

MODULE 5 - MAINSTREAMING OF OPEN SCIENCE

FOSTERING NEW APPROACHES IN THE PRODUCTION OF KNOWLEDGE



EXECUTIVE SUMMARY

"Open Science" is an expression that slowly becomes mainstream, moving away from the discussions taking place in dedicated groups in the academia, to a way of describing scientific practice at large. Open Science (OS) is about how science is practiced, how scientific results are disseminated and communicated, and, more general, it covers a plethora of new approaches in research and education. It expresses a cultural change that allows researchers to foster new collaborative work while using the advantages of new technologies and digital tools.

The action plan of Module 5 in RIS4CIVIS and our recommendations consider all these aspects, which are promoted through four case studies:

- The creation of an OS Knowledge Base
- A database with OS Trainings
- The CIVIS OS Award
- The Research Assessment Reform

The main challenges identified so far are:

- A. Defining a common approach to Open Science with practical support (including training), systems, and procedures, taking into account the national policy framework that imbeds each institution;
- B. Addressing the question of research assessment at the Alliance level by contributing to define a larger set of criteria to evaluate researchers such as OS practices, but not solely.

INTRODUCTION

Open Access (OA) is perhaps the best-known aspect of Open Science (OS). Beyond referring to free access to scientific results, it also reflects a culture of sharing, which was traditionally embedded into the scientific practice from the very nascent of modern science into the so-called "Scientific Revolution" of the early modern period. This aspect somehow got forgotten in the twentieth century, when paywalls restricted access of individual researchers only to resources locally available in their own institutions. OA allows scholars to freely access (and re-use) the latest research in the field and to take part in global conversations about theories, methods, hypotheses, experimental settings, technological and pedagogical innovations, etc. By building upon a long debate about the benefits of OA, OS approaches contribute to a global transformation of the scientific practice in which new values, such as transparency and collaboration play a key role.

OS VALUES AND FINDINGS

Transparency. Making publications freely available (OA) ensures they will get more visibility. At the same time, results, methods, and research hypotheses will be much easier to test and to be critically assessed by the peers. Research results have a larger variety than traditional papers (i.e., articles in scientific journals), such that research data, code, simulations or visualizations, and many other outcomes can contribute to ongoing discussions in various fields. Making these research findings available increases the transparency of scientific practice and can lead to other beneficial outcomes, too. For example, OS practices can contribute to the credibility of science in general, or they can encourage citizens

to engage with research, either as part of the collection process of scientific data (e.g., crowdsourcing) or as readers of the various scientific results. Communicating science to and for the general public helps raising awareness about significant issues, including climate change, and a transparent process in the production of science will accelerate the dialogue between various social actors involved in the process.

Collaboration. The practice of science is based on cooperation, sometimes between scholars working in the same field and other times between scholars from a variety of disciplines. This can take the shape of transnational collaborations, with networks of experts spread all over the world. For this reason, publication and communication of research results need to respect the principle “as open as possible, as close as necessary.” This takes place through numerous communication channels (e.g., open digital publications, preprint servers, repositories with open data, etc.), which are not anymore restricted to a set of selected journals. It is important to take into account the diversity of practices, and to recognize it not only as part of the ongoing scientific conversations, but also in the evaluation of research results. Research assessment reform is thus an important part in nurturing the new culture of scientific practice.

Towards a common approach for OS. The work carried out by *Module 5. Mainstreaming of Open Science* aims to address some of the challenges mentioned above, while contributing to the new culture of sharing good practices. For this reason, two of the case studies (OS Knowledge Base and the OS Trainings) are directed at providing a unique point of entry for the CIVIS academic community – and any other user accessing the future CIVIS website – which will include reliable information about OS resources. At the moment, there is a *great fragmentation* of OS approaches in the CIVIS universities, which can be explained by the *diversity of OS practices at international level*, where OS is constantly reshaping and expanding. This requires a *constant need for mapping the status of OS practices at the alliance level*, as changes are rather frequent (e.g., new initiatives in individual CIVIS universities, new national rules and

policies, etc.). These are additional reasons to develop a common CIVIS approach to OS, but in order to embrace the diversity and the different needs (and paces in the adoption of OS practices) of each university in the alliance, Module 5 will focus on core OS resources that will be shared through the single access point to OS (the OS knowledge base, but also the list of OS trainings, and any other relevant OS resource). This will contribute to the creation of a framework for sharing information about good OS practices and will raise the awareness of the CIVIS academic community about such practices. At the same time, it will foster new conversations about OS, which is a desideratum, given the diversity of approaches and the fast development of the topic. In sum, our recommended plan of action is built upon these two points:

- To provide OS resources;
- To encourage more conversations about good OS practices.

POLICY RECOMMENDATIONS

In light of what was presented above, we recommend a course of action that will put into spotlight good practices in OS, while at the same time encouraging an open conversation about the new culture of sharing. Networking and collaborative work are key constituents of science practice and illustrate the global exchange of ideas contributing to the progress of science. OS supplies ongoing conversations with an enhanced visibility, tools, and methods. Besides, training of young as well as experienced researchers is a key-factor for the development of a common culture regarding the OS paradigm. Making these explicit can have beneficial consequences:

- Attract more researchers to the study of science;
- Inform general public about new scientific results;
- Collaborate with the general public (or local communities) in science-informed solutions to a variety of problems and challenges;
- Increase the credibility of scientific practice and results; etc.

In a nutshell, **our key policy recommendation is to provide a (funding) mechanism to support conversation on good OS practices at European level, including the European University Alliances**. Given the broadness of the OS field, including disparities and fragmentation in different institutions and countries, this mechanism should provide the means to implement OS practices at different speeds, while preserving the desideratum to keep the discussion open and inclusive.

ADDITIONAL INFORMATION

Research and Innovation Strategy for CIVIS (RIS4CIVIS) is 3-year project co-financed by the European Commission under the Horizon 2020 «Science with and for Society» programme. RIS4CIVIS will define a common Research & Innovation strategy for the CIVIS European University Alliance and transpose the strategy into an Institutional Transformation Model to serve as a source of inspiration for other European Alliances and universities.

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