



Coalition for Networked Information

Refreshing the Agenda and Priorities for Collaboration

Report of a Meeting of Senior IT and Library Leaders Held September 6, 2018 Published December 2018

The Coalition for Networked Information (CNI) held a small invitational meeting for senior information technology and library leaders from universities and colleges on September 6, 2018, in Washington, DC. The impetus for this meeting was to examine where there are key opportunities for librarians and information technologists to collaborate today. CNI was formed in the early 1990s as a deliberate collaboration between library and IT leadership and has developed an evolving agenda of work building on those collaborations. CNI's executive director Clifford Lynch opened the meeting with some reflections on how the world looked very different in the early 1990s: most academic libraries had little exposure to the internet and most had little IT expertise internally, although there were a few exceptions. Now all that has changed. While higher education institutions generally have a central IT operation, technology has become so pervasive in scholarship that one can find IT staff within academic departments and in the library. On some campuses, there is a division in responsibilities between central and departmental IT (including the library). The scale of technology infrastructure is much more expansive than in the early 1990s, and the degree of integration of technology in teaching and learning is much more extensive than in the early years. Currently, there are some services jointly supported by IT and library organizations; this was only a dream 25 years ago.

At the day long meeting, library and IT leaders, each from a different institution, focused on: what are the most important areas for collaboration; what are institutions doing currently in terms of collaboration; and, how are library and IT organizations implementing collaboration structurally. Participants included individuals from liberal arts colleges, mid-sized institutions, and research universities. A number of attendees had worked at multiple institutions throughout their careers in higher education and could represent a variety of perspectives.

We began with a quick look at organizational structure. There was considerable variation in reporting lines in the participants' organizations; perhaps most commonly the library reports to the provost. CIO reporting lines vary widely. Often it seems somewhat easier to collaborate if both the library and the CIO report to the same person. It was also noted that particularly when the CIO reports to the "administrative" side of the institution, IT can easily become intensely focused on administrative systems, compliance, and related matters. Sometimes CIOs are, in fact, brought in to "fix" IT, and generally this is in response to problems with administrative systems, not research or teaching support. There is definitely a culture gap between the path of evolution in administrative systems, where commoditization is significant, and academic computing, which has more room and more need for innovation (as well as

lots of commercial and commodity products). Some CIOs, who may have been hired in from outside the academy and with a primary mandate to deal with administrative-systems related issues, may have difficulty engaging the needs of research support and the collaborations necessary to meet these needs.

Three themes provided the framework for discussion and resulted in some clear areas of mutual interest and opportunity between the representatives of academic libraries and information technology units. The themes were: the research enterprise, teaching and learning, and enterprise-wide concerns. A summary of each topic's discussion is provided here.

The Research Enterprise

A now decades-long move to IT-enabled scholarly work continues to have an impact on library and IT organizations, particularly in terms of how the products of research and scholarship are communicated, provisioned, and preserved. In each of these areas, both information technology organizations and libraries are struggling with some major challenges. As federal and private funding organizations have implemented various new mandates related to research outcomes such as publications and data, the chief research officer (CRO) must now be a key partner for both IT and library leadership, and there is a need for much closer collaborations among all three institutional units. This emerged as a central finding of the research discussion: many higher education institutions are forming three-way partnerships among the information technology unit, the library, and the research office to coordinate and collaborate on developing policies, practices, and infrastructure related to research support and management of research outcomes, particularly data. It was noted that because chief research officers are often drawn from faculty ranks (the area is not "professionalized" in the same sense that libraries and IT are) it's important for library and IT leadership to proactively reach out to new incumbents in the CRO role, as they may not come to the position with a clear understanding of the depth and scope of the necessary collaboration.

There is a very strong desire to engage with faculty across the entire research life cycle, from grant preparation to ultimately meeting mandates for public access to research outcomes. This is very challenging and requires libraries, IT and the office of research to work as a team to provide integrated services to faculty and graduate students. This is a massive and centrally important shift from the nature of the library-IT collaborations that had their roots in the 1990s and the early 2000s.

Meeting participants identified data science as a locus of building strength in inter-unit relationships because it crosses so many boundaries, including teaching. It is currently a very dynamic and confusing time for data science: institutions are struggling to situate it within their academic programs and departments, and there are many complex interests and choices here. At the same time, there's also a very active need for data science as a body of skills and services that students and faculty need to obtain access to (there's some similarity with statistics, historically, or geographic information systems). All recognized that coordination in this area is important and some libraries see this as the future of the literacies that they focus on in their instruction programs. Data science will also likely impact the future of scholarly publishing.

Data science is a leading driver of a broader demand for a wide range of skills and knowledge that includes familiarity with various software, good coding and software management practices (software carpentry), knowledge of intellectual property and funder mandate issues, the process of publishing scholarly work, matters dealing with human subjects, and other areas. Faculty often expect graduate students (and sometimes undergraduates) to have these skills, but don't want to explicitly teach them; IT, research administration, and the library often collaborate to teach various kinds of (usually non-credit) courses in these areas. Several participants also mentioned offering students externally developed tutorials, sometimes licensed (e.g. Lynda.com) and sometimes open access materials. This is seen as a very strategic role in that it not only supports the academic and research enterprise directly, but also provides an opportunity to help shape the practices of the next generation of scholars.

Participants had a lively discussion about appropriate and helpful involvement by faculty in decisions about provisioning infrastructure, and the role that faculty should play in the design or selection processes for services, tools, and technology support. There was some dialog about how to engage faculty without the faculty actually building systems either independently or in partnership with IT and libraries. A key issue is developing trust by faculty in the decisions made and infrastructure built by IT and libraries. It can take decades to build such trust with the faculty. As a case in point, there has been an ongoing debate about how to move from the model of faculty independently acquiring servers with grant funds, installing them in frequently problematic spaces (power, air conditioning, physical security, etc), and running them with graduate students serving as part-time system administrators, to, instead, various forms of centralized, professionally configured and managed "condo" arrangements, server pooling and sharing, or even cloud-based services. Some participants argued that if you don't want faculty to continue running their own servers, the central organization must subsidize infrastructure to some degree and give faculty some role in decision-making. Incentives matter; central organizations need to subsidize services to some degree as a carrot to change behavior.

Sticks are also relevant: conformance issues such as meeting HIPPA (Health Insurance Portability and Accountability Act) requirements are increasingly challenging and increasingly well audited, and are much more easily satisfied in centralized facilities. And the stakes and challenges in broader computer security continue to grow. As high-performance becomes much more heterogeneous with special purpose hardware (GPU-based, FPGA-based, custom Machine Learning processors, and the like, possibly as part of commercial cloud-based offerings), provisioning computation is become increasingly complex. At the same time, research computing has become much broader than just high performance computing, encompassing research data management systems of many kinds. While the management of research data sets was the most commonly discussed issue here, there are many others – consider, for example, the selection and deployment of electronic lab notebook platforms.

Research data management is a particularly challenging area, and there is huge demand. Roles and responsibilities, and expectations about what the researchers will do themselves, are very much in flux. The funding models are not really mature, in particular to support long-term preservation when that is warranted. A related issue is deciding how long research data should be retained. One participant observed that

simply planning institution-wide storage capacity was becoming a major challenge, which may ultimately need strategic planning and budgeting much like what is practiced for physical space management.

One participant noted that the burden is on libraries and information technology organizations to quickly meet the expectations of faculty, whose perspectives for research delivery is very different from core infrastructure projects. There is tension between the viewpoint of many library and IT administrators, that one-off tools are not sustainable and should not be the focus of service provision for research, and that of some faculty, that they don't want or see the need for replicable services in research; where that view is warranted, it is difficult to get a shift in IT staff's perspectives to react in ways that are responsive to faculty. One arena where these tensions have been manifest for decades is in digital humanities support, with some arguing the need for start-up packages and other subsidies for digital humanists in order to incent them to go toward tools and standards that will fit with existing infrastructure (including producing outputs that can be preserved, when appropriate), while others advocate for the need for resources to provide services and support for unique bespoke projects.

Finally, there was considerable interest, and also some skepticism, about the developments in what is being termed the "national research platform." There are a number of different visions of exactly what this constitutes; there are questions about how many researchers will be able to take advantage of this in the next few years, and how this will be funded. It has significant and potentially expensive implications for networking, both at the campus level and beyond, as well as for storage and computation strategies. But there was a consensus that something important is happening here that needs to be tracked carefully and may ultimately change the understanding of how collaborative inter-institutional research is carried out.

Teaching and Learning

The discussion of areas of collaboration in teaching and learning focused primarily on educational content resources, both open and purchased/licensed materials and their procurement as well as the integration, support, and platform migration of learning management systems (LMS). In addition, many participants mentioned student learning and success analytics as a looming issue.

One of the clearest areas of mutual interest and opportunity was in provision of content resources that support the curriculum. There are many components here: open educational resources (OERs), electronic textbooks, learning management system content, and testing materials. Textbooks have become a significant cost, to the extent that some students are not purchasing them. As they become electronic, they need to be licensed rather than purchased, and the terms of those licenses are an issue; electronic textbooks can also generate a great deal of data about how, and how much, they are being used. Further, there's a sense that we should be moving towards a greater continuity across "textbooks," other learning materials, and material in the learning management system. The way these are identified and acquired is ripe for re-examination, as are the economic models for acquiring them.

Most obviously, this is related to affordability, which is a major political issue and a key institutional strategic concern. It's also strongly related to student success, because the most challenged students may be those who cannot necessarily afford very expensive educational materials; thus progress here can support another major institutional strategic objective.

Additional issues that have received much less attention include student privacy, accessibility of the materials and ways to accommodate those with various disabilities, continuity of access beyond the duration of the course, library roles in acquiring these materials, and data governance of analytics that may be derived from the use of these materials (who gets to see them, what can be done with them, how long are they retained, and to what extent they are anonymized). Libraries and IT collectively have a great deal of experience and knowledge that can help to inform and guide negotiations with vendors and faculty decision making. Solutions in this area also require integration with institutional authentication and authorization infrastructure.

However, libraries and IT are faced with major organizational obstacles in trying to take action in this area. These include restrictive contracts with bookstores, how to collaborate with faculty and with the instructional technology organizations at scale, and how to focus institutional-level commitment on these issues. There may be questions about how this connects to the institutional procurement processes. There's also an important communications and outreach component to the work that's needed in these areas.

Enterprise-wide Concerns

A variety of topics were discussed in this portion of the meeting. Following on the earlier discussion about the research enterprise, data governance re-emerged as a key area of joint interest. In particular, the discussion in this segment focused on governance over data analytics; if governance is in place and is grounded in university values, the role of analytics in various areas (student success, learning evaluation, research profiles, etc.) may become more palatable to critics. Currently, data collection, retention, and use is often driven by risk management and compliance concerns coming from general counsel or audit and risk management, as well as various security and safety interests. In the absence of such considerations, data is often liberally collected, retained, and reused on a relatively ad-hoc, opportunistic basis.

Some information technologists believe that librarians are problematic participants in the discussion because their professional values regarding patron privacy are perceived as absolutist, rather than nuanced, and do not consider appropriate balances among privacy, personalization, and the ability to deliver valued services or advance institutional mission (for example, improving the quality of teaching and learning). More generally, there was concern that the interests of various parties involved with data governance all tend to leave out of the conversation the individuals about whom the data in question has been collected.

These data governance conversations may be headed by someone from IT, the library, or institutional research. When the group was polled, we found that some librarians are

involved in data governance on campus but not in other universities. In some cases, there is no campus group working on data governance. At times, conversations around data governance take place as direct conversations between counsel and individual interested parties on a bilateral and transactional basis; this is particularly true in smaller institutions. There was a strong consensus that moving beyond this to an inclusive and transparent governance process was very desirable.

Both library and IT participants noted that while librarians protect circulation data for physical materials, units within the university, including libraries and instructional technology, are giving away considerable amounts of student and faculty information through contracts with vendors. Commercial companies who have access to university data are analyzing it for their own purposes and, in some cases, re-selling it. Most librarians don't know enough about those systems to know what trade-offs they're making, and students don't either. Some suggested that we need policies that focus on what can be done with data and who can access it rather than on what is collected.

Information technology leaders did consider librarians as welcome partners in institutional policy conversations surrounding privacy issues and how those policies address data security. They suggested that having library and IT work together on institutional privacy issues will help take the conversation to the rest of campus. Greater education of the broad campus community is essential and librarians and IT staff could work together in this area. Clearly this also connects to related questions about authentication, authorization, and identity management.

Another issue is accessibility, including tools and best practices, as an institution-wide issue. Both IT and libraries have a stake, and expertise, to bring to this challenge.

A final topic touched on was institution-wide digital asset management; libraries have been investing in this area for 25 years or so, but there are many digital assets in the university that are not included in library systems, often including many important institutional resources, depending upon how records management and institutional archives are organized and where they report. Few campuses (none in the group present at the meeting) have a unified institutional strategy. Some participants addressed the potential for joint asset management of library and museum resources, especially where the library had administrative responsibility for campus museums. One participant suggested that in order to develop joint systems, incentives matter a lot; in one case in particular, where the library has responsibility for museums, they realized that if they didn't put some money behind a system, they would end up with five systems. They are underwriting one third of infrastructure costs. A representative from a different campus noted that at present, the library digital asset management system couldn't scale to house their museum collection.

Other examples of information resources that are currently housed in separate systems included a document management system for personnel and a medical imaging system. Each area has precise use cases and would need to be examined as to whether they could/should be put together.

Rationalizing these systems and attempting to move towards an institutional strategy is clearly a promising potential area for library and IT collaboration, but there was a sense

that this was an extremely challenging, perhaps overly ambitious goal that didn't promise a near term payoff.

The discussion then shifted to what was identified as a bigger question: providing good systems for research workflow. The lack of good systems is slowing research progress and increasing the compliance burden on researchers. Some noted that libraries are good convenors in processes to try to better understand the needs and requirements of such systems.

Conclusion and Next Steps

At the conclusion of the meeting, Clifford Lynch asked the participants to very briefly describe who “worries” about emerging technologies on their campus; how are important emerging technologies identified, evaluated and prioritized, and ultimately folded into strategic planning? Responses included:

- an innovation group within central IT
- individuals or teams at the school level rather than at the enterprise level
- libraries for user-oriented technologies (e.g. makerspaces, visualization platforms)
- students, in some cases
- everywhere on campus, without coordination (this was the most common response).

Unfortunately, there wasn't time for further discussion of these responses.

CNI anticipates convening additional groups of IT and library leaders to continue these discussions, exploring some of the areas mapped by this first meeting in greater depth.

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