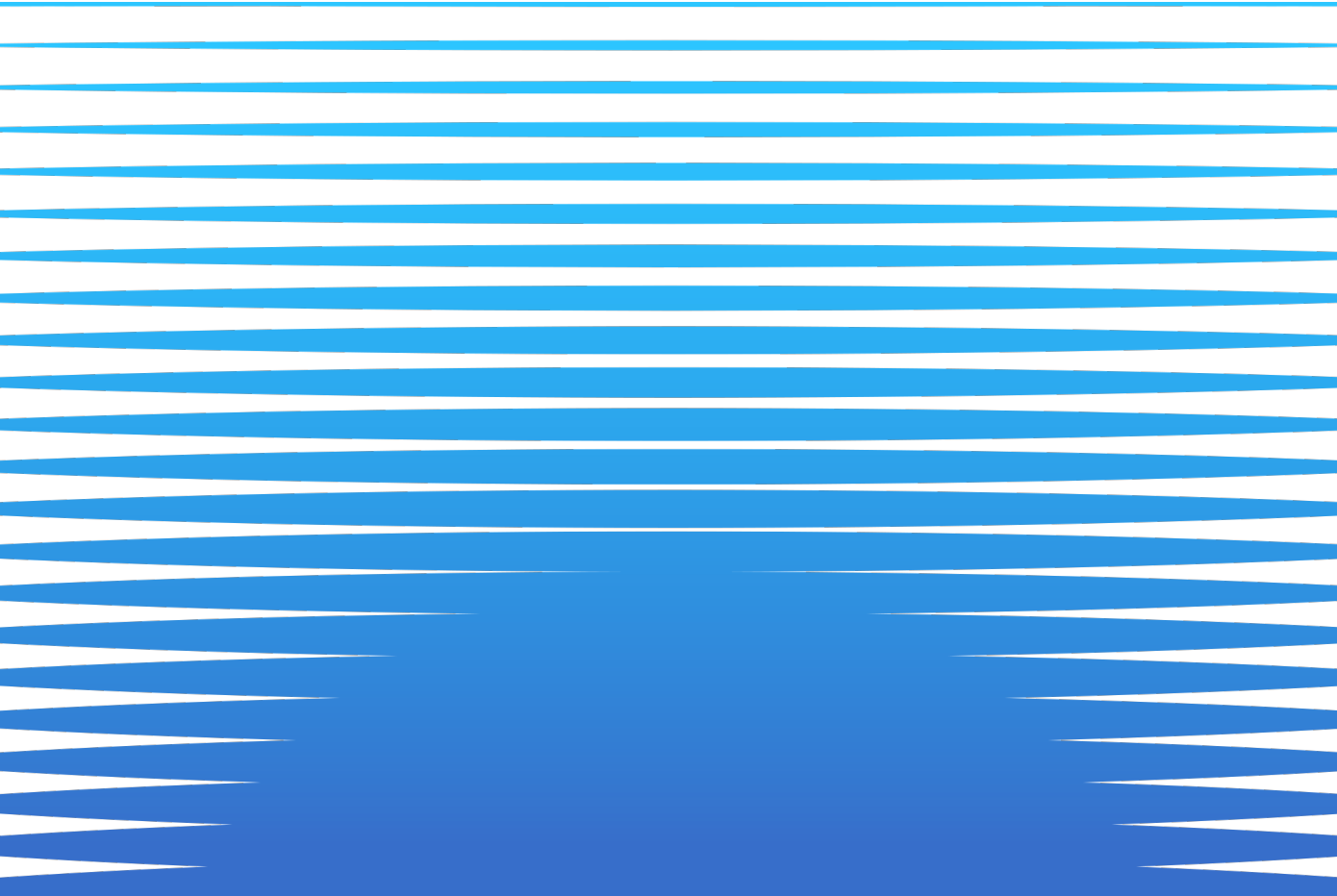


Aligning the Research Library to Organizational Strategy

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The Association of Research Libraries (ARL) is a nonprofit organization of 126 research libraries in Canada and the US whose mission is to advance research, learning, and scholarly communication. The Association fosters the open exchange of ideas and expertise; advances diversity, equity, and inclusion; and pursues advocacy and public policy efforts that reflect the values of the library, scholarly, and higher education communities. ARL forges partnerships and catalyzes the collective efforts of research libraries to enable knowledge creation and to achieve enduring and barrier-free access to information. ARL is on the web at ARL.org



CARL members include Canada's twenty-nine largest university libraries as well as two national libraries. Enhancing research and higher education are at the heart of its mission. CARL develops the capacity to support this mission, promotes effective and sustainable scholarly communication, and advocates for public policy that enables broad access to scholarly information.



Ithaka S+R provides research and strategic guidance to help the academic and cultural communities serve the public good and navigate economic, demographic, and technological change. Ithaka S+R is part of ITHAKA, a not-for-profit with a mission to improve access to knowledge and education for people around the world. We believe education is key to the wellbeing of individuals and society, and we work to make it more effective and affordable.

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Foreword

Dear reader,

The Association of Research Libraries and the Canadian Association of Research Libraries commissioned Ithaka S+R to consult with university leaders in Canada and the United States to identify their strategic priorities, to gauge their expectations of research libraries in achieving them, and together with our members, to determine what more research libraries can do to advance them. This report represents the findings of the consultations, as well as a summary of Ithaka S+R's research on scholarship and Ithaka S+R's recommended menu of opportunities for research libraries to achieve further strategic alignment.

The report findings are wide-ranging, sometimes hard-hitting, and are welcomed by our members. The report informs both associations' strategic planning. In addition, each of the menu of research library opportunities identified by Ithaka S+R in the report includes an indicator of organizational alignment. This initial list of indicators is shared with an invitation for broader engagement by university leaders and the research library community to define those indicators of alignment with the greatest benefit to advancing institutional strategic priorities.

Through the consultations with university leaders, four institutional strategic priorities were found to be very common among universities at this time: growth strategies and especially advancing STEM; engaging the state; redressing relationships with the historically marginalized; and the residential experience. With these in mind, Ithaka S+R is developing case studies of research libraries' role in achieving them.

The project would not be possible without the thoughtful and knowledgeable team from Ithaka S+R and the guidance from the ARL and CARL Advisory Group members. We are grateful to all for their many contributions.

We look forward to feedback on this report as a snapshot in time, to your engagement in the development of indicators, and to sharing the case studies with you.

With best regards,

Mary Lee Kennedy, Executive Director, ARL
Susan Haigh, Executive Director, CARL

Executive Summary

Ithaka S+R was commissioned by the Association of Research Libraries (ARL) and the Canadian Association of Research Libraries (CARL) to examine the strategic directions of research universities with the objective of identifying common themes that research libraries can consider in aligning to advance the research and learning mission both individually and collectively. This project draws on interviews and other forms of engagement conducted in 2021 with more than 60 university leaders (presidents, provosts, senior research officers, and chief information officers) across research libraries in the US and Canada, as well as Ithaka S+R's substantial body of research with scholars across disciplines.

The report is a snapshot in time and is part of a larger project that includes discussing and developing indicators that might be used within institutions and collectively with stakeholder associations to assess alignment with strategic priorities. It also will include a set of case studies on each of the senior leaders' strategic priorities to develop a shared understanding of how research libraries are advancing them.

From our research with university leaders, we identified four common strategic directions of research universities:

- The pursuit of growth, particularly in the STEM research enterprise;
- At public institutions, efforts to engage the state, both through its political system and its population;
- Redressing relationships with the historically marginalized, with significant variation between Canadian and US institutions in terms of how this priority is framed; and
- Defending the residential experience, which remains core to the educational strategy of most universities.

None of these strategic directions is found at every university. It is important to emphasize that, as seen above with the items about engaging the state and redressing relationships, while all these strategies are common, there are important institutional differences in emphasis, prioritization, and approach.

Based on Ithaka S+R's research with scholars, we also reviewed several key trends in research practice and support:

- The turn to computation, big data, and machine learning;
- The inequitable impacts of the pandemic;
- The centralization of research enablement and support; and
- Changes in research communications.

Based on these common strategic directions and key trends in research practice and support, we proposed a menu of strategic directions from which research libraries may wish to choose:

- An accelerated pivot to STEM;

- Double down on humanities and distinctive collections;
- Focus on student needs and student success;
- Redress relationships with historically marginalized groups;
- Serve the needs of the political entity that funds or controls the institution; and/or
- Make scientific communication fit for purpose.

For each of these strategic directions, we provide elements that could contribute to implementing these strategic directions as well as an initial spectrum of indicators of success. For most research libraries, we recommend selecting from among these rather than attempting to prioritize all of them.

In addition to this menu of strategic directions, we frame out some of the expectations that university leaders have of their research library leaders, as well as some elements of research library leadership in the multipolar leadership environment of a university.

Introduction

Universities advance the public good, yet they do so in what is today a marketplace for higher education and scholarly research. At the same time, governance within universities is highly complex and executive authority somewhat diffuse. For all these reasons, internal alignment within a university is never easy. The pandemic has compounded these challenges, with unprecedented operational challenges causing uncertainty about strategic directions. Bearing in mind all these factors, it is an opportune moment to examine the strategic directions of research universities with the objective of helping their libraries continuously realign with their parent organizations.

This project began in early to mid-2021 with the intention of examining any possible “post pandemic” changes to research university strategy. As additional pandemic waves struck, we quickly determined that a broader framing would be appropriate, as we are not simply in a crisis that will suddenly end but rather experiencing an era. Our goal therefore became to examine research universities’ current strategic directions and research priorities and use this lens to identify the information services strategies that will best serve to support them. Recognizing the complex leadership structures in higher education, we also provide guidance to research libraries about the strategic options and leadership approaches they can use to most effectively lead and support the evolving priorities of higher education.

Our scope in this project is the research universities in Canada and the US whose libraries are members of the Association of Research Libraries (ARL) and the Canadian Association of Research Libraries (CARL). This project includes a comprehensive engagement of university leadership outside the research library on the strategy of those libraries at an important moment in the evolution of higher education.

In structuring this project, we recognized that strategic directions and information services strategies alike will necessarily vary across institutional contexts. For this reason, portions of

our research design and analysis give attention to two different stratifications. First, we consider separately how dynamics may differ between Canadian research universities, all of which are publicly supported by individual provinces, US public research universities, all of which are publicly supported by individual states, and US private not-for-profit universities. Second, we consider how different university leadership roles interact with one another and how their different perspectives can inform information services strategies.

Methodology and acknowledgements

This project entailed a combination of original and secondary research. The original research included interviews and focus groups with an array of university leaders, including presidents, provosts, senior research officers, and chief information officers, about the strategic directions of their institutions and the ways in which those strategic directions were being pursued organizationally.

To reach these leaders, we partnered with a number of proxy organizations for each role in both Canada and the US. They either directly organized engagements with their members or provided introductions to their members. Thanks to these partnerships, in all we spoke with 63 higher education leaders, the vast majority through individual interviews, although some in the context of focus groups.

We express our deepest thanks to the following organizations:

- American Council of Learned Societies (ACLS)
- Association of American Universities (AAU)
- Association of Public and Land-Grant Universities (APLU)
- Canadian University Council of Chief Information Officers (CUCCIO)
- Educause
- Universities Canada (UC)
- U15 Group of Canadian Research Universities (U15)

The distribution of conversations was broad, including 14 leaders from AAU member institutions, 14 leaders from UC member institutions, 12 leaders from U15 member institutions, and 31 individuals from APLU member institutions, allowing for some overlap in membership. We also thank CUCCIO and Educause for making it possible for us to speak with 13 CIOs. A basic interview protocol is included as an Appendix.

In addition to this original research, we conducted a reanalysis of findings from recent studies of research practices and research support needs of researchers (including several from Ithaka S+R

collaborations with research universities) as well as projects on library and university leadership.¹

We express our deepest thanks to Susan Haigh and Mary Lee Kennedy of CARL and ARL, who served as project partners and regular advisors and without whose leadership and support this project could not have been conducted. We also thank the members of the boards of both organizations who provided constructive engagement, including questions and discussion, at key junctures in the project. We thank our colleague Jane Radecki for her excellent contributions to the engagements with chief information officers.

Trends in the academy

To begin, we examine broad changes taking place in research universities. Our goal is to examine the university context in which research libraries, and other enablement and support providers, operate. They are the basis for alignment.

Universities are typically governed through a combination of administrators charged with setting institutional strategy and groups like the faculty senate representing faculty priorities. For that reason, in this section, we consider each of these factors separately. First, through leadership interviews and examination of university strategic plans, we analyze trends in institutional strategy. Then, because research methods and practices have been changing rapidly in some fields, we reanalyze the existing research to examine trends in scholarly research practices and their support.

Trends in institutional strategy

Institutional strategy can be a woolly concept if not defined crisply. For purposes of this project, we define institutional strategy as *the long-term directions that university leaders have elected to pursue for the institution*. Strategy is sometimes established through extremely inclusive processes, while in other cases it is largely established from the top. Either way, it is enacted and pursued by institutional leaders. It is also based on a long-term vision. Especially given the disruptions of the pandemic, it is essential to distinguish strategy from the day-to-day environment in which strategy is (or is not) implemented.

To be sure, the pandemic yielded tremendous disruptions to university operations and budgets, including those for scholarly research. The pandemic emergency response included shutting down research labs and closing or reducing physical access to libraries in many universities for a period of months, as well as substantial uncertainty around revenues and budgets for

¹ Melissa Blankstein and Christine Wolff-Eisenberg, "Ithaka US Faculty Survey 2018," *Ithaka S+R*, 12 April 2019, <https://doi.org/10.18665/sr.311199>; Danielle Cooper and Rebecca Springer, "Data Communities: A New Model for Supporting STEM Data Sharing," *Ithaka S+R*, 13 May 2019, <https://doi.org/10.18665/sr.311396>; Oya Y. Rieger and Roger C. Schonfeld, "The Senior Research Officer: Experience, Role, Organizational Structure, Strategic Directions, and Challenges," *Ithaka S+R*, 1 December 2020, <https://doi.org/10.18665/sr.314490>; Jane Radecki and Rebecca Springer, "Research Data Services in US Higher Education: A Web-Based Inventory," *Ithaka S+R*, 18 November 2020, <https://doi.org/10.18665/sr.314397>; Dylan Ruediger, Danielle Cooper, et al., "Big Data at the Crossroads: Support Needs and Challenges for Universities," *Ithaka S+R*, 1 December 2021, <https://doi.org/10.18665/sr.316121>.

universities.² To begin reopening, universities developed substantial testing and case tracing capacity. Subsequently, enormous efforts have been made to encourage or mandate masks and vaccines among university community members, in some cases under extraordinarily complicated political and liability circumstances. The many disruptions to routines raised substantial questions about the return to work for students, faculty and staff on campus, the changing nature of the workplace, the prospect of ongoing remote working, and in some cases the very nature of the university's talent strategy. Not only were the day-to-day lives of scholars, students, librarians, and other community members disrupted in unprecedented ways, but the bandwidth of university leaders was focused to a substantial degree on the emergency response.

Nevertheless, from interviews with presidents and provosts, we heard unambiguously that, for all these disruptions, long-term university strategy did not shift substantially as a result of the pandemic. While many leaders reported accelerating some elements of their strategy, none were engaged in activities to re-envision or shift the long-term strategic directions of their university, such as by developing a new strategic plan off cycle. Instead, the elements of their strategies are based on organizational objectives within the context of a given university's resources, capacities, weaknesses, opportunities, and its governance and associated political realities. Over time, impacts of the pandemic may affect university strategy, especially as they hire new leaders and undertake new cycles of strategic planning, which has a longer time scale and less punctuated impact.

While we did not seek to conduct a detailed analysis of how strategy is established in research universities, we heard about a variety of approaches. Perhaps most importantly, strategy is typically established by the president, at least ultimately, rather than principally by another university leader. In some cases, we heard about inclusive processes that involved numerous individuals across the campus as a whole. We also heard about cases where the president delegated the day-to-day development of a strategy to another university officer, sometimes working with a committee. In other cases, strategy was established principally by the president working with the governing board. In at least one case, the president felt that the strategy was established through the vision they set out during their hiring process.

In the following sections, we walk through the principal strategic directions that university leaders shared with us during interviews.

Growth strategies and STEM

Growth strategies were perhaps the most widespread strategic direction described by university leaders. These growth strategies came in a number of formulations, and typically they were for the purpose of growing the size, quality, or impact of the research enterprise, rather than

² Jane Radecki and Roger Schonfeld, "The Impacts of COVID-19 on the Research Enterprise: A Landscape Review," *Ithaka S+R*, 26 October 2020, <https://doi.org/10.18665/sr.314247>; Kimberly D. Lutz and Roger C. Schonfeld, "Leading a Library Today: How Library Directors Are Approaching the Challenges of the Current Moment," *Ithaka S+R*, 30 April 2020, <https://sr.ithaka.org/blog/leading-a-library-today/>.

enrollment, per se. These growth strategies were long-run directions for the university, not caused by the pandemic.

To be sure, the pandemic affected the research enterprise. Research efforts were paused in many fields, and substantial efforts were made to restart scientific research in response to funder policy. While there were meaningful short-term disruptions, the scientific research enterprise remained at the heart of most research universities and the result of its strategic significance is that keeping it operational during the pandemic emerged as an essential priority.³

In some cases, the simplicity of the growth strategy belied the complexity of achieving it in varying institutional circumstances. More than one university leader expressed “join AAU” as a success metric. Others indicated their desire to grow the size of the research enterprise in terms of the amount of externally funded research revenue. Sometimes revenue goals were expressed as percentages of growth over a multi-year period, while in other cases they were expressed in terms of rising a certain number of places in the research funding rankings. These kinds of research enterprise growth strategies require a variety of enablement and support functions, as well as the right faculty members and incentives to support the goal.

To grow the size of the research enterprise, some Canadian institutional leaders are pursuing a strategy of growing the undergraduate body, which, because of funding formulae in their jurisdiction, should provide resources to support research as well. One Canadian university leader stressed their plan “to grow to the size of” one of Canada’s largest and most research-intensive universities in terms of student enrollments. It was made clear that this was not primarily because of a desire to have more undergraduates, but because doing so would give their institution a chance to develop a higher level of research impact.

Most of the growth strategies described by university leaders were ultimately about increasing the research enterprise at their institutions, which would require investment in the STEM fields. Presidents, provosts, and senior research officers all discussed ways that their institution is improving, and can further improve, the incentives as well as enablement and support services for STEM growth (some of which are described below in the section on centralization of research enablement and support). There was relatively little reflection on the possibility that technology may have important impacts on research labor by, among other things, enabling considerably more remote work.

Universities tend to be differentiated in terms of whether their STEM programs, and growth strategies, are more focused on the engineering or the biomedical fields, with some institutions being equally weighted in both. During the period when our interviews were conducted, the United States Innovation and Competition Act (USICA) was pending before Congress, and several of the university leaders from engineering-oriented institutions were especially focused on the potential to align their programs to maximize the opportunities from this potential funding source. By contrast, several of the institutions with significant biomedical programs had experienced some amount of research funding growth as a result of the pandemic emergency

³ Radecki and Schonfeld, “The Impacts of COVID-19 on the Research Enterprise: A Landscape Review.”

response from the federal government. At the senior research officer level, it is not uncommon to be pursuing a strategy not only to grow research funding but also to diversify its sources, in terms of additional federal funders as well as corporate and philanthropic partnerships of various types. In all cases, these growth routes were framed by interviewees as opportunities that were being developed in ways that were consistent with preexisting university strategy.

In these discussions about institutional growth strategies, university leaders focused consistently on STEM fields. In a handful of cases, university leaders reflected on the position of the humanistic fields relative to the sciences, and several discussed the importance of humanistic scholarship. But the humanities fields were not framed as a plank in the institutional growth strategy.

While widespread, not all research universities are pursuing a STEM growth strategy. Whether because they have reached the top of the league tables, or for other reasons, some universities are pursuing stability or seeking to consolidate their recent gains.

Engaging the state

A number of university leaders from US public universities discussed their outwardly facing efforts to engage the state broadly. This was the most explicitly political element of university strategy and could be seen across many public universities. In our sample, presidents were somewhat more likely to discuss this priority, but several provosts did as well. Given that US public universities are state controlled and at least to some degree state supported, a number of presidents felt that deepening engagement at a state level was a political imperative. We heard three fundamental approaches.⁴

The first was simply a desire to reach out beyond the typically liberal university town or state capital where the university was located to engage the full population of the state. This goal was typically framed with a special focus around engaging the state's more rural communities and populations. We heard about listening tours and visits at a university leader level to listen and engage with individuals as well as political leaders at the county level.

Second, several university presidents were extremely focused on workforce development. This included several efforts to serve the talent needs of the major businesses and economic sectors in the state. Workforce development was positioned as an effort to build alliances with business as well as ensure that university graduates would be able to find well paid jobs in the state.

Finally, university leaders are interested in maximizing their contributions to economic development across the state. In many cases, this takes the form of aligning the research enterprise with the needs of the state, at least to some degree. This can take the form of

⁴ For additional context about some of the issues discussed in this section, and in particular how they function in the context of a state university system, see Martin Kurzweil, Melody Andrews, Catharine Bond Hill, Sosanya Jones, Jane Radecki, and Roger C. Schonfeld, "Public College and University Consolidations and the Implications for Equity," *Ithaka S+R*, 30 August 2021, <https://doi.org/10.18665/sr.315846>, and in particular this case study which formed a part of it: Roger C. Schonfeld and Jane Radecki, "Consolidating the University of Wisconsin Colleges: The Reorganization of the University of Wisconsin System," *Ithaka S+R*, 30 August 2021, <https://doi.org/10.18665/sr.315853>.

revitalizing university extension programs. It can also take the form of emphasizing local and regional opportunities in technology transfer strategy.

In all cases, the university leaders prioritizing engagement with the state are doing so in an explicitly political context. They appear to recognize that state support for public higher education is increasingly split along partisan lines. Most of the elements of this strategy, then, are an effort to reposition the university as providing economic value to the state as a whole, or to engage populations who are not typically as supportive of higher education. The ultimate goal is to rebuild the political coalition that supports public higher education.

Redressing relationships with the historically marginalized

Most leaders highlighted that improved representation of, and engagement with, historically marginalized groups, as a priority for their university.⁵ However, it is important to recognize that there is significant variation between Canadian and US institutions in terms of how this priority is framed.

Canadian institutions are focused especially on responding to the 52 calls to action from the federal government's Truth and Reconciliation Commission, which was designed to facilitate reconciliation among those affected by the legacy of the Indian Residential Schools system nation-wide. This led to significant efforts within universities to prioritize Indigenous studies and Indigenous education. The leaders we engaged with highlighted how theirs and other institutions had recently made, or were in the process of making, substantial investments in programs and capacity building that were intended to advance this strategy, cutting across research, student funding, community engagement, and more.

Among US universities, many leaders framed their university's growing strategic priorities around marginalized groups through the lens of diversity, equity, and inclusion (DEI). One area of emphasis is in increasing the diversity of their student bodies, which may require the allocation of more resources to financial aid. Public institutions that are designated as minority-serving also tend to emphasize how their initiatives are framed to address the unique needs of the specific populations they serve, and some leaders noted that the library can especially help to bolster these efforts by attending to the representation of and relationships with minority communities through their collecting activities and ensuring that the library is accommodates the unique needs of minority students.

A number of university leaders in the US also recognized that their institution's approach is continuing to evolve due to the impact of the movements for racial justice that developed following the murder of George Floyd. However, it is important to recognize that these efforts are being far less consistently developed in comparison to the Truth and Reconciliation-related initiatives in Canadian universities. This variation in approach and level of response between Canadian and US universities reflects the reality that there is no federal-level mandate in the US

⁵ Sindy Lopez and Catharine Bond Hill, "Underrepresentation of Black and Latino Undergraduates at America's Most Selective Private Colleges and Universities," *Ithaka S+R*, 30 March 2022, <https://doi.org/10.18665/sr.316615>.

related to Black Lives Matter that is equivalent to the Canadian Truth and Reconciliation Commission.⁶

In an effort to bring greater equity and inclusion to their institutions, a number of leaders are grappling with their institutions' historic identity as "elite" and their current high degree of student selectivity in terms of race and class. In Canada, the focus is especially on how to create policies and spaces that are respectful of and inclusive to Indigenous people and their communities. In contrast, in the US there is an emphasis among private institutions and highly selective publics to modernize a campus climate and culture in ways that still retain the institution's legacy as "elite."

The residential experience

In a research university context, institutional leaders are less likely to emphasize the educational role of the university as compared with its research impact. For example, although many of the research universities are pursuing student success initiatives of one type or another, those rarely rose to the level that university presidents or provosts would choose to emphasize in interviews on strategy. The exception were Canadian institutions for which increasing undergraduate enrollments was a funding strategy for developing the research enterprise. That said, it is important to emphasize that the residential experience remains core to the educational strategy of almost all the universities in our sample.

For all, the primary modality of instructional delivery leading up to the pandemic was face-to-face, typically in a residential environment for students. And then, the sudden shift to online instruction pointed to a dramatically different possibility, at least in the near term. Still, among our leadership interviewees, we heard a strong ongoing commitment to the value of in-person, residential experiences.

This dynamic is playing itself out in a number of critical ways, sometimes in ways that may not appear to be internally consistent. For example, many universities have attempted to emphasize the continuing importance of the in-person delivery of services that, the pandemic response has shown, can be delivered remotely. For leaders, this is at the heart of defending the integrity of the campus-based model for residential education and university community. At the same time, there seemed to be some evidence that, notwithstanding these efforts, some campuses are reassessing their capital expenditures. In particular, the threshold necessary for units to justify their claim to campus space continues to grow, with the goal to prioritize student use over other functions. While the library community was already well engaged in efforts to transform spaces traditionally reserved for physical collections to other functions, it is important to be mindful that due to the pandemic the expectations for ensuring campus space—including within the library—is maximized for student needs will continue to accelerate.

⁶ Given the country-wide interventions that can result from federal commissions, it is noteworthy that there is a current resolution before Congress to establish commission on Truth, Racial Healing and Transformation (TRHT), see <https://www.congress.gov/bill/117th-congress/house-concurrent-resolution/19/text>.

Trends in research practice and support

Research support needs and opportunities are determined separately from university strategy. While these issues are of central importance to presidents and provosts, they also represent the areas where the leaders under their purview play a substantive role in providing strategic direction. In this section, we provide some of the key themes in research practice and support needs and opportunities based on a reanalysis of existing literature and engagement with senior research officers and chief information officers.

The turn to computation, big data, and machine learning

The computational turn has been affecting progressively more fields beyond computer science, with especially noteworthy growth in such areas as business, education, medicine, health, and social sciences. In recent years, the dynamics around large-scale data analysis and storage and the growing prevalence of AI-based methods has introduced new opportunities as well.

In order to ensure that researchers can take advantage of these shifts, it is essential that a wide swath of the academic community know how to apply the basics of computational thinking. This means that universities must significantly reorient how they provide computer science education across their undergraduate, graduate, and professional offerings, as well as to their faculty and staff. It is also reasonable to anticipate that most institutions will invest significantly in strategic hires and service models that can further embed data science, data management, statistical, and computational staff to provide researchers and instructors with relevant expertise to assist in big data research and teaching.

The need to broaden pedagogical approaches to computational thinking may present an opportunity for academic libraries and other campus support units, but only insofar as they can be successfully integrated into the core curriculum. Ithaka S+R's study on researchers who work with big data found that faculty recognized that workshops and training offered by libraries and other campus units provided learning opportunities for their students more than for themselves. But, the study also found that these faculty still do not frequently recommend these resources to their students because they didn't see them providing a strong enough connection to the research projects the students would ultimately work on.⁷

As universities explore how to best foster research that harnesses computational methods using big data and machine learning, another major consideration is who stewards the resources necessary to conduct that research, and how. CIO stakeholders engaged for this project in both Canada and the US emphasized that funding for ongoing infrastructure needs is a significant challenge. For example, for institutions that still see themselves having a role in providing local repository space for the data collected by their researchers in this "big data" era, they will need to significantly increase the storage capacities and marketing to researchers to ensure uptake. The CIOs highlighted that libraries have an important role to play in these discussions given that

⁷ Dylan Ruediger, Danielle Cooper, et al., "Big Data at the Crossroads: Support Needs and Challenges for Universities."

they typically have institutional repositories in their purview and are also a major source of expertise on data management and storage practices more broadly.

Repositories are just one example of the kinds of centralized services and tools that can be challenging to provide to researchers who work with big data. Ithaka S+R's study on researchers who work with big data found that prior to the pandemic faculty continued to favor local, lab-organized computing resources over centralized campus storage and computing options, including cloud computing services. The study found that storage issues were among the most pressing for researchers, who consistently emphasized that the existing centralized resources offered by their institutions were inadequate. However, it is also a challenge for researchers to procure storage and other cloud-based resources themselves because those resources typically require ongoing subscriptions, and their funding is typically grant-based.

As universities look to harness cloud-based solutions to ensure effective research and teaching in the pandemic era, it will be important to carefully consider how to effectively provide centralized resources to faculty and to what extent. Universities will need to more regularly and systematically assess on-campus active data storage needs and capabilities. Encouragingly, the CIO stakeholders interviewed in this project emphasized an eagerness to collaborate with libraries towards developing effectively coordinated services. It will also be important to increasingly pursue infrastructure solutions that span institutions and regions. For example, consortium relationships between universities could help build long-term data storage and computing capacity. In both Canada and the US consortial approaches are currently being developed in response to that (e.g. the Digital Research Alliance in Canada, e.g. Data Curation Network in the US).

Inequitable impacts of the pandemic

The pandemic has had numerous impacts on the practice of scholarly research. While a number of meaningful innovations have resulted, for example, the remote-controlled research laboratory,⁸ there were a number of major setbacks as well.

Many laboratory and field scientists were forced to pause research activities for a period of time.⁹ Inequitable productivity impacts of the pandemic, particularly on the basis of gender and caregiver status, have been widely documented.¹⁰ While universities have made some efforts to compensate for these impacts, it is unlikely that they have been adequately addressed, especially given the continuing community disruptions that have required ongoing caregiver attention.

In addition, while at a field level the STEM programs have largely thrived, as noted above, many humanities departments faced setbacks. Growing concerns about the job market and student funding needs led dozens of humanistic departments to pause their admissions of PhD

⁸ Rebecca W. Doerge, Brian Frezza, and Keith Webster, "Carnegie Mellon University's Cloud Lab Project," Presentation at the CNI Fall Membership Meeting, 14 December 2021, <https://youtu.be/j8bvZZyGiw>.

⁹ Radecki and Schonfeld, "The Impacts of COVID-19 on the Research Enterprise: A Landscape Review."

¹⁰ Makala Skinner, Nicole Betancourt, and Christine Wolff-Eisenberg, "The Disproportionate Impact of the Pandemic on Women and Caregivers in Academia," *Ithaka S+R*, 31 March 2021, <https://doi.org/10.18665/sr.315147>.

candidates.¹¹ At some institutions, these dynamics probably exacerbated some existing disparities across fields, not only in terms of wealth but also in symbolic stature.

Centralization of research enablement and support

Many universities have made major efforts in recent years to level up the research enablement and support services they provide, particularly for the sciences, while also seeking to gain efficiencies in their provision. One broad direction has been to centralize support through a senior research officer.¹²

One area of emphasis for university offices of research is helping researchers secure more external funding, whether through grants, corporate support, or other sources. A related area is streamlining some of the administrative burdens facing researchers. Additionally, offices of research have been involved in many cases in efforts to provide analytics about the research enterprise, in some cases driven by toolsets and platforms from external providers. They also have extensive responsibilities around compliance issues, including research security and research integrity. Finally, many research offices have helped to bring greater coherence to research cores, maximizing the usefulness of and support for these vital elements of shared infrastructure.¹³

University research offices have developed substantially in the United States over the past decade, growing in some cases to rival the provost. In some Canadian research universities, these offices are less well established, with a clear intention to drive a similar type of centralization in research enablement and support.

Research communications

The communication of scholarly research has been changing in a number of significant ways.

Open access has matured significantly in recent years. The UK and EU countries have committed largely to a “gold” version of open access, driven largely by transformative agreements with the major incumbent publishing houses.¹⁴ The US policy environment has been far more mixed, with a great deal of “green” open access incentivized by major scientific funders, although some individual universities pursued transformative agreements. Both Canadian and

¹¹ Megan Zahneis, “More Doctoral Programs Suspend Admissions. That Could Have Lasting Effects on Graduate Education,” *The Chronicle of Higher Education*, 28 September 2020, <https://www.chronicle.com/article/more-doctoral-programs-suspend-admissions-that-could-have-lasting-effects-on-graduate-education>.

¹² Rieger and Schonfeld, “The Senior Research Officer: Experience, Role, Organizational Structure, Strategic Directions, and Challenges.”

¹³ Yuzhou Bai and Roger Schonfeld, “What Is a Research Core? A Primer on a Critical Component of the Research Enterprise,” *Ithaka S+R*, 6 December 2021, <https://doi.org/10.18665/sr.316205>.

¹⁴ See Lisa Janicke Hinchliffe, “Transformative Agreements: A Primer,” *The Scholarly Kitchen*, 23 April 2019, <https://scholarlykitchen.sspnet.org/2019/04/23/transformative-agreements/>.

US libraries have benefitted from the expansion of free and open access in strengthening their position at the negotiating table with major publishers.¹⁵

Progress on open access has radically expanded public access to the research literature. It has also brought with it a number of second-order effects. Some of them are connected to the serious problems in research integrity and the growing crisis of trust in science.¹⁶ Others can be seen in the impacts on the scholarly publishing marketplace and the platforms that support discovery and access.¹⁷

While open access has made scientific materials more widely available, it has not directly addressed the challenges in translating scholarship for public consumption. Looking ahead, it is likely that scholarly communication will experience further changes as a result of computers increasingly supplanting human readership. The form of the scientific output may decreasingly look like the traditional journal article as over time standardized data, methods, protocols, and other scientific artifacts become vital for computational consumption.

What university leaders expect

Many university leaders have substantial experience in the political complexities of organizational leadership. Some have learned that it is rarely useful to criticize any part of the organization publicly. Instead, they reward success and address failure through a combination of budgetary prioritizations and personnel adjustments. For this reason, our analysis of what university leaders expect of the library includes elements that go beyond what these leaders would state directly in an interview, even under promises of anonymity. Fundamentally, we found that university leaders have widely varying expectations of the library.

Expectations of the library

Ultimately, university leaders expressed widely varying expectations of the library.

Some university leaders have comparatively *modest expectations* of the library. Such leaders may offer generalized plaudits for the library—“everyone loves our library here”—but they cannot provide concrete examples when asked about the library’s engagement with and support for the university’s strategy nor can they offer suggestions for how engagement and support can be improved. Many of them appear to be hoping that their library will maintain the status quo --

¹⁵ Danielle Cooper and Oya Rieger, “What’s the Big Deal? How Researchers Are Navigating Changes to Journal Access,” *Ithaka S+R*, 22 June 2021, <https://doi.org/10.18665/sr.315570>.

¹⁶ Roger C. Schonfeld, “Is Scientific Communication Fit for Purpose?” *The Scholarly Kitchen*, 1 November 2021, <https://scholarlykitchen.sspnet.org/2021/11/01/is-scientific-communication-fit-for-purpose/>; Suzanne Smalley, “As Misinformation Grows, Scholars Debate How to Improve Open Access,” *Inside Higher Ed*, 8 November 2021, <https://www.insidehighered.com/news/2021/11/08/open-access-science-misinformation-era>.

¹⁷ Roger C. Schonfeld, “The New Clarivate Science: A Second-Order Consequence of Open Access,” *The Scholarly Kitchen*, 9 December 2021, <https://scholarlykitchen.sspnet.org/2021/12/09/new-clarivate-science/>.

continue to serve students and faculty more or less as it always has done. Several of these leaders seemed to plan to hold steady on the library's budget or reduce it over time.

Others feel that the library could offer substantially more value to their institution than it does and are *discouraged by the pace of change*. One university leader expressed their disbelief that the library, widely beloved on their campus, should need hundreds of employees “to staff a study hall.” This particular leader felt that substantially all digital functions should be offered at the cross-institutional level and that half the existing library staff should be redeployed into research data management roles. Such leaders tend to believe that their library director is not doing enough to innovate within their existing budget and staffing allocation.

Still others see their *library as an innovative partner* in the strategic directions of their institution. These leaders are able to cite tangible value that the library adds to the university, typically through new services of one type or another. Many of these services, discussed below, are driven by successful efforts to redirect the workforce towards new priorities.

In this typology, the latter two categories represent cases where university leadership sees the library as a partner for strategic impact, in actuality or in potential.

Expectations of library leaders

In these cases where university leadership sees the library as a partner for strategic impact, the leaders tend to express a number of expectations for their library leadership. Sometimes these expectations are currently satisfied, while in other cases they were expressed more aspirationally

The most important characteristic sought by university leaders was for the library director to act not as the chief manager of the library but rather as a university leader with responsibility for the library. In practice, they were looking for the director to focus not on protecting the library or advancing its interests—but rather to focus on deeply understanding the university and working as part of the leadership team of the university to advance the university's interests. This expectation is consistent with the often-voiced perspective of library leaders that the library is a convening organization that can bring together the parts of the university with their own interests. And yet, many university leader interviewees felt this prioritization of the university over the library was not really the case under current or recent library leadership.

A second characteristic sought by university leaders was for the library director to push the library beyond its traditional responsibilities to serve the current and emerging needs of the university. University leaders expressed this drive, including for some specific directions we discuss below, without very much understanding of some of the political constraints that they impose, also discussed below.

A final characteristic sought by university leaders was for the library director to take responsibility for resource stewardship. Several of them expressed a relatively sophisticated understanding of the challenges facing the library in terms of journal licensing and the transition to open access and a gratitude that the library was working on these issues. Others felt

that the library leadership was more comfortable driving change against external factors like journal publishers, and in terms of their direct expenditures, than stewarding the other elements of their resources, especially their personnel. We heard several times that the library director was too meek in cutting costs for long-standing roles that have become decreasingly valued relative to the university's needs, and as a result insufficiently redeploying personnel resources to address new priorities.

Strategy and leadership for the research library

Almost every university leader expressed a clear strategic direction for their institution. Many of them hoped for a strong and ideally growing contribution towards this strategic direction from the university library. The specific elements clearly would need to vary substantially from institution to institution. Weaving these together coherently, and threading the needle of organizational change within substantial political constraints, is the work of research library leadership today.

A menu of possible strategic directions

In this section, we provide a long list of six possible strategic directions. These have been developed based on the research conducted for this project in combination with our existing research. In terming this list a “menu,” we mean to indicate that individual libraries could select from the items on this menu—some selecting only one, others selecting several, in various forms. They are not ordered according to any sense of prioritization.

For each strategic direction, we include an array of possible elements. These elements are intended to be illustrative rather than prescriptive. A library pursuing one of these strategic directions would wish to select from among these elements, and potentially add others suitable to their institutional context, in assembling their strategy.

An accelerated pivot to STEM

This approach is designed for universities that are pursuing the STEM-based growth strategy. Elements of this approach could include:

- Exercising strategic leadership on research data management and sharing, building well beyond the library research data management approaches to contribute to the compliance and other institutional requirements for RDM;¹⁸

¹⁸ University libraries have over a period of decades consolidated departmental libraries into a more efficient centralized service provider, admittedly in some cases with the risk of loss of specialized services and closer affinity with individual schools and departments (see for example Oya Y. Rieger, “Academic Health Sciences Libraries: Structural Models and Perspectives,” *Ithaka S+R*, 21 October 2020, <https://doi.org/10.18665/sr.314248>). Today, data is the issue. Research universities have numerous services for research data management and support, spread across a variety of individual schools and departments as well as provided centrally (see Radecki and Springer, “Research Data Services in US Higher Education”). The largely distributed models are ripe for intervention that would bring greater service consistency and efficiency

- Advancing the work of technology transfer and innovation, through support for innovation / start-up agenda;
- Building deep partnerships with the research office, including support for shared cores and grant application support; and
- At some institutions, drawing down spending on print collections and their processing and management more steeply than has been the case to date.

An indicator of this strategy's development is a strong direct relationship and regular one-on-one meetings between the SRO and the library director; another is that RDM services and infrastructure are offered in collaboration with partners beyond the library (e.g. IT, campus computing); another is that staffing models come to be balanced more towards data expertise than print resource stewardship.

Double down on humanities and distinctive collections

At institutions where humanities and distinctive collections are already strong, this approach signals to leadership that the library is crucial to supporting enduring institutional priorities. Elements of this strategy can include:

- Expanding efforts to collect and process distinctive collections;
- Strengthening partnerships, potentially with the campus museum and with instructional departments, to increase teaching with distinctive collections;
- Improving discovery and fulfillment of both general and distinctive collections, in both tangible and digital formats, including increasing services levels for fulfilling material requests, building on services such as Hathi Trust ETAS, and steering shared print programs and resource sharing models towards improving access;
- Encouraging and supporting digital arts and humanities, including through laboratory support of text mining and other non-consumptive uses.

An indicator of this strategy's development is a measurable increase in enthusiasm among university leadership for support of the preservation imperative; another is that library digital humanities programming/services/tools are integrated into all appropriate curricular offerings; another is an increase in fundraising by the library to process/preserve special collections.

Focus on student needs and student success

Although students were rarely invoked by the leaders engaged in this project given the focus on the university's research strategy, it is nevertheless important to recognize that many libraries will find benefit in this strategic approach given that students are ultimately mission imperative to their institutions. Elements of this strategy can include:

- Turning the library physical space, and potentially some of its virtual space, into a hub for student learning and success, bringing student-facing services into the library facility, trading space for organizational advantages;
- Piloting new student learning and success services using a “labs” approach to rapid prototyping;
- Engaging the residential imperative of the university through active participation in living and learning communities, including staffing librarians as resident fellows and in other roles;
- Among public institutions, in particular, aligning student and learning support services with fields prioritized for regional workforce development;
- Serving as, or collaborating with others serving as, a laboratory for instructional innovation;
- Ensuring that the library is working in alignment with the university’s student success agenda (if there is one) and as a contributor to it.

An indicator of this strategy’s development is that university leaders can clearly describe how the physical offerings of the library serve as more than a study hall or cafe; another is that library services and tools are responsive to and integrated in core curricular offerings (with computational thinking being a likely source of expansion at most institutions); another is growing partnerships among teaching staff beyond the humanities.

Redress relationships with historically marginalized groups

Many libraries have already taken some meaningful steps to redress relationships with historically marginalized groups, and it is noteworthy that this was one of the most common areas that senior administrators reported seeing a meaningful role for their libraries, archives, and special collections to serve as a cross-campus leader. There was a recognition that these are units uniquely poised to engage meaningfully with marginalized communities, especially through their collecting functions and their centralized physical presence on campus. Elements of this strategy can include:

- Reassessing talent management and organizational dynamics to ensure that recruiting and retention, as well as organizational structure and culture, effectively achieve objectives for equity and justice;
- Developing strong policy and investing appropriately to increase the representativeness of collections and address repatriation where needed;
- Addressing policy and practice to ensure that access, especially to digital collections, appropriately balances the goals of openness and respecting rights to pre-determination and sovereignty (for example, when engaging with Indigenous communities and their traditional knowledge);
- Improving practices for the description (e.g. subject headings and metadata) and exhibition of materials to address the equity imperative without erasing historical context.

An indicator of this strategy's development is strong, meaningful relationships between the library and local communities; another is that collections are built and represented in ways that are consistent with how the university frames DEI and its goals in that area; another is quantifiable improvement in the hiring and retention of staff in ways that contribute to organizational diversity.

Serve the needs of the political entity that funds or controls the institution

For public universities there is a growing need to serve the needs of the political entity that funds or controls the institution. This means not just engaging, for example, the state government, but also the voters and political dynamics in the state. Elements of this strategy can include:

- Extending the library's negotiations and licensing expertise to expand access to research outputs across the state;
- Exercising leadership in state-level library collaborations, where the research library may be giving more than the direct benefits it received, rather than focusing collaboration on peer-based collaborations at a larger regional or national level;
- Supporting university start-up / incubator programs (and related technology transfer and economic development efforts) as well as workforce / talent development programs;
- Engaging the public education system, not just locally but across the state, with support for using object-based and other special collections in the classroom;
- Providing assistance to help university experts share their expertise with the general public in the state;
- Fostering a culture of civic engagement among the broader university population, including through civics education.

An indicator of this strategy's development is that the library is actively included when the university makes the case to political entities for support; another is the extent of partnerships between the library and other public entities (e.g. k-12 use of special collections).

Make scientific communication fit for purpose

In our civic environment today, there is a crisis around trust in science and deep challenges in research integrity. Libraries have a major role to play in making scientific communication fit for purpose, grounded to the extent it exists in the university's STEM growth strategy. Elements of this strategy can include:

- Modernizing information literacy models to ensure that they address today's information environment;
- Collaborating with the senior research officer to ensure that research integrity issues are addressed and the scientific record is as trustworthy as possible;

- Ensuring that advocacy efforts for scholarly communication, both on campus and with service providers, incorporate not only imperatives such as openness and cost control, but also deep alignment with the university's STEM growth strategy;
- Improving support to help scientists share their research outputs, and access those of others, in ways that are consistent with university strategy, for example around the pivot to STEM.

An indicator of this strategy's development is the senior research officer seeing the library as a key partner in their research integrity work.

Library leadership in an organizational context

As our findings make clear, university library leadership is not easy. The organizational context has both strategic and political elements that must be balanced effectively. Several elements of this balancing arose during the course of this project.

To be successful, library leaders must navigate within a multipolar university leadership context with the complexities of faculty governance. While the president, provost, and other members of the leadership team should be aligned strategically, as a result of their different roles they do not always view the role of the library in the same way.

Library leaders must seek to support the strategic agenda outlined by the president while also typically reporting to the provost. For many of the university strategic priorities and associated library strategic directions, this can add complexity. Most of the universities we engaged in this project are pursuing a STEM growth strategy, so we offer the dynamics around aligning to this strategy as an example that will be relevant to many universities.

At a foundational level, to align with this strategy, one might expect to see library leaders redirecting resources towards an array of advanced services in support of STEM, not only materials budgets but also personnel and spaces. This has happened to some extent, without question, yet for some presidents, such a shift has not happened nearly quickly enough. One impediment is the actual or symbolic losses that such a strategy is seen to impose on other campus communities, for example humanists. For many provosts, while they would like the library to support the president's agenda, they also are unwilling to expend meaningful political capital when faculty members, especially through their governance structures, raise objections. In some cases, provosts hope that the library will avoid generating the kinds of political controversies that will consume time and attention. And so libraries do not pivot as quickly as it otherwise would be advisable to do, over time coming to be seen as out of alignment with the university strategy.

To navigate a dilemma like this one, library leaders require highly attuned political and organizational instincts. They need to be able to articulate a consistent message that is tailored to multiple audiences with competing instincts. They must be able to have a "teamwork" approach with their fellow leaders, discussing their competing interests and seeking alignment in order to resolve them. In some cases, they will need to "horse trade" in order to achieve their objectives. All of this can happen more effectively if the library leader takes the mindset of

serving as a member of the university's leadership team, rather than just as the chief librarian of the library.

One asset that libraries possess, even when they feel underfunded based on historical growth expectations or recent cuts, is substantial budget, staffing, and space. There are further opportunities to drive efficiencies in library operations, which in turn can be utilized for new priorities or in some cases “traded” with other parts of the university. While many libraries have made significant progress in this respect, it can be challenging to address organizational culture, collective bargaining agreements, and structural inequities that would be necessary to dramatically rethink operations. At some institutions, there may be opportunities to seek alliances outside of the library based on a shared commitment to driving operational efficiency and operational excellence.

During the course of our research, and in related projects over the past two years, we have engaged with two other members of university senior leadership that are vital for the library's organizational positioning and alignment. Chief information officers are in some cases strong allies of the library, looking for opportunities to collaborate and respecting the areas of expertise that both bring. In other cases, CIOs see the library as a flailing legacy organization that needs dramatic reform, perhaps under their own leadership. While senior research officers are rarely hostile to the library, few of them see meaningful contributions the library can make to their strategic objectives, and in some cases when libraries try to do so SROs express frustration that the library should “stay in its lane.”

CIOs and SROs represent two dramatically growing areas of university infrastructure for research support, and library leaders often seek ways to collaborate with these leaders and their offices. Doing so requires not just advocacy for the library but also a sufficiently deep understanding of the philosophy, budget structure, and strategic priorities of these offices to be able to generate real alignment. Ideally, the library should work in partnership with these units to support the strategic priorities of the university.

Concluding Reflections

While the research and analysis that we reported above is based on a single point in time, the work to align the research library to the parent institution is ongoing. University strategies evolve over time, as do research and teaching practices, so libraries wishing to adopt the approaches we recommend here should be positioning themselves not for a one-time shift but rather for a process of continual realignment. Such processes may sometimes need to be more grounded in university strategy than certain forms of library strategic planning traditionally have been. The key is a permanent process of ongoing realignment.

At a foundational level, the alignment work described in this project is institutional. That said, there are opportunities for research libraries to act collectively. One such opportunity is for collective design and prototyping work, and possibly ongoing collective efforts, in support of the pivot to STEM. Another is for national and multi-state research library consortia to collaborate

more deeply with other kinds of library organizations at a state, provincial, or metropolitan level. And, there may be opportunities for library leaders to explore the challenges they face in realignment and thereby build a set of strategies for strengthening leadership in today's dynamic environment. Other specific opportunities for collaboration and collective action deserve consideration.

Ultimately, our work finds substantial opportunities for research libraries to improve their alignment with and support for university strategy along with some hard realities about what can realistically be achieved, at least at some institutions. It is our hope that these findings will support research libraries in providing for the needs of their institutions and their users in the years to come.

Appendix – Interview Protocol

This interview protocol was used for our semi-structured one on one interviews with presidents and provosts. Slight modifications were made to accommodate other interviewee types and for use in focus groups.

- What key external issues are you tracking?
- What major strategic directions your university is pursuing? And how if at all this has shifted given the experience with Covid?
- Do you see a role for key offices like IT, the research office, and especially the research library to contribute to these strategic directions?
- How has the library been funded relative to other university priority areas in recent years?
- How you define the value or success of the research library going forward and how if at all do you see this changing?