'd form a committee that would critically review their previous publications. If more evidence pointed to plagiarism, I would bring proceedings against the researcher regarding academic fraud.
3. I find that the sent materials are solid proof of academic fraud. I'd make the case public knowledge in the faculty by writing to all staff members of the structural unit that we don't tolerate plagiarism. I'd warn the researcher that if they violate the rules again, they will be fired.
4. I'd decide to help the researcher who is clearly overburdened by their work assignments. I'd talk to the researcher and advise them to cut down the workload to avoid similar situations in the future.
5. I'd discretely address the issue in a smaller circle. I'd gather the immediate supervisor, a professor who's also a coworker and the researcher themselves. The four of us would discuss how such the situation came to be and how we could avoid these issues in the future.

6. *None of the above. Academic fraud severely violates the principles of research integrity. This issue should be taken seriously and solved without bias. To ensure the solution is neutral, I'd turn to a person or committee that deals with academic fraud cases at the university. It's important to allow the researcher to defend themselves and make sure the allegations are justified. That's why it should be thoroughly thought through if a review by the funding institution is enough to prove guilt or whether additional info should be gathered. The head is also responsible for guaranteeing the integrity and privacy of the researcher until the case is closed. The researcher should be treated as innocent until proven guilty, which is why no information should be made public until proceedings are terminated. If guilt is indeed proven, it should be considered whether the researcher's name should be published. Previous agreements must be followed through and attention should be paid to the severity of the violation, the researcher's behaviour prior to the incident, etc. It's also important to take note of the ways these situations could be prevented in the future and how researchers could be supported following the principles of research integrity.*

IV The example case about the researcher in the research community

Reviewing issue

A journal asks Doctor Valge if they'd be willing to pre-review a paper. As the title seems captivating, Valge agrees. Once he has read the entire paper, the content seems familiar to Doctor Valge. He recalls having heard a conference presentation by Doctor Must on the same topic.

Doctor Valge has no doubt that one of the authors of the reviewed paper is Doctor Must, whose research methods Valge has doubted for a while.

What would you do if you were Dr Valge?

1. I'd notify the journal that I can't review the paper since I know who the author is.
2. I'd write a thorough review and submit it to the journal. I'd make note of having an idea about the author's persona, though.

3. Having a gut feeling about the authors wouldn't significantly alter my judgment about the paper. I'd be as neutral as possible as the reviewer.
4. The journal expects me to give my unvarnished expertise. I'd write a critical review and voice my opinion on the used methodology.
5. I feel I couldn't remain entirely objective but I wouldn't want to go back on my promise to review. I'd ask a friendly colleague who's unaware of who the author is to write the review, but we'd agree to put me as the author.

6. *I'd write to the editors of the journal and let them know of my doubts and critical stance toward the research methodology of Doctor Must. I'd see how the journal feels about the situation and act according to the editors' instructions.*

V The example case about observance, promotion and application of research integrity

Colleague's accusation

Research fellow Rand goes to the head of the research group Professor Kallas, complaining that research fellow Põhi in the same group has publicly embarrassed the institution. According to research fellow Rand, they heard from students that research fellow Põhi had been staggering around and acting indecently during Walpurgis night. After all, this isn't the first incident like that. Research fellow Rand finds that behaviour like that violates the good practice of science, since it damages academic the integrity and the reliability of a research institution and sets a bad example for students. Rand finds that something should be done right away – it's very hard for them to work with Põhi and if Professor Kallas doesn't do anything, they will submit an official complaint to the research institution.

Professor Kallas then talks to research fellow Põhi, who admits that things might've happened the way Rand had described but that's not a violation of research integrity – blaming him for damaging academia is malicious and unjust. Research fellow Põhi stresses that work has been stressful lately and their free time is no one's business.

What would you do if you were Professor Kallas?

1. I'd try to mend things between the co-workers, stressing that our joint goal is to complete the research project. After that we could discuss if long-time cooperation is in the cards.
2. I'd explain to Rand that what research fellow Põhi does in their free time is private business and has nothing to do with research integrity. I'd ask them not to submit an official complaint as that would only harm our work relationship.
3. I'd agree with research fellow Rand's critique and warn Põhi against such behaviour – serious consequences might follow and their career at the institution might suffer.
4. I'd feel the conflict definitely needs to be solved but I couldn't objectively assess the situation myself. I'd delegate the case to the head of department.
5. I'd do nothing. I'm convinced that the complaint made by research fellow Rand has no effect on the work of the research group. It's better to stay neutral in a conflict between two colleagues.

6. *The head of the research group bears responsibility and it's their job to react and take a stance, regardless of whether the accusation is justified or not. The head of the group must defend their employee while*

honouring the code of conduct for research integrity. There's no way to draw a clear line between a researcher's private life and their professional activities. Someone will always disagree. The right to privacy and personal autonomy, the reliability of the researcher and the institution, and good cooperation are all equally important. You also have to be a good role model to students. That's why research institutions should develop agreements to solve these issues. The head of the research group could also go by these guidelines. If no such agreements are in place, then the head of the group must solve the incident on their own or ask colleagues and experts inside the institution for help.

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