ISSUE BRIEF

Doing More, With More

Academic Libraries, Digital Services, and Revenue Generation

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Introduction

The axiom to "do more with less" in university research libraries is increasingly untenable, as budgets continue to shrink and demand for novel services continues to rise. The impacts of such existential uncertainties are self-evident and widely discussed in the current literature—staff burnout, lowered morale and increased toxicity, weakened local collections, and limited capacity for ambitious and genuinely innovative work. Like many institutions, the University of Maryland (UMD) Libraries has found itself reinventing many of its services and initiatives to meet the increasingly technical needs of students and researchers in our campus community. New services and positions for research data services, GIS librarianship, discovery services, and digital scholarship are all popular and increasingly central to the information service mission of the Libraries. Like many more institutions, demand for such services often outstrips the Libraries' operations and collections budgets, as well as labor capacity for project-driven initiatives and highly technical service requests.

It can be easy to tell the same old story about budget woes: unlike a lucrative (or "lucrative") athletic program, a highly ranked business school, or a medical program that can bring millions in grant funding to campus, libraries are often at the financial mercy of campus administrators and the generosity of donors. This in turn can breed a sense of frustration or fatalism about the valuation of library services within the library that contributes, slowly but insidiously, to lowered morale and toxicity.[1] UMD Libraries leadership rejected "standing in line to plead for more porridge" as the only financial lifeline. Instead, the IT division rethought the ways technology services and expertise could generate urgently needed revenue by supporting new types of projects and partnerships. From here, the Digital Data Services (DDS) program launched in 2015 to support entrepreneurial projects on campus and throughout the local and extended community.

Now approaching its fourth year, the program represents a significant income source for the Digital Systems and Stewardship division, and it has enabled the division to hire more staff, develop additional expertise, and pursue more library projects than would have been otherwise possible. Fiscal management of the DDS program shares some foundational principles with Responsibility Center Management, such as proximity, community, and transparency, and is made possible under the aegis of the University of Maryland's encouragement of entrepreneurial initiatives fostered in campus units. While these environmental conditions help the program succeed, they are not inherently

[1] Kevin Harwell, "Burnout Strategies for Librarians," *Journal of Business & Finance Librarianship* 13, no. 3 (2008): 379-390, https://doi.org/10.1080/08963560802183021.

required for the initiation and advancement of the program. With careful strategic planning and financial sustainability, such a model can translate to many other research libraries with in-house technological expertise in systems management, software development, preservation, digitization, or research data management.

However, the Digital Data Services program illustrates a contentious debate between competing values at the heart of librarianship. This large-scale revenue generating program demonstrably enables the Libraries to expand both capacity and aptitude to improve mission-driven services, but the program is undeniably commercial in nature, and contentious questions about whether such a service even belongs in a library are important to interrogate. Negotiating the tension between revenue generation and the altruistic mission of academic libraries is a challenging practice, and requires transparency, reflection, and compelling evidence of support for our mission to meet the education, research and community outreach imperatives of the university.

Program Origins

This is a pivotal moment for research libraries. Many organizations are in the midst of a massive professional shift from the stewardship of research collections to an active role as collaborative service providers. Simultaneously, the cost of those collections continue to climb, and hiring and retaining staff with specialized domain expertise to provide rapidly evolving services is an ongoing struggle. Certain initiatives, such as the proliferation of digital scholarship programs across libraries, may be launched and grown through traditional extramural funding sources, though this path comes with well-known risks and limitations. However, the foundational technical work that underpins a substantial amount of the research enterprise can struggle for sustainable funding and attention, and simultaneously requires progressively more expensive IT talent like programmers, system administrators, systems librarians, and certified desktop support technicians. Ultimately, this volatile confluence of competing demands and limited sustainability results in overextended staff and infrastructure. UMD Libraries is not unique in this experience.

At the same time, many academic or administrative units on university campuses have a concrete need for smaller scale technology services than enterprise IT, data management, or digitization services. These groups may have modest amounts of funding available to complete such projects, but a shortage of specific technical expertise or resources to complete projects. Often, these groups have specific restrictions on where they can spend funds or who may be hired for these projects, and as a result these groups might be unable to seek private or external solutions or staffing. Out of necessity, these units may turn to their university libraries for support on projects, and the library may

even possess the expertise to do the work required. However, traditional models for reimbursement of library labor, most notably salary buyouts and other methods of "cost recovery," do very little in practice to benefit the libraries. Put another way, buying 20 percent of a librarian's time to support a grant project doesn't make that librarian's existing work go away, and the library can't hire a 5hr/week professional to offset the work responsibilities of a highly skilled staff member. With that limited amount of income, libraries can easily find themselves in the problematic scenario of hiring more temporary labor in the form of students and term employees, or risk turning away potential new advocates and opportunities. Pursuing a sustainable, conscientious solution to this problem at UMD required a number of campus conditions, cultural buy-in, and well-defined vision and a plan.

Environmental Conditions

The University of Maryland at College Park is the flagship research university of the University System of Maryland, and one of the newest members of the Big Ten Academic Alliance. UMD Libraries consistently appears in the top half of the American Research Libraries Investment Index. However, UMD Libraries also serves the largest student and faculty population in the Washington, D.C. metropolitan region. According to the latest ARL Investment Index report,[2] UMD's library budget is comparable to, or smaller than, private colleges in the region like George Washington University or Georgetown University that enroll far fewer students. Consequently, the tension between the high demand for service and stretching limited state funds are ongoing and existential within the Libraries.

The State of Maryland, the University of Maryland system, and UMD College Park campus encourage and foster multiple entrepreneurial initiatives from university units to resolve competing tensions between austerity and innovation. In particular, the Maryland Innovation Initiative[3] and the UMD Division of Research Innovation and Entrepreneurship programs[4] are designed to facilitate commercialization of technology products or services that are spawned from scholarly research.

With these substantial programs serving as inspiration, administrators in UMD Libraries began assessing potential opportunities for participation. Given that campus leadership

[2] Association of Research Libraries, "Spending by University Research Libraries, 2015-2016," *The Chronicle of Higher Education*, August 13, 2017, https://www.chronicle.com/article/Spending-by-University/240829.

[3] "Maryland Innovation Initiative," TEDCO, 2018, https://www.tedcomd.com/funding/tech-transfer/maryland-innovation-initiative.

[4] "Innovation and Entrepreneurship," University of Maryland Division of Research, 2017, https://research.umd.edu/innovation.

emphasized technological advances that might become commercial services, the Libraries' technology division appeared to be the most natural fit for entrepreneurial initiatives. Budget administration at the University of Maryland follows traditionally centralized governance practices, rather than fully distributed models such as Responsibility Center Management. However, the Libraries could already retain and reallocate the typically limited income generated by late fees or student-facing services, and this approach could be replicated for higher-value information technology services. Moreover, while continuing state-funded positions are extremely difficult to secure, UMD Libraries has a number of options to rapidly hire contractual staff and faculty when necessary with such funds.

Inception

The idea about entrepreneurial activities in the UMD Libraries started with a realization or a sense that library services and products have a market. Library leadership identified the market to include various academic and administrative units on the UMD campus, partner universities within and beyond the University System of Maryland, and other public and private entities and organizations.

Within the university, many fields and disciplines, ranging from education to public health to the humanities, lack access to information technology specialists and data specialists for specialized projects. As a result, they must often rely on student labor, which is temporary and can lead to unstable and not-very-usable products and outcomes. The student labor pool that these disciplines tap into may come from the same discipline, or from other more technology-oriented departments and programs. In cases where the students are from the same discipline, they often lack the proper technical skills, and in cases where the students are from technical backgrounds, it takes time for them to understand the new domain into which they are entering and grasp the requirements of the tasks at hand. In just about all cases, students often lack the skills and mandate to produce viable products, and require more guidance and oversight from supervisors. Work done by students also generally lacks the infrastructure for ongoing maintenance and upgrades.

Services provided by commercial entities are available to these disciplines, but they are often financially prohibitive and not supported by grants. By using the area and subject librarians' specific knowledge of the domains in need of information technology expertise, libraries have an advantage in understanding the user needs and understanding the research problem better.

Looking outside the campus community, UMD Libraries' staff knew that consistent, professional data management and electronic records management posed major problems for companies. These organizations create large amounts of data, but data and records management are supportive services and not core competencies. It seemed natural that much of the Libraries existing practices for data and records management could be applied to companies and other entities outside the university, as well. This approach paved the way for opportunities to develop partnerships within the DC and greater Maryland metro areas.

Implementation

The Digital Data Services business model was imbued with several foundational values at its inception. At its core, the model extends the language of "cost recovery" and embraces revenue generation to support necessary growth. It embraces Agile methods by emphasizing rapid, iterative approaches to project acceptance, implementation, and assessment. It facilitates the reuse of existing expertise and infrastructure, and encourages projects that support new opportunities to learn. Finally, the Digital Data Services business plan embraces open communication and collaboration within the managing division, with transparent governance and approval processes that parallel Responsibility Center Management principles.

Planning

Initially, Digital Data Services program planning overlapped with performing tasks and with conducting projects for some early partners. These first clients consisted of people or entities with which the Libraries had some existing professional relationship or partnership, like research institutes, individual faculty, and campus administrative units. Using an iterative, responsive approach, staff could launch some projects for which they knew they had either already developed systems and services for the Libraries, or for which they possessed appropriate expertise. Planning began with an assessment of both internal IT labor capacity, and tasks associated with certain project proposals. Initial project development included discussions and brainstorming sessions with early potential customers in order to effectively assess needs.

A critical activity during the planning process was determining how to price Digital Data Services products and services offerings. This was achieved by identifying products and services already available in the marketplace or open source and the price points at which these products and services were offered. As part of this phase of planning, staff considered which components of the target products could be built with internal resources, as opposed to using existing services in the market and in the open-source

community. Furthermore, participating staff conducted competitive market analysis by researching existing options and their price points. Customers also were encouraged and guided to investigate and consider other existing alternatives, including commercial solutions.

Based on these assessments, department heads and the associate dean of the Digital Systems and Stewardship division designed and configured the initial offerings and narrowed the program's focus to application development services, data services, and digitization services. These three thematic programs relied upon a number of pre-existing resources within UMD Libraries, especially a robust development team, equipment infrastructure like an onsite digitization lab and data center, and a team of digital librarians who were adept at digital project and data management. An important part of planning also included aligning DDS program offerings with initiatives that were already planned for the Libraries or had already been implemented. This led to leveraging, in both directions, the work done for customers and the work performed for the Libraries. This proved to be an important exercise that required continuous effort, and led to offering competitive products and services at competitive prices.

Projects

Initially, the DDS program took on a wide range of projects in order to learn about the market and about opportunities to best leverage existing products and staff expertise. In addition, staff wanted to assess the gaps in their expertise for which there is great market potential. From there, the plan was to strengthen human resources and technology resources in those areas. As such, IT staff knew that the initial work would be very broad but that they would narrow their focus later on.

The nature of the projects and the work performed included project management, software development, consulting and advising, training, data and process analysis, and data management. The DDS program also provided digitization services and expertise, as well as hosting and storage services that used a secure environment created for projects with sensitive and private information. The work ranged from larger multi-year projects to shorter, task-oriented ones. The shorter projects often took the form of consulting or advising, or to repair or optimize existing systems.

As mentioned earlier, projects came from academic and administrative units on the UMD campus, from other universities in the state university system, as well as from other university consortia. Some projects also came from the commercial sector. Some early example partners and projects include:

- The University System of Maryland and Affiliated Institutions, development and hosting of the Maryland Shared Open Access Repository (MD-SOAR)
- National Socio-Environmental Synthesis Center (SESYNC), software development services in support of locally built applications

In situations where the work was more exploratory in nature, DDS initiated pilot projects, and in some of these cases rates were lowered or waived for early adopters who were willing to provide complimentary domain expertise or who were willing to take an active role in development sprints, providing feedback on improving products and processes. Another dimension to the work performed had to do with how much of the work had already been completed in house for the Libraries, and could now be repurposed for others. Projects undertaken also took into consideration how many in-house experts were available to do new work, versus how many would have to be hired.

DDS leadership fully intended to capitalize on work and products that had already been developed, such as UMD's digital repositories and linked-data platforms, providing stable products to customers that were developed, maintained, and tested over longer periods. These would also be cheaper than products developed from scratch. Rather, DDS could focus more on customizing and specializing these existing products to the needs of the customers. Customization ranged from changing the look and feel of the product, to configuring and tuning parameters so they would fit customer needs, to adding new features. The work also could include integration with the customers' systems. These types of projects that were compatible with the Libraries' existing plans and aligned well with planned technologies in the organization.

Operations

Day-to-day management and operations for Digital Data Services projects rely upon a number of organizational values, including consensus building and collaboration, transparent decision-making, and formal expectation management and open communication. Because current employees did not have the bandwidth to take on all the new projects, and in some cases did not have the required expertise, new personnel were added to the team, using revenue from the DDS program. Given the inconsistent nature of this revenue, and that projects would not necessarily be recurring from year to year, the program managers adopted an augmented workforce model using contractors and consultants. The university offers efficient vehicles through which this type of personnel can be hired. Contractors ranged from project managers to software developers, and could be independent contractors from outside the university, or university employees that take temporary release from their regular positions.

Active participation of customers is crucial to the success of many of the projects undertaken so far. This is particularly true for systems and services that are being implemented and deployed for the first time, or are to be deployed in a new environment, or used in a significantly different way. The customers are not only there to specify business and technical requirements, but to perform tasks from the project plan. Testing the outcome of various phases of this work also relies heavily on customers to assume an active partnership role. Members of the customer team are, therefore, an integral part of the project team with explicit roles and responsibilities.

Using existing structures in the University and drawing upon past experiences in the Libraries with a copy center that provided photocopy and print services, Libraries staff created a dedicated business unit and separate account for DDS financial activities, which was essential for managing operations and for accounting purposes. Libraries staff had some discussions with the office that handles intellectual property about how faculty librarians and staff would share and manage the intellectual property that they developed or co-developed with others. Personnel compensation was taken under consideration. Currently, compensation for DDS work is made if the employee worked on DDS projects on their own time rather than as part of their normal job duties, in the form of approved overtime or overload compensation.

As Libraries staff developed Service Level Agreements (SLAs) and Memoranda of Understanding (MOUs) with customers and stakeholders of projects within the Libraries, they considered how to develop such documents for agreements with external customers and stakeholders. Agreements with entities outside the university system came in the form of formal contracts vetted by the university's Office of General Counsel. Mechanisms to manage the indirect costs of these contracts to maintain a competitive edge for private-sector customers is still under consideration and evaluation.

While the program is not a formal implementation of Responsibility Center Management,[5] the approval and review process for Digital Data Services parallels a number of foundational principles of this resource allocation strategy. New project proposals and expenditures from the financial account must be approved by the department heads for the division and then routed to the associate dean for final approval. This process ensures that department heads whose units will be directly impacted by a new project have full knowledge of its inception and expenses, and are best able to communicate the local impacts of the project. Many projects require collaboration across multiple teams, and consequently, consensus-building and open

[5] Edward L. Whalen, *Responsibility Center Budgeting: An Approach to Decentralized Management for Institutions of Higher Education* (Bloomington, IN: Indiana University Press, 1991).

communication has emerged as the de facto method for securing approval among this group. The higher approval of the associate dean ensures that projects continue to fit within the overall direction of Digital Data Services.

Experiences

With nearly three years of experience running the Digital Data Services program, as well as a modest portfolio of successful projects, Libraries staff have identified a number of outcomes and results from the initiative. The advantages span direct financial gains, a growing labor pool, and improved public-facing services, but these benefits have come with some lessons about the challenges of hiring, refining product offerings, and balancing competing priorities. Ultimately, the Digital Data Services program has prompted self-assessment and consideration regarding its place not merely at the University of Maryland, but within the library profession at large.

Advantages

The most direct outcome of the program is the pool of funds available. After ensuring that DDS project obligations are met, additional revenue is available to assist in providing services for internal projects. Those funds have most successfully been used to hire contract developers who work on both DDS and internal projects. Those developers have not only brought additional developer hours, but also new expertise and experience that has been shared across the developer team. As an example, IT staff knew that the Libraries needed to adopt Ruby on Rails as a core technology. The team both desired to support a growing number of community developed applications using Rails, like ArchivesSpace and Samvera, and also needed to fill a gap in the Libraries' technology stack for rapid development of staff administrative applications. With funds from DDS revenue, the Libraries hired a developer with that experience. That developer not only helped support our target Rails applications, but also bootstrapped training and support across the team.

The program also provides a mechanism to bring online experience in another way. For a project involving broadcast media content management, the Avalon Media System was chosen for the baseline application. This both met the customer's needs and allowed Libraries staff to explore and gain preliminary experience with Avalon for managing the Libraries' audio/visual materials. The DDS project directly funded the Libraries initial exposure to Avalon, and that experience facilitated launching an Avalon pilot online for internal use.

The program has allowed the Libraries to expand support for its strategic partnerships, such as the one with the University System of Maryland and Affiliated Institutions (USMAI) consortium. UMD Libraries has run and maintained a DSpace instance for nearly 15 years as the institutional repository for the UMD College Park campus. On several occasions in the past, USMAI and College Park have discussed a possible consortial DSpace instance, but were unable to reach any agreement on the funding and support model. Only with the advent of the DDS program were these organizations able to make this a reality. UMD Libraries was able to use existing expertise to provide a hosted version of DSpace called the Maryland Shared Open Access Repository (MD-SOAR). This service began as a two-year trial before moving into full production.

Lessons Learned

Despite some success in hiring contract developers and project managers, this has been somewhat of a rocky process. When hiring permanent developers, UMD Libraries has the luxury of bringing on board staff with general developer skills who are willing to stick around to get trained on the specialized skills and tools of academic library technology. This long-term investment approach does not work for the DDS funded contract developers. Either hiring managers need to find someone with the existing skills, which is difficult given the library domain specific technologies in use, or bring someone on board with generic skills, and then carefully blend their work with permanent staff to accomplish both the DDS and Libraries' core projects. Department heads have tended towards the latter, based on an early experience. The first contract developer hired was an expert in Ruby on Rails, but spent several months attempting to learn a digital library toolkit. Ultimately the developer left before accomplishing any significant milestones.

A secondary issue is that the growth of the development staff and project queue outstrips the availability of administrators and project managers, creating bottlenecks in the process. The Libraries just began to trial using a part-time project manager on a major project, and have yet to determine how to use DDS revenue to expand the necessary permanent, in-house administrators necessary to support expanded DDS operations.

The DDS experiment began without any seed money, so initially projects had to be completed strictly with existing resources. Eventually, enough revenue was generated to support the DDS projects and begin funding additional internal projects. However, division leadership and staff underestimated the amount of anxiety among internal stakeholders about the DDS program and its effects on internal projects. Even with full organizational support, and basic information sharing about the program, staff discovered that they needed to provide more in-depth information about the details of the program to help internal stakeholders see the long term benefits to the entire

Libraries, even at the cost of some shorter term delays. In both formal meetings and informal conversations, some Libraries' staff members expressed concern that Digital Data Services projects were pulling resources away from complex Libraries projects like the production launch of UMD's Fedora 4 repository and other digital collections work. The team acknowledged that Digital Data Services projects did pull lead developers away from dedicated digital repository work for a period of time, and also highlighted the ways experience gained from other projects would benefit digital collections work in the long run.

Over time, it has become clear that customers want a clear menu of service offerings and prices. In the case of digitization and software development, this has been fairly straightforward, but data services pricing and value has proven more difficult to articulate and sustainably implement. Time tracking or billing protocols have been implemented for production-oriented groups like the development team and digital reformatting department, but "data services" overall lacks a clearly articulated product and benefit for prospective partners, and it is more challenging to itemize specific types of work. Furthermore, the data requirements of cultural heritage and institutional memory work often outstrips the needs of partners who are seeking low-cost and simple solutions for backups, data hosting, and preservation. Put another way, the Libraries was offering a BMW when the customer wanted a Civic.

On a large campus, there is large demand for many services, but this does not necessarily mean it is easy to identify projects that are a good fit for the program. The first challenge is to identify what projects are not suitable for DDS. One of the most frequently requested services is for website development. The campus provides a Drupal hosting service, but does not provide development support. However, websites nearly always require a high level of customization, and building them is more expensive than customers are willing to pay. It would also be difficult to scale website development sufficiently to turn a profit. One of the services DDS does offer is a "Secure Data Environment," which provides researchers who require higher levels of information security with a protected virtual workbench in the secure environment the Libraries systems staff were able to configure with funds from DDS. In practice, the heterogeneous needs of researchers even within the same lab or department meant that Libraries staff spent significant time on initial consultations, application configuration, data transfer mechanisms, and user support. In order to remain cost-competitive, these aspects of data services need a mechanism to be scalable. Commercial entities deal with these issues as well, and there is an opportunity to investigate and learn from them. Furthermore, UMD Libraries still needs to set up a modern systems environment that can be automated and parameterized for quick and easy spin up, which is an issue that needs to be addressed for internal library systems as well. Ideally, DDS functions best with larger scale projects, but these are also harder to find and manage.

Questions and Considerations

As the DDS program evolved, critical questions arose regarding the practical and philosophical mission of the academic library, and how such a program should be situated as a service. First, much of the success of the DDS program primarily relies on the work of technical specialists (namely, software developers, systems staff, and digitization technicians). While librarians in the Digital Systems and Stewardship division participate in DDS projects, this accounts for comparably little billable labor. Moreover, these functional specialist librarians command significant expertise in project management, product management, and application administration, which are skills that make sense in the context of software development and management, but rarely as a stand-alone service.

The challenges of incorporating non-technical staff into such programs is exacerbated when considering the involvement of public-facing subject matter specialists and liaisons. At UMD, some of the authors have consulted on adapting the DDS model for select services in the Libraries' Research Commons group, but the speculative service offerings still trade on the highly specialized technical skills of the staff in that unit. The traditionally intellectual and emotional skills of collection management, instruction, and reference are considerably more difficult to translate into a revenue-generation initiative without violating the fundamental norms and ethics of the profession—it would be absurd for an academic library to start charging patrons for reference interviews, or faculty for one-shot instruction sessions—though the relationships and connections liaisons have to their communities are vital to the success or failure of a program like DDS. Determining effective mechanisms to involve librarians with considerable command of academic subjects in revenue-generating initiatives will be essential to both maintaining equity and expanding opportunities in the future.

Finally, there are practical and ethical issues to be interrogated with a program like this—whether this is an opportunity to expand our mission and services in a rapidly shifting landscape, or the next step in our profession's backslide toward neoliberalism.[6] It is undeniable that the DDS program quite literally embraces capitalist practices. That, in and of itself, may be enough for many to consider the program a Faustian bargain, and distrust any advantages it confers. However, the program also definitively makes it possible for UMD staff to deliver on new, free service demands, instead of apologetically telling researchers a request can't be fulfilled, an application can't be run, that "*we can't help them*." Autonomy is a key value imbued in the DDS program. Projects are chosen

[6] Chris Bourg, "The Neoliberal Library: Resistance is not futile," Feral Librarian, 2014, https://chrisbourg.wordpress.com/2014/01/16/the-neoliberal-library-resistance-is-not-futile/.

and shaped by managers and departments, and planned and accounted for, rather than sprung upon staff unexpectedly through a donor request or abrupt change in strategic priorities. This agency in the choice of products and work wouldn't be possible in traditional funding models, nor would opportunities to reinvest in support of the communities and values of UMD Libraries.

Conclusion

The Digital Data Services program at UMD is proving to be an impactful program, allowing the Libraries to expand capacity and respond more effectively to emerging service demands, but much development remains to be done. These gains have exposed new opportunities, as well as highlighted weaknesses in existing library operations, and the program continues to evolve. An important piece is to develop a formal business plan that will chart a roadmap for service offerings and develops a growth model and an exit strategy, as well as financial and revenue models. At this time, the next phase of DDS business development will require developing cash flow models and other instruments for running this operation smoothly and at a steady state. In 2018, the Data Services Librarian in the division initiated an internal program review on behalf of the division's department heads, to conduct a SWOT and gap analysis of the DDS business model and identify new opportunities for improvement. That librarian, in collaboration with the Digital Programs & Initiatives graduate assistant, initiated a review of existing Digital Data Services documentation, developed an online survey instrument that was distributed to department managers, and conducted individual follow-up interviews. Full analysis of the program is still underway at the time of this writing, but the program managers are optimistic that the report's recommendations will strengthen the program going forward.

Objectively, the DDS program represents an innovative yet controversial response to the extreme financial pressures facing academic research libraries today. Reconciling the tensions between fiscal independence and continued dependence on charity, and between delivering much-needed services or continuing to *do less with less*, will take careful discussion, thoughtful planning, and ongoing self-assessment to navigate effectively.