Open Science Report

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Abstract

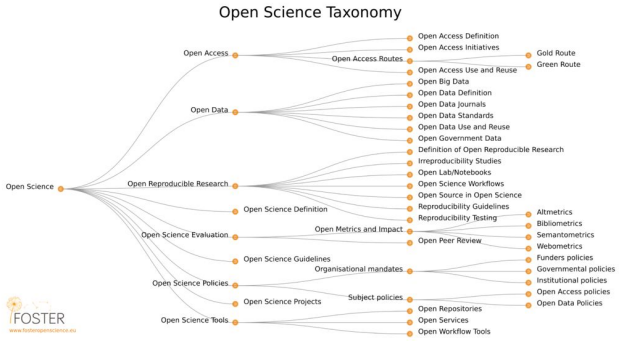
Open science is the movement to make scientific research data and content accessible to all levels of inquiring society. With the advent of academic journal and computer technologies, arguments supporting and opposing open science movements also intensifies. The document "Amsterdam Call for Action on Open Science" serves as an example to advocate for full access for scientific publication. The extent to which scientific information should be shared will be a continuous debate.

Main Content

-Introduction to Open Science

As academic collaboration within scientific communities become common practice in modern times, incentives to push data and information sharing are also booming. Open science, as one of these incentives, is the movement to make scientific research and data accessible to all levels of inquiring society. It began in the 17th century with the advent of scientific journal, when the old-fashioned way of describing discoveries in encrypted text becomes infeasible for knowledge sharing. In modern times, as collaboration among academics becomes common practice, the demand for open knowledge sharing also grows.

The European-funded project Facilitate Open Science Training for European European Research (FORSTER) has developed an open science taxonomy to map the open science field, as shown in figure below. The components of open science according to the graph can be summarized



as follows: open access and data, open reproducible research, open science evaluation and open science policies/tools.

-Arguments For/Against Open Science

Just as each coin has two sides, there has been heated debate regarding whether open science is a good idea. Proponents for open science argue that open access to reports would lead to more rigorous peer review; more public availability potentially leads to more public funding, which is paramount for providing open access to scientific research. Moreover, increasing the availability of data would also counter the “reproducibility crisis”. Last but not the least, with wider availability of data and content, open science could make scientific research more impactful in society, as it reaches wider audience range.

However, opponents of open science also compile some compelling points. To start with, too much data could be overwhelming as some scientists want to learn with restricted influence to find inspiration in their own methods. There’s also hazard of misusing data, particularly in biology field (i.e public use of influenza strain data that aids in the creation of biological weapon). Moreover, public misunderstanding and confusion about data could also create unwanted consequence such as mass panic. Also, increasing the scale of data and research will make it more difficult for others to verify and subsequently reproduce the results, as more data could mean lower quality of data.

-Amsterdam Call for Action on Open Science

Politics have also played parts in the open science movement. In April 2016, as a result of European Commission funded research conference, a document named " Amsterdam Call for Action on Open Science" was created. The 12 actions are as followed:

- Change assessment, evaluation and reward systems in science
- Facilitate text and data mining of content
- Improve insight into IPR(intellectual property rights) and issues such as privacy
- Create transparency on the costs and conditions of academic communication
- Introduce FAIR and secure data principles
- Set up common e-infrastructures
- Adopt open access principles
- Stimulate new publishing models for knowledge transfer
- Stimulate evidence-based research on innovations in open science
- Develop, implement, monitor and refine open access plans
- Involve researchers and new users in open science
- Encourage stakeholders to share expertise and information on open science

These actions can be summarized into five categories: Removing barriers to open science; Developing Research Infrastructures; Fostering and Creating Incentives for Open Science; Mainstreaming and further promoting open science policies; Stimulating and embedding open science in science and society. The document is seen as an important attempt to advocate for "full open access for all scientific publications".

-Discussion

The main questions we have for the audience discussion concern about whether they support or oppose to open science and if the can come up with ideas to modify the scientific reward systems to embrace the goals of fundamental science. It's difficult to decide which side of open science is more valid, as both sides make strong and compelling points. We think that improvements in the scientific reward system is a necessity, and it's crucial to strike a balance between what data/content should be shared and what should be kept private.

Conclusion

To summarize, open science as a movement to make scientific research and data more accessible to society emerges with the advent of academic journal. There's been ongoing debates about the extent to which scientific information should be shared. Both supporters and opposers of open science both provide convincing points respectively. Amsterdam Call for Action on Open Science is a living document outlining concrete actions for the European Community to move to Open Science. A modification of scientific reward system and agreement on the extent of "openness" is believed to push open science movement forward.