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## **STI 2022 Conference Proceedings**

*Proceedings of the 26<sup>th</sup> International Conference on Science and Technology Indicators*

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**Citation:** Martín-Martín, A., & Delgado, López-Cózar, E. (2022). Towards a foundation of scholarly records management: a framework to understand and organise scholarly communication. In N. Robinson-Garcia, D. Torres-Salinas, & W. Arroyo-Machado (Eds.), *26<sup>th</sup> International Conference on Science and Technology Indicators*, STI 2022 (sti22202). <https://doi.org/10.5281/zenodo.6948200>



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26<sup>th</sup> International Conference on Science and Technology Indicators | STI 2022

## “From Global Indicators to Local Applications”

7-9 September 2022 | Granada, Spain

#STI22GRX

### Towards a foundation of scholarly records management: a framework to understand and organise scholarly communication<sup>1</sup>

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#### Introduction

Since the creation of the first academic journals in 1665, formal scholarly communication has increasingly been articulated as a publishing activity. From this moment and until the development of digital communication technologies, print publishing became the principal means of communication among geographically dispersed academic communities. Eventually, print journals, monographs, conference proceedings and other scholarly documents began to be collectively referred to as the scholarly record, as they effectively served as authoritative evidence of scholarly activities and discoveries.

By the 20th century, publishing articles in established journals (or monographs with reputable publishers), was already the default method for communicating scholarship in most academic disciplines. The explosive growth in publications that followed the end of WWII only led to the creation of more publishing venues. Some publishers began to exploit the commercial opportunities of this situation (Fyfe et al., 2017), creating large portfolios of new journals to accommodate the growing demand and the increasing specialisation, buying out existing - and often prestigious - journals and entire publishing houses (a common process in markets generally referred to as consolidation), and requiring authors to transfer their copyright to publishers as a way to guarantee content exclusivity.

Thus, scholarly communication evolved as a publishing market where access to documents was increasingly commoditized. In this model, commercial publishers tried to charge “as much as the market will bear” (Esposito, 2011). The consequences of this were soon felt when acquisition budgets in the libraries of academic institutions began to struggle to keep up with rapidly increasing prices, a situation that came to be known as the serials crisis. A special characteristic of this crisis was that academic documents are not fungible items that can be easily substituted for others of a similar or equal value (Abadal & Nonell, 2019; Brembs et al.,

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<sup>1</sup> This work was supported by the Plan Andaluz de Investigación, Desarrollo e Innovación (PAIDI) 2020 (P20\_00543). AM currently holds a postdoctoral fellowship funded by Junta de Andalucía (region of Andalusia, Spain) and the European Social Fund.

2021; McGuigan, 2004), and therefore lack of access to any publisher's collections could severely impair the ability of researchers to stay informed in their fields.

By the beginning of the 21st century, a small number of publishers were responsible for the publication of a large proportion of academic literature. According to (Larivière et al., 2015), in 2010 just five large commercial publishers accounted for approximately 50% of all articles published in the Natural and Medical Sciences, and in Social Sciences and Humanities in the Web of Science database. More recent data, provided by the publisher Elsevier, using their own database Scopus, set the share of articles published by the four largest publishers at 41% during 2017-2020 (RELX, 2022).

The general adoption of digital communication technologies during the last decade of the 20th century was seen by many as an opportunity to facilitate the exchange of academic information. Indeed, (Berners-Lee, 1991) declared that this was one of the main drivers behind the creation of the World Wide Web (WWW). Some early proposals highlighted the new agency that researchers were able to exert within the digital environment, by self-archiving their own publications online without the intervention of publishers (Harnad, 1995).

However, the reaction of commercial publishers to this new medium was to replicate within it their existing distribution model based on paid subscriptions. New online journal platforms were created, but paywalls were put into place to deny access to non-subscribers. At the same time, born-digital journals began to be created, and together with the notion of self-archiving, these models crystallised in the two routes for Open Access to scientific publications that were formulated by the Budapest Open Access Initiative (Chan et al., 2002).

In the two decades that followed the BOAI declaration, Open Access has been a topic of continued and heated discussion, evolving far beyond the scope of its initial definition, and generating a plethora of Open Access routes (Martín-Martín et al., 2018). After an initial period of resistance, commercial publishers found a financially viable alternative to subscriptions in the form of Article Publishing Charges (APCs), effectively removing barriers to access scholarly documents (providing Open Access), at the cost of placing new barriers at the point of publication, a model that has proven no less problematic for less well-funded institutions and countries (Kwon, 2022).

In recent years, the pursuit of higher proportions of Open Access publications has led some funders and countries to contribute to the consolidation of inequitable models of scholarly knowledge production, models that prevent some sectors of the global academic community from fully participating in scholarly communication. An increasingly common way to do this is by striking "transformative" agreements with commercial publishers, which combine access to paywalled content, and the opportunity to publish Open Access at a discount or at no additional cost for authors (Borrego et al., 2021).

From the serials crisis to transformative agreements, it now seems apparent that the way scholarly communication is currently implemented has in many cases grave structural deficiencies that Open Access alone cannot solve. In this vein, the BOAI20 steering group, in the 20th anniversary of its initial declaration, issued a set of recommendations that highlight the importance of developing open infrastructure that is controlled by the community, the need to reform research assessment and of equitable publishing channels, and a reminder that Open Access is a means to facilitate communication, not an end in itself (BOAI20 Steering Group, 2022).

Following the BOAI20 recommendations, in this essay we move the focus away from specific outcomes (such as Open Access), and instead place our attention on processes, the workflows that are involved in scholarly communication, as well as the collective result of these processes, the scholarly record. We will thus discuss scholarly communication from the perspective of records management, trying to explore a potential alternative theoretical paradigm of scholarly communication based on scholarly records management, and pointing out how this framework can be more appropriate as a tool to understand and organise scholarly communication than the popular framework of scholarly publishing. Lastly, we will draw similarities between the nascent concept of scholarly records management, and several recent proposals that also intend to improve scholarly communication.

### **Records management and scholarly communication**

It is generally considered good practice for any type of organisation to keep a record of its activities. The archive of the organisation usually contains both the documents that the organisation itself generates and those that it receives from other organisations as a result of the execution of its activities. These records are the memory of the organisation, they serve as evidence of its activities, and in many cases they may be vital for its effective running.

The principles of records management, a field which in part evolved from the traditional archival science, are established in ISO 15489-1, an international standard that has long been implemented by public and private organisations around the world, and which was last updated in 2016 (International Organization for Standardization, 2016). According to the definition presented in this standard, records management is the “field of management responsible for the efficient and systematic control of the creation, receipt, use, and disposition of records, including processes for capturing and maintaining evidence of and information about business activities and transactions in the form of records”.

Academic institutions are no strangers to records management. It is common for academic institutions to manage student records, employee records, and many other records related to administrative activities carried out within the organisation. In many cases, these institutions may even be required to implement common records management principles (such as privacy, access control, interoperability, secure storage) by law.

It is therefore surprising, from a records management standpoint, that academic institutions often play a very limited role in managing records generated by their employees in the exercise of one of their most important missions: research. In many common publication workflows, institutions learn of the publications of their employees when the information appears in third party databases to which they subscribe. This is problematic because in these workflows, the institution is not able to protect its own needs and those of its employees during the publication process.

The early history of scholarly communication as an activity that could only be accomplished through publishing can partially explain this lack of involvement by academic institutions: the highly distributed nature of scholarly communication, combined with the lack of appropriate technology made it incredibly difficult for academic institutions to organise the logistics of the communication process. This task was usually outsourced to publishing houses which specialised in this activity, and in the process, academic institutions gave up control of the scholarly record to publishers.

The digital communication technologies that are widely available today are completely different to those available in the print era, and they present different opportunities and challenges for managing the scholarly record. This change requires a deep reflection on the current needs of scholarly communication, and a real digital transformation of the workflows. So far, we are barely out of the digital incunabula territory (Crane et al., 2006), and the transformations that have taken place are those that publishers have prioritised, such as user surveillance (Pooley, 2022). Scholarly records management could be an useful instrument to deal with many issues that require urgent attention in scholarly communication, such as deciding how to better assign attribution when list of co-authors are not enough, how to organise an effective peer review process, or how to implement version control in the scholarly record by connecting different versions of the same work. It could also help in deciding which metadata should be generated for each record and how, who should have access to it, and for which purposes it could be used.

Moving from a publishing-centric vision of scholarly communication to one focused on records management would require that academic institutions make drastic changes in their priorities, taking a much more proactive role in the generation and control of the part of the scholarly record that they are responsible for. Institutions would need to stop thinking of academic documents as commodities that can be bought and sold, and instead would need to think of them as integral elements of their local record, and at the same time as elements of the global scholarly record. This would also require that they stop thinking of themselves as customers in a market, and that they start thinking as managers that are responsible for maintaining the memory of their institution, and a fraction of the collective scholarly memory. Indeed, an archive is fundamentally different from an information market, because an archive ensures that its users can contribute and access the records when they need them, while an information market turns these actions into commodities.

In scholarly records management, the expertise of publishers would still be needed, but academic institutions and communities derived from them would govern the communication process, requesting publishing services that publishers could apply for to provide (Brembs et al., 2021). It would be the responsibility of institutions to select publishers that are aligned with values that the institution wants to promote.

Although we are not aware of other initiatives that explicitly propose the application of records management principles in the scholarly communication environment, we are increasingly seeing initiatives, recommendations and proposals that include many of the core principles of records management. Below we present a few.

The FAIR principles were initially formulated for the management of scholarly datasets (Wilkinson et al., 2016), although there have also been voices that call to apply the same principles to scholarly publications in general (Waltman, 2020). Indeed, the principles of Findability, Accessibility, Interoperability, and Reusability are all core concerns in ISO 15489-1 (International Organization for Standardization, 2016) and could be applied to the entirety of the scholarly record. Below, we draw some parallels between the FAIR principles and records management principles:

- Findability and accessibility: ISO 15489-1 establishes that records systems should be reliable, which entails, among other things, “present[ing] records in useable form”, “support[ing] timely access to records”, and “protect[ing] records from unauthorised use, alteration, concealment or destruction”

- Interoperability: ISO 15489-1 establishes that “metadata schemas for records should be expressed in formats that enable interoperability across systems, information sharing, and migration and transfer processes”; “record systems should support interoperability to support interaction with other systems and a flexible approach to the use of records controls”
- Reusability: ISO 15489-1 establishes that “records should be useable for as long as they are retained. Records systems should be designed to support easy use of records.”
- Metadata, an important aspect of the FAIR principles, is also a core concern of ISO 15489-1, which devotes several sections of the standard to this issue.

The issue of interoperability is one that is particularly repeated across proposals, as is the need for a community-governed scholarly communication infrastructure, matching the records management principle that organisations must take responsibility for the records they generate. Some of the proposals that enunciate these ideas are the Principles of Open Scholarly Infrastructure (POSI), The BOAI20 recommendations, the EUA Open Science Agenda 2025, and the seven guiding principles for open research information developed by the Dutch taskforce on responsible management of research information and data (Bijsterbosch et al., 2022; Bilder et al., 2020; BOAI20 Steering Group, 2022; European University Association, 2022).

This confluence of ideas suggests that there is a growing consensus that the traditional framework of scholarly publishing is not well-suited to solve the needs of scholarly communication in our current environment. We believe, given how several expert proposals for the future of scholarly communication draw (as far as we know, inadvertently) from the principles of records management, that this is a more useful framework with which to analyse the state of scholarly communication, and that it could provide fresh insights into how the scholarly community could approach the challenges that its communication system faces. However, this paradigm requires that academic institutions undergo drastic changes in how they approach scholarly communication, changes which will not be easy to implement even if there is a will to do it.

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