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26ᵗʰ International Conference on Science and Technology Indicators
"From Global Indicators to Local Applications"

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STI 2022 Conference Proceedings

Proceedings of the 26ᵗʰ International Conference on Science and Technology Indicators

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Open Science Assessment and Incentives at the YUFE Alliance[1]

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Introduction

Research assessment systems are intended to measure the academic excellence of research undertaken by scholars and institutions. However, the dominant assessment systems have been criticised for the detrimental effects they have on academic environments and on knowledge production (e.g., the use of inappropriate indicators or putting too much emphasis on the quantity of research outputs over their quality). There is an urgent need to reformulate these systems; a need triggered by initiatives, such as the Declaration on Research Assessment (DORA; 2012) and the Leiden Manifesto (2015).
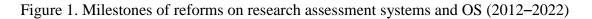
Open Science (OS) practices undertaken by scholars are also seen as being hindered by the assessment systems, which in general do not take achievements in OS into account. This research in progress presents ways universities can use to incentivise OS activities to make them more visible and recognised in career progression, to enhance the current methods of assessing the progress of individuals and research groups.

Background and context

Metrics play an important backbone in evaluating academic performance. However, many initiatives launched in the last ten years (see Figure 1) do not consider traditional metrics appropriate (or sufficient) instruments to quantify and evaluate scholars' performance. As a result, efforts are being taken around the idea of Responsible Research Assessments, which advocates for 'approaches to assessment which incentivise, reflect and reward the plural characteristics of high-quality research, in support of diverse and inclusive research cultures'

(Curry et al., 2020, 4). Despite the high-level ambitions towards OS, the transition has been slow.

Figure 1. Milestones of reforms on research assessment systems and OS (2012−2022)

To accelerate the OS process and new evaluation procedures, practical commitment for implementation by all the agents involved is also needed (Méndez, 2021). Different studies have attested that *incentivisation* can foster the transition (Mazarakis & Bräuer, 2020). As an example, the study by Kidwell et al. (2016) shows how OS badges can promote data sharing among researchers. At the moment, universities' incentive structures do not fully endorse OS practices.

Method and data

This study presents two case studies of OS research assessment proposals and incentivisation in the context of a European university alliance (the YUFE alliance). We employed a mix of research methods and data. We started with desk research on the metrics systems that consider OS performance at the individual and/or group level (incl. indicators and tools, such as the Acumen Portfolio), recommendations on responsible research assessment, and policy reports published by the European Commission (e.g., Wouters et al., 2019; O'Carroll et al., 2017).

Along the process, we validated the identified indicators and criteria in consultations with experts at university libraries within the YUFE universities. As a result, we came up with an OS indicator toolkit at the individual level and a set of OS criteria for the Full Open Science (FOS) pilot at the research group level. The Full Open Science (FOS) research groups initiative at YUFE universities has a background in the Carlos III University of Madrid (UC3M; university involved in the YUFE alliance), where it was piloted in 2019−2020.

Results and discussion

Assessing OS performance: OS indicator toolkit

The OS indicator toolkit covers several dimensions related to research, teaching, and community engagement and outreach (Table 1). The purpose of the toolkit is to help create a set of tools for piloting a novel recognition and reward scheme for researchers at YUFE

institutions that would acknowledge the effort and performance beyond the traditional quantitative criteria and metrics. The indicators will be used in a pilot that aims to integrate an OS perspective into the academic recruitment process. The indicators will be part of an impact portfolio, which aims to capture a broad set of academic activities and to make researchers' OS performance visible in the academic recruitment process. The indicators are supposed to lend support for the narratives provided by researchers of their main achievements. The portfolio will be piloted at the University of Eastern Finland (a member in the YUFE alliance) in 2022.

Table 1. Toolkit for OS evaluation purposes at YUFE Universities

Dimensions	Indicators
Open publishing	OA articles (WoS/Scopus)
	Publications in repositories (not listed in WoS/Scopus)
Open data	Metadata published
	Datasets published
	Use of open data published by others
	Research following FAIR data principles
Open research process	Preregistrations
	Open research methods
	Open software/code
	Number of citations to software/code
	Open peer review (as author or reviewer)
Teaching	Creation of MOOCs
	Downloads of one's open educational resources
	Including OS in the content of one's teaching
	Developing curricula and programs in OS methods
	Mentoring and encouraging students in OS practices
	Publishing e-learning materials
	Sharing course materials and lectures in repositories
Community engagement and outreach	Events run and organised for the general audience
	Publications intended for a wider audience
	Engaging citizens in research projects
	Widening participation in research through open collaborative projects
	Number of papers co-authored with non-academics
	Consultancy or advisory positions or tasks for non-academic organisations
	Citations in policy documents
	Professional practice using one's expertise
	Appearances in TV or radio
	Magazine or news articles written based on one's research/teaching
	Number of mentions in blogs
	Twitter discussions based on one's research
	Encyclopaedia articles published
Others of interest	Acknowledging questions of research integrity and ethics related to OS in one's work
	Taking a role of OS leader in one's research/university community
	Participation in OS networks
	Working as editor in OA journals
	Participation as volunteer in OA repository

Encouraging OS at research group level: Full Open Science (FOS) initiative
FOS is a tool for raising awareness on OS and encouraging researchers at all the YUFE institutions to share their scientific outputs in open access. A key element is to jump from the individual level to the team level, thus addressing the initiative to research groups that can act as *role-models* and *ambassadors* of OS.

FOS is developed as an open call where thirty research groups will receive an OS badge by 2023 if they meet the two compulsory criteria and at least two of the ten optional criteria from six main dimensions (see Table 2). The criteria are inclusive and flexible enough so that no research field is penalised and researchers can engage to different levels of commitment. FOS is not a reward, but an award promoted at the institutional level, as the groups can showcase their commitment with OS, for example in research calls at the European or national level.

Table 2. List of criteria for the Full Open Science research groups

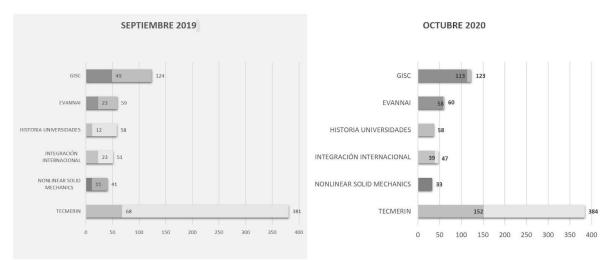| Dimensions	Criteria
General	All the researchers have an ORCID [compulsory]
	PhD Theses in Open Access [optional]
	Using open licences [optional]
Open publishing	Publications: at least 60 % in OA [compulsory]
Open data	Research data: at least 50 % in OA [optional]
	Following FAIR data principles [optional]
Open research process	Preregistrations [optional]
	Open notebooks/software/code [optional]
	Open peer review (as author or reviewer) [optional]
Teaching	Sharing Open Educational Resources (OER) [optional]
Community engagement and outreach	OS dissemination (through events, training activities, networks… [optional]
	Citizen Science initiatives [optional]

This initiative is built on a successful pilot experience developed at UC3M in 2019–2020, in which six research groups received the label. During the initiative, the research groups increased their performance on OS (see the number of OA publications in Figure 2).[1]

Figure 2. Comparison of six research groups performance in a test FOS call

Conclusions

While the movement for OS has gained momentum in recent years, there remain concerns about how to recognise researchers' efforts in OS and how to change the research assessment systems toward more responsible and encompassing ones. Apart from some efforts being taken for example in the Netherlands, there are few examples how universities could embed OS into their incentivisation structures; a gap this project aims to cover.

We present two proposals promoted by the YUFE alliance: an OS indicator toolkit for evaluating researchers' performance in OS and an incentivisation initiative to foster open science at the research group level. These initiatives operate with different incentives (connecting OS performance in recruitment processes; tangible rewards, and advocating OS by showing off institutional forerunner research groups; symbolic rewards). The project provides new insights into the open knowledge landscape within the European YUFE alliance and beyond, and ways of promoting OS paths in the institutional framework.

Endnotes

[1] See more info on the Full Open Science Pilot:
www.uc3m.es/ss/Satellite/OpenScience/en/TextoDosColumnas/1371313778240/FOS_(Full_open_science)

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