Responsible Open Science: an ethics and integrity perspective

The action should examine and map the ethical, legal and social implications/challenges as well as the research integrity issues related to Open Science, and consequently identify and analyse the necessary elements to support the integration of research ethics and integrity as structural component of Open Science.

Issues to be addressed include, among others, the need to develop appropriate infrastructure and tools for handling sensitive personal data (especially with regards to the anonymisation/pseudonymisation mechanisms, the possibility to seek the informed consent of the data subject in case of further research, data storage and security measures in place). In this context, the action should explore, among others, to what extent the application of Blockchain in the context of open data could address concerns related, for example, to privacy, and examine further the use of this technology in the context of open data, evaluating the opportunities and limitations. [[https://www.europeandataportal.eu/en/highlights/open-data-and-blockchain-match-made-heaven]]

The action should also explore ethical issues and opportunities related to the implications of Open Science on reproducibility, on the evaluation of science and scientific reputation, on scholarly communication and on the involvement of citizens in the scientific process.

The specificities of different disciplines should be clearly delineated (e.g. with regards to qualitative data from social sciences and humanities research) and issues related to inter-institutional, inter-disciplinary and international collaboration among all actors in research and innovation should be explored.

The work should be based on a bottom-up approach, gauging the attitudes of all relevant stakeholders (e.g. researchers, research funders, publishers and citizens) through the organisation of workshops and consultations and encourage change in the research culture by promoting communication and dialogue.

Ultimately, the work undertaken should result in (A) a detailed strategic/policy assessment that will enable the Commission to establish policy options as well as practical ways to support the work of relevant stakeholders in promoting responsible Open Science - defined as Open Science adhering to the highest research ethics and integrity standards. The European code of conduct for research integrity[[European Code of Conduct for Research Integrity of ALLEA (All European Academies) http://ec.europa.eu/research/participants/data/ref/h2020/other/hi/h2020-ethics_code-of-conduct_en.pdf]] will be a main reference.

The work undertaken should also result in (B) operational guidelines to support the work of research teams. This should notably address the need to respect Open Science related obligations in the preparation of proposals to request funding at EU level or in other contexts.

The need to complement the European Code with specific guidelines should be also assessed. If needed, a proposal (C) for short documents complementing the Code should be made.

In addition, this action should produce (D) traditional and online training material (reflecting the guidelines) on responsible Open Science for students, young and experienced researchers. The material will form part of the training e-platform created by European Network of Research Ethics and Research Integrity (ENERI) [[http://www.eurecnet.org/eneri/ http://europa.eu/sinapse]] and hosted by European Commission platform SINAPSE[[http://www.eurecnet.org/eneri/ http://europa.eu/sinapse]].

In addition to the above cited network, it is essential to ensure that the publicly available results from relevant EU funded research projects (e.g. PRINTEGER[[https://cordis.europa.eu/project/rcn/197299/factsheet/en]], EnTIRE[[https://cordis.europa.eu/project/rcn/210253/factsheet/en]] TRUST, MoRRI[[http://morri-project.eu/]] and RRI-Practice[[https://www.rri-practice.eu/]]) are taken into account. Cooperation with the projects should be the subject of a dedicated horizontal coordination work package.

In line with the strategy for EU international cooperation in research and innovation [COM(2012)497], international cooperation is encouraged.

The Commission considers that proposals requesting a contribution from the EU of the order of EUR 2.50 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Open Science constitutes a ""new approach to the scientific process based on cooperative work and new ways of diffusing knowledge by using digital technologies

and new collaborative tools.""[[https://ec.europa.eu/digital-single-market/en/news/open-innovation-open-science-open-world-vision-europe Idem https://ec.europa.eu/research/openscience/index.cfm?pg=citizen&section=monitor https://ec.europa.eu/research/openscience/index.cfm?pg=home&section=monitor http://data.consilium.europa.eu/doc/document/ST-14853-2015-INIT/en/pdf]] As opposed to traditional practices in science and technology, which largely focus on the publication of research results in scientific journals, Open Science focuses on sharing and (re)using all available knowledge and data throughout the research process.[[https://ec.europa.eu/digital-single-market/en/news/open-innovation-open-science-open-world-vision-europe Idem https://ec.europa.eu/research/openscience/index.cfm?pg=citizen&section=monitor https://ec.europa.eu/research/openscience/index.cfm?pg=home&section=monitor http://data.consilium.europa.eu/doc/document/ST-14853-2015-INIT/en/pdf]] This includes among others, the more active participation of citizens in the scientific process (citizen science)[[https://ec.europa.eu/digital-single-market/en/news/open-innovation-open-science-open-world-vision-europe Idem https://ec.europa.eu/research/openscience/index.cfm?pg=citizen&section=monitor https://ec.europa.eu/research/openscience/index.cfm?pg=home&section=monitor http://data.consilium.europa.eu/doc/document/ST-14853-2015-INIT/en/pdf]], open access to peer-reviewed scientific publications and scientific research data [[https://ec.europa.eu/research/openscience/index.cfm?pg=openaccess]],open peer reviews and metrics for measuring research output (e.g. altmetrics). [[https://ec.europa.eu/digital-single-market/en/news/open-innovation-open-science-open-world-vision-europe Idem https://ec.europa.eu/research/openscience/index.cfm?pg=citizen&section=monitor https://ec.europa.eu/research/openscience/index.cfm?pg=home&section=monitor http://data.consilium.europa.eu/doc/document/ST-14853-2015-INIT/en/pdf]]

Open Science aims to promote transparency and reproducibility of results, increase and widen the diffusion of knowledge and may overall accelerate scientific progress and innovation.

At the same time, in order to maximize the benefits of Open Science, there are several ethical, legal and social challenges that need to be addressed. Such challenges include:

- possible development of new forms of malpractice

- risk of diluting research results of high quality (emergence of fake science)

- risk of new bias in the assessment of the quality of the research output and impact notably via the alternative metrics

- issues related to content-mining, the privacy of data subjects, potential conflicts with intellectual property and data protection rights

- the emergence of questionable dissemination/publication practices like the proliferation of predatory journals that exploit the open access publishing business model.

The strong connection between Open Science and research integrity has been underlined in the Council conclusions on research integrity, where the Member States recognise ""the importance of open science as a mechanism for reinforcing research integrity, while, at the same time, research integrity contributes to open science.""[[https://ec.europa.eu/digital-single-market/en/news/open-innovation-open-science-open-world-vision-europe Idem https://ec.europa.eu/research/openscience/index.cfm?pg=citizen&section=monitor https://ec.europa.eu/research/openscience/index.cfm?pg=home&section=monitor http://data.consilium.europa.eu/doc/document/ST-14853-2015-INIT/en/pdf]]

The action will provide a comprehensive overview of the ethics and research integrity issues and opportunities related to Open Science and how they can be effectively handled at EU level. Furthermore, the action will promote a model balancing the need for openness with relevant ethical, legal, social and research integrity considerations.

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Permalink: https://cordis.europa.eu/programme/id/H2020_SwafS-30-2020