

Reaching Out to Global Interoperability through Aligning Repository Networks

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Abstract. COAR is working towards greater interoperability of systems in a number of areas, with an emphasis on open access metadata elements and vocabularies. This paper presents the outcomes of the recently published roadmap on future directions for repository interoperability as well as an overview of the current status of the associations' work related to this topic, i.e. the initiative "Aligning Repository Networks".

Keywords. Repositories, interoperability, standards

1. Introduction

Scholarly communication is undergoing fundamental changes, in particular with new requirements for open access to research outputs, new forms of peer-review, and alternative methods for measuring impact. In parallel, technical developments, especially in communication and interface technologies facilitate bi-directional data exchange across related applications and repository and research information systems [1].

In the past few years, Open Access repositories and their associated services have become important components of the global e-research infrastructure [2]. Repositories can be connected into networks (e.g. at the national or regional level) to support unified access to an open, aggregated collection of scholarship and related materials that machines can mine enabling researchers to work with content in new ways and allowing funders and institutions to track research outputs [3]. In addition, repositories are increasingly being integrated with other systems, such as research administrative systems and with research data repositories, with the aim of providing a more integrated and seamless suite of services to various communities [4].

Interoperability between repositories, repository networks and across systems is absolutely critical to ensure the development of a global knowledge infrastructure. It will enable the exchange of data between repositories and support the creation of new services such as disciplinary portals or text mining. In addition it will enable networks to learn from each other allowing the global community to progress more quickly leading to cost synergies by preventing duplication of work across networks.

COAR, the Confederation of Open Access Repositories (an international membership-based organization based in Germany), acts as forum to learn about new

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trends; engage with international colleagues in the repository community; and ensure repositories adhere to global best practices and interoperability standards. COAR has been working to improve the interoperability across repository networks and between repository networks and other systems. In March 2014, COAR launched the Aligning Repository Networks initiative to work towards more harmonized standards and common vocabularies.²

2. Aligning across Repositories

As open access repositories become key instruments in research infrastructure, many regions around the world are investing in the development of repository networks. These networks have evolved in their specific local contexts and currently differ in a number of ways. However, the real value of repositories is when they are interconnected to provide unified access to research materials for researchers around the world [3].

To achieve some level of alignment across repository networks COAR initiated a meeting of representatives of globally important repository networks in 2014. At this meeting, delegates from Australia, Canada, China, Europe, Latin America and the United States identified several key elements for alignment [3] and made first steps to establish a mechanism for ongoing dialogue between repository networks. This initiative will give the repository community a stronger global voice and raise the visibility of the role of repositories as critical research infrastructure. At the practical level, this activity will allow repository networks to discuss and adopt best practices for metadata standards, vocabularies and services [3].

A number of follow-up activities were undertaken. At the strategic level, the group identified the fact that publishers are lengthening embargo periods, making it challenging for repositories to provide open access to articles. COAR, in conjunction with SPARC US³ and other organizations crafted a statement against embargo periods which emphasizes that immediate access should be considered best practice and if embargos are to be imposed they should be a maximum of 6-12 months (depending on discipline). Numerous institutions and individuals have signed the statement.⁴

At the technical level, a working group was launched in April 2014 with representatives from major regional repository networks⁵ seeking to harmonize open access elements and metadata schemas, and improved visibility of repository networks worldwide. The aim is to discuss how to express new elements needed in order to track open access outputs such as funder name, open access status, embargo periods, and licenses.⁶ The regional Aligning committee met for a second time in April 2015 in

² See <https://www.coar-repositories.org/activities/advocacy-leadership/aligning-repository-networks-across-regions/>

³ The Scholarly Publishing and Academic Resources Coalition: <http://www.sparc.arl.org/>

⁴ <https://www.coar-repositories.org/activities/advocacy-leadership/aligning-repository-networks-across-regions/statement-about-embargo-periods/>

⁵ Australia, LA Referencia (<http://lareferencia.redclara.net/rfr/>), OpenAIRE (<http://www.openaire.eu>) and SHARE (SHared Access Research Ecosystem: <http://www.share-research.org/>), CASRAI (Consortia Advancing Standards in Research Administration Information: <http://casrai.org/>) and EuroCRIS (Current Research Information Systems: <http://www.eurocris.org/>).

⁶ Working Group – developing a blueprint for global interoperability of open access repository networks, <https://www.coar-repositories.org/activities/advocacy-leadership/working-group-global-interoperability-of-oa-repository-networks/>

order to review priorities and identify new areas in which they can further align their expanding repository networks. Amidst the intensifying global debate about the most sustainable ways to implement open access and research infrastructures, meeting participants reinforced their aim to foster solutions that reflect the diversity of approaches and capacities across different regions.⁷ COAR will work with the community to accomplish these activities in the coming year.

3. Interoperability

The interoperability of repositories and between repositories and other systems has been an important topic for the COAR community since the association was established in 2009. With the papers “The case for interoperability for open access repositories” (2011) [6] and the “Current State of Repository Interoperability Report” (2012) [7] the Working Group Repository Interoperability built the foundation for the establishment of the interoperability roadmap. This roadmap presents the results of a community wide consultation to identify the important issues around repository interoperability. The issues and priorities outlined in the roadmap were derived based on input from an Expert Advisory Panel representing knowledgeable experts from around the world. Through this process, 35 interoperability issues were identified, 9 of which are considered “priority” issues based on their immediate relevance, with varying levels of complexity. These issues can be viewed as represent the most pressing priorities for efforts around interoperability [1]:

1. Exposing citation formats
2. Supporting data export functions
3. Supporting author identification systems
4. Exposing publication lists
5. Exposing bibliometric information
6. Exposing usage statistics
7. Supporting additional metadata format(s)
8. Integrating different persistent identifiers
9. Supporting search engine optimization (SEO)⁸

Many of these issues involve some level of standardization across vocabularies, metadata and indicators, both within the repository environment as well as with other systems. Interoperability in these areas, therefore, will require collaboration across countries and regions as well as with other systems developed by different communities. In addition, ensuring local implementation of guidelines and standards at the level of individual repositories is very difficult and often requires significant community outreach to raise awareness of the benefits of adopting standards. One strategy is to work with the repository platform developers to have the standards implemented into repository software systems. In parallel the available interfaces of repositories and the corresponding systems should be open to enable bi-directional communication and information channels in order to allow concrete system interoperability [1].

⁷ <https://www.coar-repositories.org/news-media/communique-international-repository-networks-reinforce-their-aim-to-develop-a-global-open-access-knowledge-commons/>

⁸ For the full table see https://www.coar-repositories.org/files/Roadmap_final_formatted_20150203.pdf

COAR is already working to advance interoperability in several of the priority areas including author identification systems, standard vocabularies, persistent identifiers, and usage statistics [1]. In particular, the interest group “Controlled vocabularies for repository assets”⁹ is working on developing a controlled vocabulary for open access repositories that will be used globally and connecting different languages through linked-data techniques.¹⁰ The COAR interest group “Usage Data and Beyond”¹¹ reviews existing and emerging article level metrics with the aim of identifying a common set of metrics that can be adopted across repositories, enabling the community to compare statistics across repositories.

4. Conclusions

Interoperability is a core issue for repositories and will remain so as the roles of repositories evolve and expand. The success of future repository services depends on the ability to offer seamless services across repository networks and in conjunction with other stakeholders at the local, national and international community level. In order to achieve this, the repository community must work with and engage in ongoing dialogue with these other communities. COAR, with its vision of a global network of open access repositories, will continue to work towards greater interoperability both within the repository community as well as with other players in the scholarly communication system. In addition, ensuring local implementation of guidelines and standards at the level of individual repositories is very difficult and often requires significant community outreach to raise awareness of the benefits of adopting standards.

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⁹ See <https://www.coar-repositories.org/activities/repository-interoperability/ig-controlled-vocabularies-for-repository-assets/>

¹⁰ See <http://wiki.surf.nl/display/standards/info-eu-repo>

¹¹ See <https://www.coar-repositories.org/activities/repository-interoperability/usage-data-and-beyond/>