



OPEN SCIENCE

Conclusions and recommendations from the FIT FORTHEM workshop

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UNESCO [1] defines Open Science (OS) as an inclusive construct that combines various movements and practices aiming to make multilingual scientific knowledge openly available, accessible and reusable for everyone, to increase scientific collaborations and sharing of information for the benefits of science and society, and to open the processes of scientific knowledge creation, evaluation and communication to societal actors beyond the traditional scientific community.

In that sense, open science is a new way to carry out scientific and technological activities following principles like quality and integrity, collective benefits, equity and fairness. Furthermore, it constitutes a new paradigm that tries to improve traditional practices in terms of reproducibility, transparency and collaboration.

The OECD [2] in its report “Making Open Science a reality” enumerates the following benefits of Open Science: improve efficiency in science, increase transparency and quality, speed the transfer of knowledge, increase knowledge spillovers to the economy, address global challenges more effectively and promote citizens’ engagement in science and research.

Open science is a means and not an end. Open science strategies and policies are a means to support better quality science, increased collaboration, and engagement between research and society that can lead to higher social and economic impacts of public research.

In this line of creating the conditions to facilitate the open science, the FIT FORTHEM project includes open science as one of its main areas of interest.

The FIT FORTHEM workshop “Towards Open Science: Main steps to foster open science in the FORTHEM R+D+i ecosystem” is bringing together experts from all FORTHEM partners to discuss about the required changes and main challenges for transitioning towards an Open Science model.

Discussions have been carried out around three groups of interest: research community; government, funding agencies and universities; and libraries, repositories and data centres.

The aim is to agree on a set of recommendations addressed to the partner universities to be implemented in the short term to foster Open Science in the alliance.

Table 1. Research community

- There was a wide range of countries and fields represented in the table. Also, a few experts in research support services (useful for checking researchers' expectations).
- Researchers expectations from OS are:
 - Value creation and better societal impact
 - More context and variety of research projects (interaction between disciplines)
 - Creation of new and stronger research communities by being more open and clearer to each other
 - A combination of faster and slower processes: researchers expect faster feedback and faster results, while OS might also bring more time to do research activities in a meaningful way.

Table 2. Government, funding agencies and universities

- Researchers and managers, mainly coming from alliances of universities, were present in the table. They all were playing a specific role on OS in the alliances.
- All the attendees perceive OS as positive for science and their specific jobs. However, there is some confusion about the possibilities OS opens for them.
- Higher access to research outputs is one of the key opportunities that OS bring.
- There are several ethical dilemmas around OS, such as reward and incentives mechanisms, where to publish my work, or using commercial software or open licenses solutions.
- Most of the attendees defined themselves as OS performers at a starter level
- Peer reviewing invitations from non-OA journals should be rejected.
- OS software receives less attention from funding agencies and policy makers. More support is needed as well as changes in the legal framework.
- Key message: "We work in the republic of science. Researchers and members of the science community are responsible for self-organising the system in which we work. We are in some way self-regulated. It is us doing the OS republic. It is our responsibility to change the paradigm. Only by doing small changes individually, will we achieve big changes".

3.- Libraries, repositories and data centres

- The table gathered people from a wide range of countries, most of them involved in OS implementation
- The library community is expected to conduct an increasing number of OS related activities; however, the number of library staff is not growing. So, there is an increase in workload.

- Decoupling between OS declarations issued by big institutions (national and international organisations/governments, and big universities), and ground initiatives. Small universities (and other small organisations) should increase their participation in the formulation of these declarations.
- Reforming research assessments is a must. But libraries can do hardly anything.
- Scholarly publishing
 - Green OA: it is difficult to collect accepted manuscripts from authors if there is not a mandate in place.
 - International cooperation is essential in order to know what is going on in other countries so that specific recommendations can be provided to researchers on where/how to publish. For example, there are opportunities to communicate to researchers what are the best options when they plan to publish OA with APCs, which options available with their co-authors in other countries to optimize the expending.
 - ESAC registry of transformative agreements a key piece to know what the quickly evolving looks like in this area from an international perspective
 - Publishing data is an issue: it is important to work collaboratively with others (consortia, IT staff at university, etc.).
- Fair data
 - Support for publishing data is key. Librarians are central in providing support to the researcher community. However, doing everything for researchers from the libraries has disadvantages. Having specialized staff in the departments/institutes trained in research support would be a solution.
 - Data sets are sometimes published in journals as supplementary material. We need to improve the way we track these data sets and include them in repositories.

As a result of the discussions, **the following agreement on proposals has been reached:**

Recommendations for the alliance Research community:

- Researchers are the core of OS and need to be committed to its principles.
- An increase in data sharing and output sharing with the public is required
- Researchers need time to learn, adapt and perform OS.

Recommendations for the alliance Universities government bodies:

- Funding support and more human resources should be provided
- Training on OS and developing of basic OS infrastructures
- To develop new legal frameworks and institutional arrangements
- To include OS practices at the curricular level. A research assessment reform to reduce the focus on the volume of publications is recommended.
- More incentives and rewards to foster OS are needed

Recommendations for the alliance Libraries, repositories and data centres:

- The implementation and interoperability of CRIS (Current Research Information Systems) help in the process of filling the institutional repositories.
- The implementation of OJS (Open Journal System) to support university open access journals is a promising way to promote OS.
- Data sets may need specific repositories. Libraries should work towards the implementation of data repositories.
- New proposals need to be explored to add a DOI for data sets (e.g., using DataCite or Crossref)

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Notes:

[1] UNESCO. (2021). UNESCO Recommendation on Open Science.

Available at: <https://unesdoc.unesco.org/ark:/48223/pf0000379949.locale=en>

[2] OECD. (2015). Making Open Science a reality. OECD Science, Technology and Industry Policy Papers, No. 25, OECD Publishing, Paris.

Available at: <http://dx.doi.org/10.1787/5jrs2f963zs1-en>