Getting to the Core of Services: Considering the Arizona State University Library as a Core Facility

Matt Ogborn, Matthew Harp, and Debra Hanken Kurtz

abstract: As academic libraries focus on delivering new services in such areas as research data, digital preservation, and data curation, they have begun to explore alternative funding models and approaches to research. The Arizona State University (ASU) Library in Tempe works with the university's Office of Knowledge Enterprise Development to collaborate and support ASU's researchers at scale. The library's ongoing collaboration and its specialized services, consultations, and training have led it to consider becoming a core facility, a centralized service that would provide consultation and other help to the university's researchers. As a core facility, the library would gain the ability to fund new initiatives and functions that would expand its reach and improve its support for research.

Introduction

The Arizona State University (ASU) Library in Tempe provides a range of services to its research community, including academic support instruction, circulation and interlibrary loan lending, information access and technical help desk aid, and traditional collection development and maintenance for both print and electronic content. These services, which have been in place for decades or longer, lie at the core of what researchers expect from any academic library. However, the changing face of research and ongoing advances in technology have led to new expectations. Academic libraries are now often asked to support research data, data curation, preservation services and storage, and the discovery of and access to research outputs, among other functions. The addition of new responsibilities that often require

Academic libraries are now often asked to support research data, data curation, preservation services and storage, and the discovery of and access to research outputs, among other functions.

portal: Libraries and the Academy, Vol. 19, No. 4 (2019), pp. 549–555.

new expertise can be challenging given existing budgets and staffing levels. However, the model of core research facilities in the academic environment might enable academic libraries to extend their reach while also benefiting more researchers and students.

Core Facilities

Core research facilities, referred to as *core facilities* hereafter, are both "an integral part of modern research universities and institutes" and "relatively new components of the research ecosystem."[1] Core facilities are centralized resources and services shared by researchers across a university. Most educational institutions house them within discrete units, with dedicated personnel, equipment, and operational space.

Core facilities are centralized resources and services shared by researchers across a university.

Core facilities typically recover at least part of their cost of operation in the form of charge-backs or user fees paid from researchers' grant funding. Costs for the services provided are shared across the university, enabling greater access to high-end resources that benefit researchers regardless of their school, college, or center. Typically, core facilities are "fee-for-service laboratories in which users pay with grant funding for training, use of instruments, consulting, and specialized services."[2]

Core facilities at ASU provide state-of-the-art equipment, specialized services, and expert consultation and training to help research teams fulfill their project goals. The facilities operate in the areas of biosciences, chemical and environmental characterization, instrument design and fabrication, materials analysis and synthesis, nanofabrication and clean rooms, and research computing, among others. The researchers who use ASU's core facilities typically pay for their services with grant funding. Essentially, "recharge centers are entities within the university that provide fee-based services to researchers. Most commonly, these are laboratory-based core facilities, but a variety of non-laboratory recharge centers also exist."[3] The core facilities not only support the work of researchers but also aid the community at large through expanded services, new expertise, and better access to research results.

For the most part, academic libraries have not actively participated in research as core facilities. They support the work of core facilities staff and researchers in many ways, but they have not typically operated or been funded through charge-backs. However, some educational institutions have pioneered in this area. Johns Hopkins University's Sheridan Libraries in Baltimore, Maryland, in collaboration with the Harvard University Office for Scholarly Communication and the MIT Libraries, both in Cambridge, Massachusetts, have developed the Public Access Submission System (PASS). PASS is an open platform that supports researchers' workflows by managing their reports and metadata to ensure compliance with the policies of funding agencies that require public access to research results.[4]

Princeton Research Data Service at Princeton University in New Jersey is a joint initiative among the Offices of the Dean for Research, the University Librarian, and Information Technology, with support from the Office of the Provost. Launched in spring 2019, the service aims to provide the Princeton research community with the

expert assistance and infrastructure needed to store, manage, retain, and curate digital data, while also making data available to both the broader scholarly community and the public. Princeton expects to offer these services beginning in fall 2019.[5]

The Data and Visualization Services Department of Duke University Libraries serves both Duke University and the Duke University Health System in Durham, North Carolina. The department provides consulting services and instruction to support data-driven research, including short-term consultations with patrons, at no cost. Services include support for data sources, data management, data visualization, mapping and geographic information systems (GIS), and data cleaning.[6]

These efforts demonstrate some of the ways that academic libraries can support researchers in the current academic environment through alternative funding models and approaches. One logical next step for academic libraries might be to become core facilities. Libraries enable researchers to move in new interdisciplinary directions through information stewardship and discovery, and they provide a nexus, as both a physical and virtual interdisciplinary hub, that encourages collaboration among scholars inside the university and without. While libraries rarely function as laboratories with instruments, they do offer unique training, consulting, and specialized services.

Libraries enable researchers to move in new interdisciplinary directions through information stewardship and discovery.

ASU Library expands research impact and helps maximize university investments by directly sharing project outputs, including research data, for reuse, review, and validation. The library also plans for preservation and storage of these data. Its areas of expertise include data management planning consultation and review services; proposal development assistance; metadata guidance and validation; name identity management, such as creating and managing ORCID (open researcher and contributor ID) identifiers; and research support from initial planning to final publication of results. The library offers university-wide training, including workshops on collaborative tools such as the Open Science Framework, a free, open source Web application for project management. ASU librarians also provide literature review counseling, participate on research teams, and offer systematic review services. The library is the de facto organization that helps researchers acquire new information for their projects through its collections and collection development services and its purchase of electronic access to databases. This assistance fosters an environment that broadens the dissemination of and access to findings by university researchers.

Some traditional strengths of academic libraries, including leveraging grant funding as a means to ensure open access to the products of federally funded research, suggest that a core facilities model might be appropriate. Via the Fair Access to Science and Technology Research Act (FASTR) of 2017, Congress issued an unfunded mandate to make federally financed research outputs open and accessible. In FASTR, Congress declared that making such findings openly available will advance discoveries and improve the welfare of people in the United States and globally. FASTR states that "the Internet makes it possible for this information to be promptly available to every scientist, physician, educator, and citizen at home, in school, or in a *library*" (emphasis added).[7] Further,

"the United States has a substantial interest in maximizing the impact and utility of the research it funds by enabling a wide range of reuses of the peer-reviewed literature that reports the results of such research, including by enabling computational analysis by state-of-the-art technologies."[8]

Congress's expectation is that universities will steward, preserve, and promote the digital assets that result from research, enabling others to expand upon the findings through new analyses of existing data. Congress looks to universities to promote greater access to federally funded research and to advance innovation through use of that research. Until recently, though, few if any institutions had implemented services to make such benefits a reality. Although cloud storage and preservation service costs are considerable when data are involved, they are easier to quantify than human resource costs in many ways. Storage alone is only part of the equation, however. Metadata, systems, and digital preservation professionals develop policies, practices, and workflows to ensure that outputs are preserved and made discoverable with little or no burden to the researcher. Campuses prefer using a carrot rather than a stick strategy to encourage researchers to comply with funding requirements, but investigators are understandably more interested in directing grant dollars to active research than in making their results available for others. Libraries are well-situated to step into this gap, focusing on preserving and making valuable research available to newer researchers and students.

Metadata, systems, and digital preservation professionals develop policies, practices, and workflows to ensure that outputs are preserved and made discoverable with little or no burden to the researcher.

The ASU Library has begun to partner with campus IT departments to provide storage for data for the life of a research project, taking stewardship of archiving and cataloging the data to both preserve the information and make it available to others. The library currently seeks to replace its aging, artisanal digital repository with newer technology that can accommodate data management. It has begun to explore ways to make data as accessible, usable, and used as are its books, electronic subscriptions, and online and on-site collections. With its campus partners, the library hopes to measure the downstream impacts to inspire researchers to embrace and foster a culture of open access at ASU.

The Library and Enterprise Research Administration

ASU's Office of Knowledge Enterprise Development (KED) is the university's research administration unit. KED, which governs and oversees core facilities at ASU through a Core Oversight Committee, began meeting with representatives from ASU Library in 2018 to discuss how KED and the library could work together to support the university's faculty, researchers, and students. The library and KED initially focused on how they could combine their expertise to improve the collection, use, storage, reuse, and preservation of data. The importance and applications of research data continue to increase across academic disciplines, and the library has recognized for some time that "research

data services are a larger-than-library issue."[9] KED has typically focused on fostering successful grant proposals, collecting research dollars, ensuring grant compliance, and commercializing products of ASU research. The library, on the other hand, supports its users regardless of funding and often deals with scholars more interested in publication than commercialization. However, KED and the library share a common interest in research data that makes their collaboration a logical and natural means to address the needs of researchers at ASU.

The importance and applications of research data continue to increase across academic disciplines.

One way KED and the library plan to cooperatively support research data is by integrating the library into ASU's Enterprise Research Administration (ERA) system, which is used for the majority of sponsored research projects at the university. Researchers use the ERA system to develop and submit proposals, manage grant awards, and ensure the integrity and compliance of their activities. Ultimately, the system efficiently and effectively manages ASU's externally funded projects. Within the ERA system, predetermined flags or milestones will either trigger automatic action or prompt a research advancement officer to submit a ticket to the library's Ask a Librarian customer management platform. The ticket will then go into a research services queue, where triage team members will evaluate the source, subject, and request to determine the appropriate liaison, curator, or other staff member to respond to the ticket. Once completed, the Ask a Librarian ticket will be resubmitted into the ERA system, identifying the requested actions that have been performed or asking for additional follow-up interactions by either the research team or the research advancement officer. Integrating the library into the ERA system will utilize available APIs (application program interfaces) between platforms, allowing the software programs to communicate with each other so that research advancement officers and library staff need not exit their respective systems to process requests.

Once implemented, the many researchers who use the ERA system will have direct access to the library's specialized services, consultations, and training. The library's expertise in particular parts of the research life cycle will be embedded in a much larger number of projects at ASU, increasing the reach and the relevance of the library.

After the library and KED had met and planned the ERA integration for nearly a year, a representative from KED broached the idea of the library itself becoming a core facility. Given the increased reach and value of the library that will follow from joining the ERA system, becoming a core facility makes sense. When ASU researchers begin to expect more support of their data through the library, the needs will be immense. Given the sheer size of ASU and its active and growing commitment to research, the library will be called upon to provide a great deal of targeted support of research data once it is embedded in the research process, which interfaces with all investigators who receive grants at ASU. Potentially, every project in the ERA system will reach milestones that require the library's participation, and library staff will then be expected to provide metadata, systems, and digital preservation support, among other services.

Becoming a Core Facility

The library must take certain steps before it can effectively function as a core facility. When it becomes embedded in the ERA system and all the researchers who use it are directed to its points of expertise, the library must ensure that it has the capacity to address these needs. Thus, it must develop sustained internal training programs for research support so that more library staff and librarians can address investigators' needs. The library is looking into connecting with the growing Data and Software Carpentry instruction programs at ASU provided by the Software Carpentry Foundation, a volunteer, nonprofit organization dedicated to teaching basic computing skills. The library might sponsor Library Carpentry as a central component of its practice, as well as exploring other training resources. The library is also investigating recruiting disciplinary experts to enable data curation, which is currently missing from its roster of services. Receiving funding as a core facility would enable the training and hiring necessary to support existing services more robustly and to offer new types of assistance in a strategic, extensible manner.

A fundamental component of a core facility is access to experts. Current library staff have the expertise to develop new, integrated databases and enrich existing research and publication workflows. Liaison librarians with competencies in research data management can provide discipline-specific guidance. Interdisciplinary preservation needs can be managed by the library's digital preservation and curation officer, with discoverability and access support from metadata and collection management staff, who work with researchers to describe their work according to established best practices. The library could also streamline the publication process by facilitating mandates to publish on such platforms as PubMed in addition to journals, removing the burden of multiple deposits from faculty and other staff while also ensuring that the university has access to outputs for localized preservation actions.

ASU Library already actively works to expand its services to address modern research needs without the budgetary adjustments typically seen with new service points. It has also increased its internal expertise in data management, preservation, and the integration of research results to enable reuse and extend the impact of investigators' efforts. It provides guidance on using tools such as the Open Science Framework collaboration platform and the DMPTool, which helps researchers plan how to handle the data their project will produce. The library's Map and Geospatial Hub is a collaborative GIS (geographic information system) data, map, and geographic imagery space, as well as a place to work with experts on related software and hardware. Maker services, branded as *wkrservices* at ASU, offer hands-on learning and use of equipment and tools that aid in product development all the way from prototyping to promotion through audio and video production. The ASU Library Data Science and Analytics Lab provides access to collaborative space for text and data mining, analysis, and visualization activities with data science partners. However, to truly meet all the research needs that the library has the potential to address will be challenging. The resources mentioned in this article are just a sample of what the library provides, and it expects to expand its services into as-yet unknown areas as demand grows.

With the additional resources that becoming a core facility would provide, ASU Library would participate in many more research projects as part of the ERA system. It could expand its existing services and create new ones, such as preservation and storage, data curation, and discovery of and access to research data and outputs. This work represents only the beginning of university-wide negotiations, challenges, and new modes of operation. As the library looks toward possibilities to enhance the promotion and tenure process through robust access to and preservation of research data and new investigations, its efforts will lead to new opportunities and means of assessing the impact of research moving forward. For the present, the library is focused on expanding its relationship with KED, which includes determining the services it will provide as a core facility and establishing rates to support those services. Once the library has the necessary logistics in place to function as a core facility, it can participate in this new and potentially transformative service model.

Matt Ogborn is an assistant librarian at Arizona State University in Tempe; he may be reached by e-mail at matt.ogborn@asu.edu.

Matthew Harp is an assistant librarian at Arizona State University in Tempe; he may be reached by e-mail at: matthew.harp@asu.edu.

Debra Hanken Kurtz is the associate university librarian for technology services at Arizona State University in Tempe; she may be reached by e-mail at: debra.hanken.kurtz@asu.edu.

Notes

1. Philip Hockberger, Jeffrey Weiss, Aaron Rosen, and Andrew Ott, "Building a Sustainable Portfolio of Core Facilities: A Case Study," *Journal of Biomolecular Techniques: JBT* 29, 3 (2018): 79–92, https://doi.org/10.7171/jbt.18-2903-003.
2. Ibid.
3. Arizona State University, "Core Facilities," https://cores.research.asu.edu/.
4. Hanh Vu, Sayeed Choudhury, Jeffrey R. Spies, Peter Suber, Heather Yager, Stuart Shieber, and Ellen Finnie, "Public Access Submission System (PASS)," Open Science Framework/Center for Open Science (OSF/COS), 2019, https://osf.io/8qfzj/.
5. Princeton University Library, "Princeton Research Data Service," 2019, http://library.princeton.edu/prds.
6. Duke University Libraries, "About Data and Visualization Services," https://library.duke.edu/data/about.
7. Fair Access to Science and Technology Research Act, S. 1701, 115th Cong. (2017), https://www.congress.gov/115/bills/s1701/BILLS-115s1701is.xml.
8. Ibid.
9. Cynthia R. H. Vitale, Brianna Marshall, and Amy Nurnberger, "You're in Good Company: Unifying Campus Research Data Services," *Bulletin of the Association for Information Science and Technology* 41, 6 (2015): 26–28, https://doi.org/10.1002/bult.2015.1720410611.