European Commission

OSPP-REC: EU's Open Science Policy Platform recommendations on fostering Open Science

by Open Science Policy Platform members*

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Abstract

Open Science is scholarly research that is collaborative, transparent and reproducible and whose outputs are publicly available. Following the Amsterdam Manifesto on Open Science in 2016, the European Commission (EC) assembled the Open Science Policy Platform (OSPP) to provide high-level policy advice from the key stakeholder communities across Europe to drive a shift towards Open Science, as called for by Commissioner Moedas.

The Platform comprises 25 members consisting of the major representative organisations for each of the key stakeholders involved in Open Science. In 2018, the EC asked the OSPP to pull together a set of integrated advice across the eight priorities in Open Science, as identified by the Commission.

These recommendations are a set of short-term, actionable recommendations that can enable the scholarly community to take the key next steps towards the longer-term vision articulated by Open Science consultations and expert groups set up by the EC and other organisations in Europe and worldwide. Each recommendation has been mapped to the key stakeholder groups that have the main responsibility for driving forward these actions within their communities. This poster aims to provide an at-a-glance view of the prioritised recommendations as agreed on and published by the OSPP members.

Conclusions

It is the responsibility of all stakeholders, Member States and the EC to work together proactively to promote and foster Open Science, and to regularly and openly monitor and report on progress. Further work will need to be done to advise on the implementation of the roadmap for Open Science, and to help identify a range of tools and approaches to support monitoring.

The roles of other important players in this ecosystem, such as SMEs, industry and NGOs, will also need to be explored in the future. We recognise that some individuals and groups may fall into two or more of the stakeholder categories listed above, and we ask readers to identify with all groups that are most relevant to their functions and activities.

To view the full recommendations, go to *https://ec.europa.eu/research/openscience/index.cfm?pg=open-science-policy-platform*.

General recommendations

In addition to the specific targeted recommendations in the matrix below, we call upon all Member States and stakeholders to:

1. Appoint national coordinators and task forces for the implementation of Open Science to ensure the coordinated action required for tangible change towards an Open Science approach.
2. Ensure the scholarly infrastructure in Europe is highly interoperable to enable the simple and open sharing of metadata between systems, disciplines and countries, and that credit for research contributions is given to all participants (including citizen scientists).
3. Ensure the HR Strategy for Researchers (HRS4R) practices and FP9 evaluation reflect the principles required to effectively embed a culture of Open Science at the institutional level. These must involve research integrity (including the social, ethical and legal implications), researcher evaluation and the public availability of research outputs.
4. Foster Open Science literacy as essential to European competitiveness at the global level, together with other digital and information competencies, from primary school through the whole educational system.
5. Implement a Europe-wide campaign, coordinated by the EC, to raise awareness and communicate the benefits of Open Science among decision makers, research and education bodies, private sector, industrial and citizen organisations.

Prioritised recommendations

Rewards & Incentives

Funders, research institutions and other evaluators of researchers should actively develop/adjust evaluation practices and routines to give extra credit to individuals, groups and projects who integrate Open Science within their research practice.

Studies must be commissioned and funded to propose guidelines for best practice and tools for research assessment by 2019, together with an active delivery plan and associated timeline for their implementation. These guidelines must take into account career stage and discipline, and be appropriately tailored to their target such as individual, institution and so forth. Exemplars of innovation and good open science practice must be collated, taking into account the DORA Declaration, the Leiden Manifesto, the OS-CAM and other relevant initiatives.

Public research performing and funding organisations (RPOs/RFOs) should provide public and easily accessible information about the approaches and measures being used to evaluate researchers, research and research proposals.

The traditional academic career structure disincentivises Open Science because of the current focus on tenured positions based solely or largely on publication output. Institutions need to have a career and reward structure for all researchers, and particularly for Early Career Researchers (ECRs), that values and promotes a diverse range of outputs, activities and career directions. This should include facilitating a means by which researchers can, for example, move between academia and industry or between national jurisdictions.

Research Indicators and Next-Generation Metrics

Evaluations of individual researchers or of research groups should not use journal brand or Impact Factor as a proxy for research quality. Those responsible for hiring, promotion, funding and/or the evaluation of researchers must use a broader, tailored range of quantitative and qualitative indicators of research activity, progression and impact that incentivises and rewards open research practice. All publication venues must prominently display a broad range of indicators for all research outputs.

Quantitative and qualitative indicators need to be identified and developed for research assessment that captures the full range of contributions to the knowledge system. These should reflect the complexity and varied context of the research environment, the specific characteristics of the research being undertaken, as well as the new kinds of questions and results that might emerge in an open system.

Experiments, pilots and case studies assessing the validity of such indicators need to be undertaken urgently, and included as part of FP9 with appropriate funding allocated to support them. The results and data of these pilots must be made publicly available as exemplars for further implementation.

All researchers need to be identified through an ORCID ID. Best practice for CV/biosketch evaluation should be developed and publicly showcased to encourage a broader recognition of the range of verifiable (and especially open) contributions individuals make to the knowledge system, including teaching and peer review, and the production of a broad range of output types. The career narrative should be central to the evaluation of individual researchers as it provides the crucial context in which indicators can be interpreted.

The data, metadata and methods that are relevant to research evaluation, including but not limited to citations, downloads and other potential indicators of academic re-use, should be publicly available for independent scrutiny and analysis by researchers, institutions, funders and other stakeholders.

Future of Scholarly Communication

All published research outputs from public funding in Europe must be made public in a way that ensures both immediate Open Access and full text and data mining rights of that content, while being sensitive to disciplinary differences**. Venues used for the publication of research outputs must ensure long-term archiving and provide clear, consistent and easily accessible and machine-readable information on their Open Science policies.

** Despite significant discussion between OSPP members, complete consensus could not be reached and STM and EUCHEMS do not agree to this recommendation.

Each Member State, together with its respective stakeholders, must develop policies to guarantee compliance with the EU Open Access mandate, including both incentives and enforcement, by 2020. This needs to happen in ways that are sensitive to disciplinary differences, the financial investment required and fast-changing publishing systems.

All authors must make their data and software (i.e. excluding, if relevant, data owned by third-parties, etc) appearing in their open access publications FAIR (Findable, Accessible, Interoperable and Reusable). To this end, a key requirement is deposition in a trusted repository that adheres to FAIR principles. In addition, all publications must include a statement of FAIR compliance for the source data underpinning their claims and the licence for its reuse.

All publication venues must prominently display their Open Access and FAIR data policies.

EOSC

The European Open Science Cloud (EOSC) needs to implement a robust, transparent and participative governance structure to ensure that it has the trust and confidence of all stakeholders, including Member States. It must also support the diversity of requirements across all disciplines. The structure should provide clear channels for feedback, and be compatible with other related initiatives including national, European and Global Research infrastructures to ensure interoperability and the free movement of information across all national and international boundaries and between disciplines, while being sensitive to ethical, societal and legal issues. The EC has to take the lead in bringing the relevant parties together to agree on how this should be done, including the rules of engagement and a range of business models by end-2019.

EOSC must have a long-term baseline funding commitment to become trustworthy. An agreement on how this is to be done needs to be decided within 12 months (by April 2019). The EC must take the lead in bringing the appropriate funders together. EOSC must be free and easy to use for research and education purposes.

For FP9, all researchers must receive appropriate EOSC training and be required to deposit their research outcomes in EOSC-compliant infrastructures. This should be funded by a non-transferable allowable contribution from funders. To this end, access from all parties must be easy and inexpensive if it is to obtain universal support.

FAIR Data

Funders and Research Performing Organisations should give credit for Findable, Accessible, Interoperable and Reusable (FAIR) data resulting from research work, similar to publications, methods, code etc.

Output Management Plans (OMPs, including Data Management Plans, DMPs) and their implementation should be mandatory for all research projects. OMPs should be machine readable and regularly modified to reflect ongoing research developments.

Data resulting from publicly funded research must be made FAIR and citable, and be as open as possible, as closed as necessary.

Research Integrity

All research organisations must have a research integrity policy, including promotion of good research practices, clear procedures for dealing with allegations of research misconduct and a description of possible sanctions for proven cases of misconduct. This policy must be enforced and adequately staffed and financed to investigate any allegation pertinent to their staff. The processes for dealing with such issues should be public, transparent and prominently displayed. Outcomes should be published where the allegations are upheld, taking into account the sensitivity of the issues involved.

All published research outputs should be reported according to recognised community standards where they exist.

For any research project, researchers should define conditions by which their work can be replicated or otherwise verified by others.

All researchers must receive regular training and accreditation on research integrity pertaining to Open Science, including the ethical, legal and social implications of their research practices. Funders (including the EC through FP9) must ensure that there is adequate training given to the researchers they fund, either through the researcher's institution, or provided via other means.

Publishers, data platform and infrastructure providers must agree a standardised set of minimum quality control checks on outputs and openly display the results. The task of undertaking these independent checks needs to be adequately funded. Outputs that pass these checks should be recognised and rewarded in research and researcher evaluation systems, such as FP9.

Skills & Education

Research Performing Organizations (RPOs) need to work towards the design of appropriate Open Science training that is consistent across Member States, including data literacy, ethics and research integrity, for:

- All researchers, at all levels from early career researchers to senior researchers (R1-R4). Open Science skills need to be explicitly tailored to diverse career paths.
- Research managers and administrators, and other staff involved in the research ecosystem (librarians, repository managers, IT services, data stewards, etc.).
- Students (both undergraduate and graduate levels).

Policy makers, funders and institutions must provide incentives and support towards developing Open Science mentoring and training within a supportive culture and environment.

A fundamental part of a researcher's education is to have a common set of baseline skills on Open Science which must be integrated in the European Framework of Research Careers (EFRC) and the Innovative Doctoral Training Principles (IDTP).

Citizen Science

Publicly funded Citizen Science projects (as part of FP9 projects) should actively apply the principles of Open Science (including openness and reuse of all research outputs, data and publications).

Research-performing organisations (RPOs) are encouraged to promote infrastructures and human capacity to create a supportive and open environment for Citizen Science, which can further strengthen the outreach of RPOs to society. Research libraries are well placed, amongst others, to contribute actively to the necessary coordination and communication infrastructures as well as relevant training, fostering skills such as community management, co-production of knowledge, Open Science standards and social diversity. Appropriate funding and incentives need to be put in place to support this endeavour.

The EC must support an online toolkit for Citizen Science in Europe. This tool must promote Citizen Science as a European asset, offering an entry point and mutual learning space, interconnecting with existing activities and infrastructures at the European, national and local level. It should highlight particular achievements and best practices, and promote a clear set of principles, guidelines & quality criteria for Citizen Science.

Funding for Citizen Science projects should be flexible, long-term and allow for small or experimental projects in collaboration with key stakeholders to be funded. A small section of FP9 should be set aside for citizens to propose research topics or projects. These should be chosen on the basis that they are high risk, beyond traditional research fields and conform to the rigorous standards expected of other projects. Successful proposers will need to work with compliant institutions.

Key

The major stakeholder groups (as listed in the key below) who have the main responsibility to drive the actions stated in the recommendations have been listed alongside each one.

- Research & E-Infrastructures
- Research Libraries
- Universities & Research Performing Organisations
- Policy Making Organisations
- Research Funding Organisations
- Publishers
- Researchers
- Scientific Societies & Academies
- Citizen Scientists & Public Engagement Organisations

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