

SHared Access Research Ecosystem

When the White House Office of Science and Technology Policy (OSTP) issued its February 22, 2013, memorandum directing science agencies with more than \$100 million per year of sponsored research funds to create public-access policies for research outputs (both publications and data),¹ it enumerated the variety of public and private players in the complicated world of research and scholarly publishing. Recognition of that complex research and information ecosystem and an abiding commitment to public access are what gave the SHared Access Research Ecosystem, or SHARE—a coalition of higher education associations including the Association of Research Libraries, the Association of American Universities, and the Association of Public and Land-grant Universities—its familiar acronym. SHARE is currently guided by a Steering Group, which consists of the association leaders, provosts, senior research officers, library directors, and CIOs and which is overseeing four diversely populated Working Groups representing libraries, technologists, standards bodies, publishing, and more.

SHARE's central tenet is that policies expanding public access should provide an opportunity for higher education institutions—individually and collectively—to fulfill their missions to create, disseminate, and preserve knowledge. Higher education is not the only institutional actor involved in disseminating and preserving knowledge; in fact, it shares this role with non-profit publishers, commercial publishers, and scholarly and scientific societies. However, research universities function in large part in the public sphere and thus measure their success according to the impact they have in communicating science to the public and not in generating revenue directly from their research output. SHARE envisions partnerships with these other entities wherein research universities and their libraries maintain independence and control over preservation and access to the research in which they have invested via their faculties, laboratories, students, libraries, technologies, and other forms of infrastructure. Through SHARE, the higher education community asserts the primacy of its continued mission in generating new knowledge as well as disseminating and preserving that knowledge for ongoing societal benefit.

An ecosystem is, after all, a complex set of relationships among diverse organisms—in this case, funding agencies with millions of dollars to invest in research; scholars, the majority of whom are affiliated with research universities; scholarly societies, which publish the journals of their disciplines either

independently or through relationships with commercial publishers; and research libraries, which have spent centuries providing access and preserving the scholarly record for current users and future generations.

Extending the ecosystem metaphor, the OSTP memorandum was a call for system-wide sustainability: for agencies to design policies that make use of existing institutional and discipline-based digital repositories, many of which are based in research universities and their libraries and which recognize the central role of societies and publishers in the life of the researcher and in the dissemination of research. But the memorandum, applauded by higher education, was nevertheless a disturbance to an ecosystem already unstable due to a series of policy, economic, and technical changes to scholarship and scholarly communications. This disturbance will require adaptation by and transformation of the ecosystem's major species if they are to thrive.

Adaptation and Transformation

The SHARE partnership can be a mechanism for libraries and research universities to take stock of their investments in research support and digital infrastructure, including institutional repositories, offices of scholarly communication, and research data-management services. The partners are constructing a vision in which the universities' research libraries are initiating and maintaining these emerging core functions. Research libraries are moving away from a defined role as a procurement center and are becoming more integrated as a partner in the university's research enterprise. Although the OSTP memo gave the ARL/AAU/APLU partnership urgency in 2013, the SHARE Steering Group has emphasized that its vision is not dependent on the specific implementation of the OSTP's call for public-access policies. Research universities share a core mission with funding agencies to demonstrate to the public the impact of the research they sponsor or perform. Emerging policies such as those called for by the OSTP will require universities that receive federal (or other) funds to demonstrate their researchers' compliance with the growing number of agency-level research deposit requirements. Universities are being asked to provide more accountability about the research outputs created by their researchers. The SHARE partnership is seeking ways in which these universities can be in compliance while transforming aspects of the research ecosystem to better meet the information and data-related needs of its stakeholders.



By TYLER WALTERS and JUDY RUTTENBERG

Resilience: Building Share

To play a central role in the research ecosystem, SHARE has to solve the system-wide problem of knowing that research output exists—knowing that an article has been published, a pre-print shared, or a data set made available. In its first and foundational stage, SHARE intends to build a metadata store of these releases, with the ability to track and connect a particular principal investigator with an award and with the research output resulting from that award. Across the disciplines, principal investigators and other scholars do not have any single, structured way to report on these releases in a timely and transparent manner. Scholars' virtual workspaces are rapidly changing and vary by discipline and institutional affiliation, but the ability to identify research results across disciplines and institutions would strengthen efforts to identify, discover, and track publicly funded research, to the benefit of all stakeholders.

Drawing on a variety of sources, including publishers, repositories, and scholarly productivity and collaboration tools, SHARE will distribute these notifications, including a minimal set of metadata (fields might include items such as ORCID IDs, grant numbers, DOIs, and agency IDs) to relevant parties including funding agencies, sponsored research offices, repository organizations, and researcher networks. The SHARE notification system will also provide a record that can be queried by interested stakeholders, including researchers themselves, in preparing faculty tenure-review materials, creating progress reports, or performing compliance checks. Within a higher education institution, such a notification system will increase the resilience of its own systems for tracking grant funding, for reporting faculty activity, and for publicly disseminating information about the research performed by the institution. The successful development and deployment of the SHARE notification system will make it possible for stakeholders to encourage the long-term vision of a robust national and international repository network that includes not only the notification system but also three other cornerstones of SHARE:

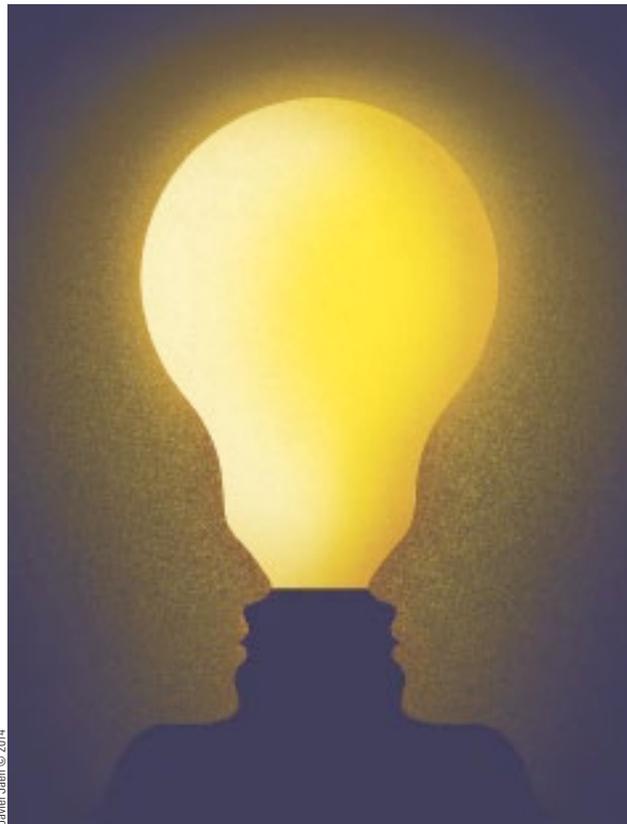
- A distributed content and registry layer that can accommodate research datasets as well as scholarly and scientific

publications. SHARE leaders foresee that research information systems can be leveraged and modified to meet, in part, the goals of this element of the program.

- A discovery layer comprising new and existing systems that will be optimized by interested parties to improve the ability to find research outputs across repositories. This SHARE program element leverages and adds value to the more than 400 open-access repositories currently in operation in the United States and the more than 2,200 worldwide.²
- A content-aggregation layer that moves beyond curation and discovery to facilitate the mining and visualization of large corpora of text, image, and other data, as well as other community-driven value-added services. Currently there are “at scale” initiatives that the SHARE program envisions exploiting in the use and analysis of research content.

Conclusion

Together, these three program elements plus the notification system promise to advance the research and information ecosystem in service to researchers, research universities, funding organizations, and members of the public who access, use, and account for research outputs. The central value proposition for higher education is the ability to engage the public by communicating the results of research in a timely and transparent manner that facilitates unfettered access to research outputs. Libraries, their repositories, and associated services are working to be valuable leaders and partners in this effort. ■



Notes

1. See “OSTP Public Access Policy Forum,” <http://www.whitehouse.gov/administration/eop/ostp/library/publicaccesspolicy>.
2. As identified by the Directory of Open Access Repositories, or OpenDOAR (<http://www.opendoar.org/>), during December 2013.

Tyler Walters (tyler.walters@vt.edu) is Dean of University Libraries at Virginia Tech and is Co-Chair of the SHARE Steering Group. **Judy Ruttenberg** (judy@arl.org) is Program Director for Transforming Research Libraries at the Association of Research Libraries (ARL).

© 2014 Tyler Walters and Judy Ruttenberg. The text of this article is licensed under the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0>).