Competing in the Era of Big Bets
Achieving Scale in Multidisciplinary Research
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About the Education Advisory Board

The Firm
Since 1979, The Advisory Board Company has been providing best practice research to the world’s leading hospitals, academic medical centers, and health systems. With a staff of over 1,000 in Washington, D.C., we serve health care CEOs, administrators, and clinical leaders at 2,700 institutions, publishing 55 major studies and 10,000 customized research briefs yearly on progressive management practices. The work focuses on the industry’s best (and worst) demonstrated practices, helping member institutions benefit from one another’s hard-learned lessons.

A New Practice in Higher Education
Encouraged by academic medical centers that our model and experience serving nonprofit institutions might prove valuable to universities, the Advisory Board began a higher education practice in 2007, with memberships serving the provost and senior administrators in academic affairs (the University Leadership Council), student affairs (the Student Affairs Leadership Council), and business and finance executives (the University Business Executive Roundtable). In our first two years, we have been honored to welcome over 180 of the nation’s leading universities on whose advice and goodwill we rely.

A Member-Led Agenda
Provosts set the agenda for the University Leadership Council’s research. Each year, we poll the membership to better understand their “up-at-night” issues—topics of genuine aspiration or urgency. The most widely voiced issues become the focus of our best practice work. In our first year, members prioritized increasing faculty diversity, developing an institutional strategy for student learning outcomes, and managing multidisciplinary research centers.

Casting the Net Wide
Our search for innovative practice is not limited to the membership. The Advisory Board believes it serves members best by exposing them to ideas and practices beyond the narrow confines of their peer groups as traditionally defined. We scan the entirety of the higher education sector for effective and replicable models, typically reviewing thousands of pages of literature and interviewing hundreds of institutions to find the 10 to 15 top ideas worthy of provosts’ attention.

Specializing in Best Practice Inquiry, Not Policy Analysis
New to the higher education community, we are acutely aware of how much we have to learn and modest in our ambitions in serving academic administrators. Our work is not intended to propose national policy (or to lobby policy makers), nor is it peer-reviewed academic research. Our narrower intention is to distill the experiences of institutions like yours, profiling success stories (and failure paths) to help prioritize investments and improve performance. At our best, we offer original insight into “what’s working” in higher education and critique the popular wisdom and fad-like trends that take hold in all fields and industries.
We are extremely grateful to those who generously contributed their time, expertise, and insight to our research.
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1. It is now uncontroversial to argue that multidisciplinary research collaboration is a top strategic priority for university leaders across the nation, convinced that the richest opportunities for scientific discovery, recruiting and motivating elite talent, and funding growth lie at the intersection of traditional disciplines.

2. While not new, multidisciplinarity is newly urgent. Faculty and students see multidisciplinarity as the means to address pressing real-world problems such as climate change, renewable energy, and pandemics. Funding agencies concur and are using the creation of multidisciplinary research centers as a favored mechanism for fostering the collaborations necessary to bring research to bear on these multifaceted issues.

3. For these reasons, universities of all sizes are formalizing multidisciplinary strategies.

4. **New Entrants:** Smaller institutions lacking resources to build nationally recognized departments see early identification and domination of defensible multidisciplinary niches as a way to climb the rankings and “punch above their weight” in the war for talent.

5. **Good to Greats:** Institutions with strong research reputations falling just short of the top tier are investing unprecedented sums (often in the tens of millions) in infrastructure and seed funds to pursue global preeminence in inherently multidisciplinary fields.

6. **Motivated Incumbents:** Even universities that have dominated competition for funding and prestige are concerned that cultural captivity to the individual investigator model disadvantages the institution in fostering new programs that cut across silos. While far from declaring the demise of the entrepreneurial, solo researcher, more incumbents are building entirely new multidisciplinary campuses and appointing administrators expressly charged with fostering a more collaborative research enterprise.

7. Provosts had comparatively small roles in managing the research enterprise in the individual investigator era, which required minimal central resources and oversight, leaving deans and faculty to set the direction of research. Each of these factors has changed as multidisciplinary collaboration has risen in scale and strategic importance.

8. **Unsustainable Levels of Institutional Funding:** Institutional funding was the fastest-growing source of support for research from 1996 through 2007, doubling over that time to $9.7 billion. A significant portion of these funds went to multidisciplinary initiatives, with seed funds in the tens and even hundreds of millions to build out the infrastructure seen as a prerequisite for attracting the largest center grants. With endowments down 30 percent or more and philanthropy likely to follow, few universities can continue to support this level of subsidy.

9. **Overcapacity in the “Five O’s”:** Universities are duplicating efforts and fomenting a facilities and talent arms race around the hot, inherently multidisciplinary fields of the so-called Five O’s of nano, bio, info, neuro, and enviro. Even allowing for the research-friendly priorities of the Obama administration, provosts are rightly concerned that there will be many expensive, unsuccessful centers in these fields, as insufficient resources exist to support every institution wanting to become “the Silicon Valley of Green Energy.”

10. **Unmanaged Compliance Risk:** A proliferation of centers of varying size and administrative sophistication has exposed universities to increased risks of noncompliance with the rapidly growing body of federal regulations. The diverse partnerships supported by centers raise issues of conflict of interest and intellectual property rights. Federal agencies are demanding more rigorous accountability, especially for high profile center grants.

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**Top Lessons from the Research**

1. Multidisciplinary Collaboration Moving from the Periphery to the Core

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2. Rising Costs and Risks Create New Pressures on Provost and Chief Research Officer to Actively Manage the Multidisciplinary Units in a Moment of Extreme Austerity

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11. **Disconnect Between Institution-Wide Strategic Priorities and Departmental Research Interests:**
Universities cannot reach the goal of successful large-scale multidisciplinary initiatives without central leadership. While faculty and deans are the drivers of the research engine, their activities will never reach the desired scale and scope without central support and coordination.

12. Given the unprecedented strategic importance and costs of large-scale multidisciplinary collaboration, provosts are in search of more effective administrative models for their portfolios of centers and institutes. While some multidisciplinary units rival departments in academic output, faculty participation, and resources invested, budgeting, management, and accountability mechanisms have not kept pace.

### Pathologies of the Unmanaged Multidisciplinary Portfolio

13. The laissez-faire model of centers and institutes as ad hoc, autonomous units fueled by the entrepreneurial drive of faculty has created a difficult legacy environment for the provost to coordinate. From more than 100 interviews with provosts and chief research officers at top research universities, the Council can report with conviction that unchecked center proliferation, while helpful in fostering initial multidisciplinary collaboration, can be a costly, unfocused, and ultimately ineffective method for achieving that end.

14. The Council encountered six recurring problems indicative of the struggles even the best universities are having coordinating multidisciplinary initiatives:

15. **Unmanaged Proliferation:** A large number of centers of varying size and quality makes it difficult to differentiate between so-called “file cabinet” centers with a single researcher, and the university’s largest strategic endeavors. Senior administrators struggle to know where to focus attention and scarce resources. Duplicative centers hinder rather than foster large-scale collaboration.

16. **Subscale Seed Funding Yielding Faux Collaboration:** The pressure to be fair rather than strategic in seed funding decisions results in numerous subscale initiatives. Faculty come together for the sake of the funding rather than building sustainable, long-term collaborations.

17. **Lack of Center Management Expertise:** Faculty typically lack the skills necessary to manage a major center, and administrators do not want to risk faculty losing focus on their research. New centers fail to leverage institutional expertise and end up reinventing the wheel when it comes to administrative processes, leading to launch delays, wasted resources, and frustrated faculty.

18. **“All or Nothing” Administrative Support:** Administrative support is matched to the size of the center, not the level of actual need. Larger centers end up over-resourced while smaller units often go without key services, harming productivity and, of greater concern to provosts and business administrators, introducing compliance risks.

19. **Inconsistent Evaluation Criteria:** Centers use inconsistent metrics and are reviewed irregularly in closed-door negotiations, limiting accountability for performance and making it impossible to evaluate the relative merits of different centers. It can be challenging to evaluate the ultimate impact of a center.

20. **Inability to Sunset Underperformers:** While centers are easy to start, universities rarely have objective and effective mechanisms to determine when a center has come to the end of its useful life. Underperforming centers linger on, underutilizing human, financial, and physical resources that could be better deployed for other uses.
Top Lessons from the Research (cont.)

**Multidisciplinary Leaders Developing Funding Models, Organizational Innovations, and Portfolio Management Strategies to Decrease Costs and Increase Returns of Large-Scale Collaboration**

21. In the course of our inquiry, the Council identified a handful of universities committed to multidisciplinarity as a defining attribute of their research identity that have developed replicable models for balancing support of entrepreneurial faculty and deans with the need for an institutional strategy to channel resources toward top priorities and productive units.

22. The greater part of this study analyzes their approaches for addressing these common provost and chief research officer concerns:
   - *How can we bring order to the clutter of centers and institutes already on campus?*
   - *How do we design seed fund competitions to discover viable collaborations?*
   - *What critical business and operations expertise do centers require?*
   - *How can we improve the quality of administrative support across all of our centers?*
   - *How can we create actionable, consistent metrics for multidisciplinary units?*
   - *What organizational structures and funding policies foster objective sunsetting?*

I. How Can We Bring Order to the Clutter of Centers and Institutes Already on Campus?

23. **Lax rules for center creation dilute university research priorities.** At most universities the proliferation of centers of varying size and quality has made it difficult to differentiate between centers that exist in name alone and the university’s largest strategic endeavors. Unmanaged use of the designations “center” and “institute” confuses internal and external stakeholders because the terms convey no information about a unit’s scope, scale, or strategic importance.

24. Provosts and chief research officers, burdened with oversight of units more appropriately managed within schools or departments, struggle to know where to focus attention and scarce resources. Center reporting lines are based on a unit’s historical origin rather than the breadth of participation in its current research activities.

25. Ad hoc chartering processes allow duplication of centers with overlapping research thrusts, leading to wasted resources, unproductive competition, and barriers to large-scale collaboration. Proliferation of centers obscures institutional priorities.

26. **Implement chartering and review policies that create different tiers of multidisciplinary units.** Successful portfolio management depends on consistently applied terms for multidisciplinary units that clearly indicate different levels of institutional priority, a review process to apply new standards to legacy centers, and a uniform process for approving new centers.

27. These policies help reduce the portfolio of multidisciplinary units to a manageable number of more viable efforts and preserve the university’s brand equity, reserving certain terms (and hence resources) for the most strategic efforts.

28. **Practice #1: Tiering the Multidisciplinary Portfolio.** Agreed-upon terms designate each new center according to reporting line (provost, chief research officer, dean, department chair), level of institutional funding, and breadth of participation (single department, single school, university-wide).
29. **Practice #2: Center Recertification Inventory.** The university undertakes a review of all multidisciplinary units on campus to determine not only which ones remain worthy of the designation “center” or “institute” but also where those units should be placed in the hierarchy.

30. **Practice #3: Building Permits.** All new centers must be formally approved before they are allowed to use the term “center.” The review process ensures all centers meet certain basic criteria and prevents potential duplicate centers through proposal consolidation.

II. How Do We Design Seed Fund Competitions to Discover Viable Collaborations?

31. **Traditional seed funds fail to align college and faculty interests with institutional priorities and to produce viable large-scale collaborations.** As provosts have raised their expectations, striving to seed large-scale collaborations involving multiple departments, multiple schools, and external partners, many have found that simply increasing the level of institutional funding does not translate into greater success.

32. A bottom-up approach that supports proposals from individual faculty, departments, or schools will not lead to collaboration around a small number of top institutional priorities. However, top-down attempts to seed major initiatives that do not have the backing of deans, departments, and faculty almost always fail.

33. Opportunistic seed funding decisions based on subjective criteria obscure the trade-offs inherent in any decision to allocate funds. Decisions focus on whether a proposal is worthwhile rather than whether it is a better use of funds than other proposals.

34. Many seed funding programs fail to consider the long-term viability of proposals, which depends not only on extramural funding opportunities, but also more critically on long-term commitments from deans and faculty.

35. **Use seed funding as a mechanism for discovering collaborative opportunities and securing dean commitments.** Seed funding is about more than simply providing the resources necessary for a group of faculty to do preliminary research. It is one of the few levers that the provost has for promoting strategic university-wide research priorities against the backdrop of the competing interests of faculty, deans, and existing centers. For that reason, the level of support is typically less important than how funding is allocated and structured.

36. Central funding serves as an incentive for deans to identify research partners in other schools and to align their efforts with broader institutional goals. The seed funding competition becomes an opportunity to discover nascent cross-campus research strengths that already have substantial support from deans and faculty and to provide them with the resources needed to reach new levels of scale, scope, and sophistication.

37. A regular university-wide competition with clear rules and explicit criteria ensures that funding goes to the proposals with the highest likelihood of success. Using a broad range of stakeholders for review promotes fairness and maximizes the amount of information available to decision makers. Reviewing existing and proposed centers simultaneously clarifies resource trade-offs, enabling rational resource allocations.

38. The most effective processes reflect the understanding that the distinction between seed funding and ongoing support for centers is an artificial one. The ultimate goal is to build a strong portfolio of centers, and that requires reallocating funds from lower priority to higher priority research goals and from less effective to more effective research projects.
39. **Practice #4: Seed Fund Synergy Reviews.** Deans are required to commit their own resources to an initiative before they can request central seed funds. Support from multiple deans indicates a university-wide initiative is likely to be sustained over the long term.

40. **Practice #5: Synchronized Portfolio Review.** Proposals for new centers are force-ranked against existing centers to make resource allocation decisions explicit. Deans determine center funding by setting their own levels of investment in centers with the provost providing matching funds in proportion to deans’ commitments.

41. **Practice #6: Permanent Multidisciplinary Operating Budgets.** The provost supports core operating expenses for university-wide centers, enabling them to build scale and encouraging them to pursue broader university priorities rather than being driven only by external funding opportunities.

### III. What Critical Business and Operations Expertise Do Centers Require?

42. **Top scientists are not business managers (nor do we want them to be).** The already significant administrative burdens required to manage a center have become even more complex over the past decade as performance expectations have grown. As centers are asked to perform a wider variety of tasks—technology transfer, outreach, undergraduate research experiences, diversity, etc.—the level of bureaucracy risks overwhelming the ability of researchers to stay focused.

43. Many centers struggle due to a lack of experienced support for the complex task of managing all necessary administrative processes and procedures. Research delays, faculty frustration, and compliance problems are common.

44. It is rare to find faculty members with both the skills and the desire to manage these administrative activities while continuing to advance their research agendas, and it is not clear that such a drain on research productivity is the best use of their time.

45. Experience gained in one center is rarely leveraged in others. As directors and staff move up the experience curve in a specific center they lack a mechanism (or the time) to share their knowledge with other centers on campus.

46. Few center directors have the discipline or the tools to identify and mitigate common problems related to hiring, partnering, and funding, forcing them into a reactive mode when easily anticipated problems occur.

47. **Share task-specialized professional business support across newly launched units.** Top institutions recognize the importance of experienced, professional management for large centers. While faculty members still play the role of center director, they are supported by managers with significant experience with large-scale multidisciplinary research (often in industry as well as academia).

48. Professional managers can support multiple centers simultaneously, establishing standard procedures, selecting and training new staff, and intervening at critical moments such as launch, site visits, and sunsetting.

49. Rather than reinventing the wheel with every center launch, an experienced center manager can standardize the process, developing reusable timelines, templates, and plans.

50. **Practice #7: Multidisciplinary Program Office.** A provost-funded office provides business support for directors of university-wide institutes, including strategic planning and standardized administrative processes.
51. Practice #8: Launch Specialist. A dedicated professional manager assists new centers during the first six to nine months, overseeing post-award management, hiring, purchases, and finances. The specialist can manage two to four centers concurrently with up to half of his or her salary charged directly back to grants.

IV. How Can We Improve the Quality of Administrative Support Across All of Our Centers?

52. Supply of administrative support is mismatched to actual need. Centers are typically organized as independent administrative units. As a result, some tend to be over-resourced while others lack the basic staff and skills they need to support faculty and comply with regulations.

53. Center directors and faculty are often resistant to the idea of sharing staff with other centers, preferring to stay with their own insufficient staff rather than trust the central administration to provide superior services.

54. Create shared services tailored to the needs of multidisciplinary research units. Sharing staff resources across centers provides access to skilled professionals and ensures that staff members are not underutilized.

55. Strengthening administrative services within an existing center and allowing other centers to opt into the service is a cost-effective way of building efficiencies and improving service levels without imposing rigid requirements on researchers.

56. For new shared services, particularly those offered on an opt-in basis, demonstrating that they can provide a higher level of service than faculty currently receive is more critical for their success than demonstrating that they can reduce costs.

57. Coordinating staff in the same functional area across units can be an alternative to pulling them out of their units into a central service provider. Each unit can leverage the expertise of all of the members of the network and access backup capacity when needed. At the same time, units are able to maintain the flexibility of having their own dedicated administrative support.

58. To address faculty concerns that centralized services will not be as responsive, staff in the new unit typically have a dual reporting structure. Reporting locally ensures that administrative staff remain responsive to individual faculty needs, while reporting centrally facilitates coordination and also presents training and development opportunities that local units could not provide on their own.

59. Practice #9: Center of Excellence Channeling. The administrative unit from a top-performing center provides a comprehensive range of administrative services to other centers by absorbing, retraining, and redeploying staff from centers that opt in.

60. Practice #10: Distributed Grant Writer Network. Central office coordinates grant writers based in individual units, encouraging specialization and collaboration while preserving responsiveness to unit needs.

V. How Can We Create Actionable, Consistent Metrics for Multidisciplinary Units?

61. Undisciplined evaluation prevents objective comparisons, obscures (non-financial) contribution. Most universities lack an objective, regular review process for multidisciplinary centers and institutes.

62. An individualized and irregular review process prevents comparisons across centers. Without objective and transparent reviews, personal and political considerations end up driving the process.
Top Lessons from the Research (cont.)

63. Center performance reviews are not typically linked to resource allocation decisions. When centers undergo individualized reviews, funding decisions are made on an opportunistic basis with no evaluation of the relative merits of different centers.

64. Research performance metrics are commonly aggregated at the disciplinary level, missing institutional strengths in multidisciplinary niches. The higher value placed on departmental excellence creates disincentives to invest in multidisciplinary research and may obscure some of the institution’s greatest research strengths.

65. It is often impossible to determine whether a department or a center is responsible for a grant awarded to a faculty member who is a member of both. Many institutions choose to “double count,” or assign equal credit to each unit for the sake of encouraging collaboration. Yet without a more precise method for allocating credit, administrators have no way to determine the relative impact of their investments in departments or centers.

66. Develop objective metrics that enable portfolio-wide comparisons while recognizing the distinct missions of individual centers. Regular review cycles for all centers and institutes enable objective comparisons and form the basis for budgeting decisions. Evaluation metrics are developed by individual center directors in consultation with university administrators, striking a balance between standardization and flexibility. Some universities are attempting to quantify the unique value added by multidisciplinary units, providing a tool to better allocate research investments among centers and departments.

67. Practice #11: Center Scorecard Configurator. Center directors develop performance metrics customized to their specific mission from a standard set of options developed by a university-wide multidisciplinary program office. Using a broad set of metrics avoids overemphasis on extramural funding success.

68. Practice #12: Multidisciplinary Niche Mapping. Co-citation analysis identifies research strengths at the intersection of traditional disciplines.

69. Practice #13: Fractional Credit Calculator. A formula is used to calculate the impact generated by investment in centers. Rules are used to assign partial credit for research output and to gauge impact based on a three-year lag between initial investment and attributable grant revenue.

VI. What Organizational Structures and Funding Policies Foster Objective Sunsetting?

70. Too many underperforming centers are allowed to persist. Most centers have no term limits or objective criteria for determining when they are no longer the best use of university resources. Many institutions lack effective processes for terminating even those centers that are clearly failing to perform to expectations.

71. Underperforming centers linger on, underutilizing human, financial, and physical resources that could be better deployed for other uses. Sunsetting decisions become highly politicized, limiting the university’s ability to change course or explore new avenues of research.

72. As centers grow, they develop a life of their own, adding faculty, staff, facilities, equipment, and other resources that depend on the continued existence of the center. The larger the center or the longer its tenure, the more disruptive disbanding it becomes.

73. Center funding comes to be seen as an entitlement, making reallocation of funds politically sensitive. At most universities, there is an enduring expectation that, once granted, center funding will continue in the absence of catastrophic failure, making it impossible for provosts to hold centers accountable.
Segregate permanent multidisciplinary infrastructure from temporary projects. Rather than establish each new multidisciplinary initiative as a semipermanent administrative unit, exemplars are creating an overarching multidisciplinary infrastructure to flexibly support a dynamic portfolio of discrete projects. Physical infrastructure and administrative support services are shared across multiple units, minimizing disruption when centers are launched or dissolved, maximizing utilization of scarce resources, and enabling rapid responses to changing demands for research.

In periodic funding competitions that force prioritization across both existing and proposed new centers, sunsetting is the default (not the exception) if a center fails to garner sufficient support.

Practice #14: Virtual Centers. Each university-wide center works with assets “on loan” from the deans and is reviewed every three years for an extension of its charter. Centers no longer deemed priorities by the deans are dissolved and a prefabricated plan of returning faculty, space, and funds to their home colleges is effected.

Practice #15: Evergreen Multidisciplinary Areas. The university selects a limited number of broad and enduring scientific research areas that are likely to attract significant faculty interest and/or extramural funding, creating an administrative infrastructure, permanent operating budget, and facilities to house these individual efforts.

Practice #16: Plug-and-Play Infrastructure. The university builds a flexible facility that is not only optimized for multidisciplinary partnerships (both internal and external) but also designed for rapid response and high throughput of collaborative, specialized research. Opportunities that fail to materialize are slotted out, with a queue of new projects waiting to use the space.
Competing in the Era of Big Bets

The Provost’s Role in Fostering Large-Scale Multidisciplinary Research
Competing in the Era of Big Bets

The End of the “Wild West” Approach: Institutionalizing Large-Scale Multidisciplinary Research

Multidisciplinary research has reached a turning point. Decades of encouraging faculty collaboration, cultivating new initiatives, and launching new centers have led to a proliferation of multidisciplinary research units. Many institutions are now struggling to bring order and focus to their sprawling portfolios of centers and institutes in the face of unsustainable levels of institutional investment, a historic drop in federal research funding, and rising levels of compliance risk.

A laissez-faire approach to managing centers, once commonplace, is no longer tenable. The era of the individual investigator has given way to large-scale collaborations, the cost, complexity, and strategic importance of which demand active leadership from provosts, together with chief research officers. While in the past a provost’s role lay in recruiting the best researchers and allowing them to freely pursue their work, provosts must now take the lead in managing institutional priorities, establishing university-wide research policies, and supporting large-scale facilities.

Letting a Thousand Flowers Bloom: Center Proliferation Perpetuated by False Assumptions

Many institutions have encouraged rapid growth in multidisciplinary research centers over the past few decades with the belief that launching new centers is a relatively inexpensive and low-risk approach to growing extramural research funding, encouraging new research thrusts, and recruiting and retaining star faculty. While most universities have found that centers can be a valuable mechanism for fostering multidisciplinary research, they have also learned that unchecked center proliferation is a costly, unfocused, and ineffective method for achieving that end. Three erroneous assumptions formed the rationale for the aggressive expansion of multidisciplinary centers.

Centers Do Not Pay for Themselves

Administrators saw new centers as investments that would someday generate a return. While some centers would undoubtedly fail, they believed that the centers that succeeded would support themselves while at the same time attracting new extramural research funds to the university. Many provosts and chief research officers saw themselves as venture capitalists, placing bets on promising ideas in the hope that some of their ventures would pay off.

Unfortunately, the economics of academic research are such that centers never “pay off,” at least not in the sense of generating additional discretionary income for the university.1 In fact, even highly successful centers struggle to cover their overhead costs. Given common cost-sharing arrangements, federally imposed limits on

<table>
<thead>
<tr>
<th>Clarifying Terms: Large-Scale Multidisciplinary Research</th>
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<tr>
<td><strong>Multidisciplinary</strong></td>
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<tr>
<td>Many commentators distinguish between interdisciplinary, multidisciplinary, and cross- or transdisciplinary research.2 This study uses the term “multidisciplinary” broadly to refer to collaborations that bring together researchers from multiple departments and colleges within the university.</td>
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<td><strong>Research Centers</strong></td>
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<td>Extra-departmental research units are referred to by a variety of names—center, institute, organized research unit (ORU), laboratory, initiative, or program. The terms “center” and “institute” are used in this study to describe administrative units within the university that exist outside of the traditional departmental structure and engage faculty from multiple departments.</td>
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<td><strong>Large-Scale</strong></td>
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<td>The term “center” can refer to a single researcher with no dedicated physical space or a $100 million initiative with a major dedicated facility and hundreds of affiliated researchers. This study focuses on centers that are large enough to be institution-wide priorities, including institutional initiatives with significant levels of resource commitment, center grants from federal agencies such as the National Science Foundation Engineering Research Centers (ERCs) and the National Institutes of Health Clinical and Translational Science Awards (CTSAs), and major corporate-funded academic research groups. Large-scale centers are most common in the physical and biological sciences and engineering, but are increasingly common in the social sciences and humanities as well.</td>
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overhead recovery, and the fact that many centers are required to share recovered overhead with departments, it is nearly impossible for a center to fund operations without an ongoing institutional subsidy. Centers with significant contract research activity are the exception.

The experience of a neuroscience institute at a midsized public research university represents a typical case in which the scholarly success of a multidisciplinary center did not translate into financial sustainability. From a research perspective, the neuroscience institute and the university did everything right: the institute’s original faculty included a Nobel laureate, the university provided $2 million in seed funding as well as dedicated space in a new multidisciplinary research facility, a cluster hire brought in an impressive lineup of star researchers, and the university secured a development grant from the state that enabled the institute to purchase equipment. While these conditions allowed the institute to have great success in winning extramural grants, they were not sufficient to enable the institute to cover its operating costs. The university had decided that all indirect cost recovery would be returned to departments. The institute had planned on philanthropy making up the difference, but it lacked adequate support from the university’s development office and failed to meet its fundraising targets. The failure to plan for ongoing institutional support placed the institute at risk of closing despite exceeding all of its research goals.

If a Center Fails to Flourish It Will Not Simply Go Away

Administrators often believe that centers are significantly easier to launch and close than traditional departments, enabling the university to respond rapidly and flexibly to the changing research interests of faculty and funding bodies. Universities promote unrestricted center proliferation in the belief that a Darwinian competition will ultimately weed out the weakest centers.

In practice, however, underperforming centers are rarely closed. Once launched, centers tend to persist, protected by the fact that center evaluation processes are typically ad hoc and ineffective with no link to funding decisions. Review committees commonly recommend increasing resources as a reward for centers that perform well but also recommend increasing resources to help centers that are struggling. Vocal support for the center from the director and affiliated faculty make sunsetting decisions politically charged. The result is that underperforming centers linger on, draining resources (faculty and administrative time even if not direct financial resources) that could be better used by other centers. Fig. 1

So-called “zombie” centers that persist despite a lack of significant research activity exist on many if not most campuses. A large Western public research university, for example, launched a nanotechnology center in the 1990s in the hopes of bolstering its research strengths in an important and popular domain. The university secured both state and federal funding and attracted a top researcher to lead the center. When the director left unexpectedly, however, the center foundered, and multiple searches for a new director failed to attract an appropriate candidate. A decade later, the leaderless center still lingers on, supporting various minor research activities but lacking the scale or strategic direction originally planned for it.

Research Success Does Not Guarantee Financial Sustainability

“We’ve contributed significantly to the neuroscience community here, with a direct or essential hand in bringing in $20 million in funds to the campus—ten times what the university invested in us. But we can’t cover our overhead costs, and without a change in our business model it’s not clear we can sustain three years of operations.”

VP for Research
Midsized Public Institution

Most Centers Have No Term Limits

Source: W. Mallon and S. Bunton, “Characteristics of Research Centers and Institutes of U.S. Medical Schools and Universities.” Association of American Medical Colleges (June 2005).
Centers Do Not Automatically Reduce Barriers to Multidisciplinary Collaboration

The rationale for creating most new centers is that they will bring together researchers from different units within the university and enable them to perform new types of research currently impeded by traditional disciplinary silos. Centers provide a common space, institutional recognition, and often seed funding to encourage faculty to collaborate in new ways.

Simply adding a new center, however, rarely transforms the complex web of incentives that support or inhibit faculty collaboration. Broader issues around hiring, tenure, and promotion must be addressed. While many centers do support novel forms of collaboration, once institutionalized as a separate administrative unit, centers can actually increase bureaucratic barriers. Centers themselves can become silos, competing with other units on campus for support and faculty attention. As the number of centers increases, the potential for turf battles grows, mitigating the centers’ original intent.

The New Austerity Forcing a Reconsideration of Center Investments

Unmanaged center proliferation was never an optimal approach, but in the current economic environment it is simply no longer sustainable. A doubling in both federal research funding and institutional support for research from the mid 1990s to the early 2000s facilitated an opportunistic approach to center creation. However, the hard landing for federal funding followed by the broader recession has burst the bubble, creating unprecedented pressure to manage centers in a financially responsible manner.

Downturn in Federal Funding Threatens Center Viability

Federal funding for academic research boomed in the mid 1990s and early 2000s, driven primarily by the doubling of the budget for the National Institutes of Health (NIH). The doubling was followed, however, by real declines in funding in 2006 and 2007, the longest period of declining research funding since the late 1960s. Most centers, particularly in the experimental sciences and engineering, were built on the assumption of continuing growth in federal funding for research.
When that growth ended, the financial prospects for centers changed dramatically. Fig. 2

Competition for center funding is even more intense than overall federal funding numbers indicate. The vast majority of new centers fall within a handful of popular research domains—bioscience, nanoscience, information science, neuroscience, and environmental sciences. While these fields have generally seen significant growth in funding, there are indications that the growth of centers in these fields may be outstripping the level of resources available. Center funding is beginning to look like a zero-sum game.

The downward trend in federal funding was reversed (at least temporarily) in February of 2009 with the American Recovery and Reinvestment Act’s inclusion of significant resources for academic research. Long-term trends in federal spending, however, will put tremendous pressure on future federal budgets. Many universities planning to achieve significant growth in federal research funding by investing in large-scale multidisciplinary research initiatives will be disappointed.

Institutional Funding Not a Sustainable Driver of Growth

Institutional funding for the start-up and ongoing support of center activities is the other critical factor in the center funding equation. Universities have dramatically increased their role in funding research over the past decade. In fact, institutional funding was the fastest growing source of support for academic research between 1996 and 2007. A significant portion of these resources was targeted to major multidisciplinary initiatives, and seed funds in the tens of millions of dollars have become commonplace with some over $100 million. Support for multidisciplinary research has also become a familiar component of major university fundraising campaigns. Fig. 3

The financial crisis that began in late 2007 impacted state budgets, endowments, and annual giving, putting significant pressure on all aspects of university finances. By 2008 many institutions had already instituted hiring freezes, stopped new construction, and started identifying areas for further cuts. As institutions look for areas in which to cut costs and refocus on core activities, extra-departmental research units and multimillion dollar research initiatives have come under greater scrutiny. In January of 2009, for example, Boston University announced that due to a budget shortfall of $10 million they would be undertaking a review of operating expenses with a special focus on the nearly 200 centers and institutes on campus.5 In February of 2009, Harvard University announced that they would temporarily halt construction on a $1 billion multidisciplinary science complex in Allston as a result of a 30 percent drop in the value of their endowment.

As the pressure to cut costs grows, faculty and students are making increasing demands for greater budget transparency. Such transparency is likely to highlight the ongoing subsidies required by large-scale research, forcing researchers and administrators to justify their claims to ongoing support. At Colorado State University, for instance, a group of students and faculty protested the more than $300 million of institutional funds invested in research.6

Despite Challenges, Multidisciplinary Research Still Central to Mission

While financial pressures are forcing universities to reexamine their approach to centers, universities are not abandoning their research ambitions. Most provosts still see multidisciplinary research as a critical strategic priority. It represents not only exciting new research questions and an opportunity to address urgent real-world problems but also a way to generate significant growth in extramural research funding.

Virginia Tech’s 2006 strategic plan exemplifies the important role of multidisciplinary research. The plan sets an ambitious goal for growth in research
expenditures from $291 million in 2005 to $541 million in 2012 and estimates that 63 percent of that growth will come from the university’s multidisciplinary institutes. The plan explains that Virginia Tech can meet its growth objectives only through large-scale multidisciplinary research, not the traditional individual investigator approach. Early results have been impressive. Between 2006 and 2007, Virginia Tech jumped 12 spots in the NSF ranking of total academic research expenditures.

Regardless of their current level of research expenditures, institutions across the research spectrum are finding reasons to support large-scale multidisciplinary research. “New Entrants” with little history of large-scale research and limited resources to build nationally competitive departments are striving to create world-class research capacity in a few multidisciplinary niches. Baylor University represents an institution that has recently elevated its research ambitions. Bringing an entire department to world-class level would be prohibitively expensive and would create tensions with other departments on campus that did not receive similar levels of investment. As an alternative, Baylor has launched a handful of multidisciplinary centers that pull top faculty from across the university into world-class teams. As a result, Baylor’s federally funded research expenditures exploded from $830,000 in 2002 to $2.8 million in 2007, representing a jump of 75 positions in the NSF funding rankings.

In addition, “Good to Greats”—institutions that have strong histories of research excellence but fall short of the top tier of research universities—are making substantial investments in research infrastructure.
and administrative talent in the hopes of establishing global preeminence in a handful of areas. For example, University of Notre Dame made a major push in 2007 and 2008 to raise its reputation for multidisciplinary research. The university hired several experienced administrators, including a new provost in 2005, a new vice president for research in 2007, and an associate vice president for launching centers in 2008. It also built major new facilities and committed $80 million to integrated research initiatives designed to build on multidisciplinary research strengths.\(^8\)

Finally, “Motivated Incumbents”—universities that have historically dominated the competition for research funding and prestige—are finding that their success with the traditional individual investigator model has limited their ability to foster new research programs that cut across existing academic and administrative silos. In 2007, Harvard University established a permanent central committee to promote collaboration among its colleges, launched a seed fund for interdisciplinary science, and in 2008 appointed its first vice provost for research. Harvard also began construction in 2008 on a new campus in Allston, specifically designed to house and facilitate multidisciplinary research collaborations.\(^9\) (Though construction was temporarily halted in early 2009 as a result of the financial crisis.) Harvard’s explicit goal is to move beyond the limits of the traditional individual researcher approach to develop larger, collaborative teams.

### A Unique Responsibility for Provosts in Promoting Multidisciplinary Research

In the individual investigator era, provosts had little role to play in managing the research enterprise; faculty and deans set the direction for research, and the required central resources and oversight were minimal. However, with the increasing complexity of multidisciplinary research, provosts and chief research officers are now responsible for high-stakes decisions about the strategic direction of the research enterprise.

Large-scale multidisciplinary research initiatives involve multiple units, external partners, and significant institutional investments. The critical activities that must take place—encouraging collaboration among the deans, committing the institution to partnerships, and setting strategic research priorities—cannot occur without the leadership of the provost. Yet for many provosts, even those with a background in research administration, these tasks present unfamiliar challenges.
Managing Centers Still a Challenge Despite Decades of Experience

Despite massive investments, considerable senior leadership attention, and a long history of launching multidisciplinary units, centers continue to pose significant management challenges, which provosts have had to address with few resources for guidance. Six questions presented below, posed throughout the center life cycle, reflect the most important challenges that an effective center management policy must overcome.

### Six Challenges for Center Portfolio Management

**I. How Can We Bring Order to the Clutter of Centers and Institutes Already on Campus?**
- Proliferation of centers prevents strategic focus and spreads resources too thinly
- Center reporting lines do not align with their current breadth of research
- Centers with overlapping activities hinder attempts to build large-scale collaborations

**II. How Do We Design Seed Fund Competitions to Discover Viable Collaborations?**
- Faculty initiatives remain small scale without strong central funding, but large centrally funded initiatives fail to take root without the support of faculty and deans
- Opportunistic seed funding decisions obscure the trade-offs inherent in resource allocation
- Administrators fail to consider the level of ongoing institutional support that centers will require after the seed stage

**III. What Critical Business and Operations Expertise Do Centers Require?**
- Top scientists are often poor center managers
- Many centers struggle due to lack of experienced administrative support
- Experience gained in one center is rarely leveraged in others

**IV. How Can We Improve the Quality of Administrative Support Across All of Our Centers?**
- Some centers are over-resourced while others lack the basic staff they need to support faculty and comply with regulations
- Administrative staff lack opportunities for training and career advancement
- Faculty are often resistant to the idea of sharing staff with other centers

**V. How Can We Create Actionable, Consistent Metrics for Multidisciplinary Units?**
- An individualized and irregular review process prevents comparisons across centers
- Center performance reviews are not typically linked to resource allocation decisions
- Many institutions assign equal credit to each unit involved in a grant, making it difficult to determine the impact of an individual center

**VI. What Organizational Structures and Funding Policies Foster Objective Sunsetting?**
- There are rarely effective processes for terminating centers that are clearly failing to perform to expectations
- Centers accumulate assets over time, making disbanding the center increasingly disruptive
- Center funding comes to be seen as an entitlement, making it difficult to hold centers accountable
Notes


Achieving Scale in Multidisciplinary Research

Best Practices
Competing in the Era of Big Bets

Paths to Scale in the Multidisciplinary Research Enterprise

I
Managing Center Proliferation

How Can We Bring Order to the Clutter of Centers and Institutes Already on Campus?

#1 Tiering the Multidisciplinary Portfolio
#2 Center Recertification Inventory
#3 Building Permits

II
Seed Funding Strategies

How Do We Design Seed Fund Competitions to Discover Viable Collaborations?

#4 Seed Fund Synergy Reviews (The Ohio State University)
#5 Synchronized Portfolio Review (The University of Alabama at Birmingham)
#6 Permanent Multidisciplinary Operating Budgets (Duke University)

III
Professionalized Business Planning

What Critical Business and Operations Expertise Do Centers Require?

#7 Multidisciplinary Program Office (Duke University)
#8 Launch Specialist (Purdue University)
IV

Build-as-You-Go Shared Services

How Can We Improve the Quality of Administrative Support Across All of Our Centers?

#9 Center of Excellence Channeling (University of California, Berkeley)

#10 Distributed Grant Writer Network (University of Missouri-Columbia)

V

Objective, Actionable Evaluation Criteria

How Can We Create Actionable, Consistent Metrics for Multidisciplinary Units?

#11 Center Scorecard Configurator (Duke University)

#12 Multidisciplinary Niche Mapping (University of California, San Diego)

#13 Fractional Credit Calculator (Virginia Polytechnic Institute and State University)

VI

A Separate Infrastructure for Temporary Initiatives

What Organizational Structures and Funding Policies Foster Objective Sunsetting?

#14 Virtual Centers (The University of Alabama at Birmingham)

#15 Evergreen Multidisciplinary Areas (Duke University)

#16 Plug-and-Play Infrastructure (Purdue University)
I. Managing Center Proliferation

*How Can We Bring Order to the Clutter of Centers and Institutes Already on Campus?*

**Best Practices**

#1 Tiering the Multidisciplinary Portfolio  
#2 Center Recertification Inventory  
#3 Building Permits
How Can We Bring Order to the Clutter of Centers and Institutes Already on Campus?

**Typical University Problem:** Lax Rules for Center Creation Dilute University Research Priorities

At most universities the proliferation of centers and institutes of varying size and quality has made it difficult to differentiate between so-called “file cabinet” centers and the university’s largest strategic endeavors. Senior administrators struggle to know where to focus attention and scarce resources, burdened with oversight of units more appropriately managed within schools or departments. Duplicative centers arise, hindering rather than fostering large-scale collaboration.

**Best Practitioner Approach:** Implement Chartering and Review Policies That Create Different Tiers of Multidisciplinary Units

As a housekeeping prerequisite for more sophisticated portfolio management activity, exemplars combine a standard vocabulary that clearly differentiates multidisciplinary units receiving different levels of institutional support with a review process for approving use of either the university name or popular center research themes. These policies help reduce the portfolio of multidisciplinary units to a manageable number of more viable efforts and preserve the university’s brand equity, reserving certain terms for only the best-resourced and most strategic efforts.

**Case Profiles**

**Practice #1:** Tiering the Multidisciplinary Portfolio ......................... p. 21

Naming policy differentiates centers based on institutional priority and research scope

**Key Attributes:**
- Center names clearly distinguish university-wide from college-based centers
- Center director reporting lines depend on breadth of faculty involvement
- University-wide centers receive certain privileges including central funding

**Practice #2:** Center Recertification Inventory ........................................ p. 22

Broad review of legacy centers enforces compliance with updated center policies

**Key Attributes:**
- Review identifies centers that no longer merit official recognition
- All centers must demonstrate minimum level of performance and planning
- Current and potential interest from faculty and external agencies indicate long-term viability

**Practice #3:** Building Permits .............................................................. p. 24

Approval process for new centers promotes consolidation of related efforts

**Key Attributes:**
- Single point of contact (an individual or committee) reviews all new center proposals
- Closely related proposals are sent back for joint resubmission
- Potential center impact on university reputation is evaluated
Typical University Problem

Lax Rules for Center Creation Dilute University Research Priorities

Unmanaged Use of “Center” and “Institute” Conveys No Information About a Unit’s Scope, Scale, or Strategic Importance, Confusing Both External and Internal Stakeholders

At most institutions, the terms “center” and “institute” are used so indiscriminately that they have become almost meaningless. A center might be no more than a name on a business card or it might be a $100 million initiative with its own major research facility and hundreds of faculty affiliates. Because these terms fail to convey the true importance of research units, they cannot be used to communicate the university’s research strengths.

Center Reporting Lines Are Based on Unit’s Historical Origin Rather Than the Breadth of Current Research Collaboration

Many centers begin within a single department or a single school and gradually broaden their range of collaborators. Others may launch out of the provost’s office or the office of research but would be overseen more effectively by a highly engaged dean. Unfortunately, institutions rarely have clear criteria or effective processes for reassigning reporting relationships, leading to administrative turf battles, inadequate oversight, or insufficient resources.

Proliferation of Centers Obscures Institutional Priorities

When universities reach the point of having 100, 200, or more centers, it becomes difficult to identify the most important strategic priorities. An overabundance of centers spreads resources, faculty time, and administrative focus so thinly that maintaining a critical mass in any given area is impossible.

Centers with Overlapping Activities and Names Hinder Attempts to Build Scale

Hot research areas tend to attract new centers from multiple units on campus. In a sense, this is one of the goals of multidisciplinary research. But if each unit is allowed to launch its own center, the competing centers can actually become barriers to collaboration. Researchers will continue to work with colleagues from their own division, and none of the centers will achieve the scope or scale necessary to have a major impact.
Best Practitioner Approach

Implement Chartering and Review Policies That Create Different Tiers of Multidisciplinary Units

Nomenclature Clearly Differentiates Centers According to Scope and Strategic Importance

While precise definitions for centers and institutes vary widely from one institution to another, optimal systems impose a clear hierarchy on their multidisciplinary research units, identifying those that represent the most important strategic priorities while creating categories for more narrowly focused or fledgling centers.

Hierarchical Reporting Lines Are Based on Breadth of Research and Source of Funding

Differentiating centers on the basis of breadth, size, and alignment with strategic priorities helps institutions calibrate the appropriate level of central support and oversight. The hierarchy can be used to justify additional resources or privileges for the most strategic centers and as an incentive for lower priority centers to grow, expand the breadth of their collaborations, and raise their overall standards.

Legacy Centers Are Reviewed for Compliance with New Center Designation Policy

Applying a new center naming policy to future centers is relatively straightforward, but bringing existing centers in line with the new policy represents an enormous challenge. Typically many centers have been allowed to continue simply out of inertia or the high political cost of forcing a change. A number of universities have instituted comprehensive reviews of existing centers, investing significant time and resources into optimizing their entire portfolio of centers.

Approval Process for New Centers Consolidates Duplicative Proposals

Preventing overlapping centers is relatively straightforward. It requires all new proposals to pass a review process that includes a consideration of how the new center relates to existing centers. Encouraging related centers to integrate their research plans or even to merge into a single center can lead to greater levels of collaboration, a larger base of resources, and clearer strategic goals.
Managing Center Proliferation

These diagnostic questions reflect the essential ingredients of approaches used by best-practice institutions. Members may use them to determine if the full range of best practices is being used on campus and evaluate whether absences represent an opportunity for investment or action.

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<tr>
<th>Diagnostic Questions</th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>1. Does the university maintain a current inventory of all centers and institutes on campus?</td>
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<td>❏</td>
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<tr>
<td>2. Does the provost’s office or the office of research’s website post standard definitions for centers and institutes?</td>
<td>❏❏</td>
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<tr>
<td>3. Are the university’s centers reviewed regularly to ensure compliance with these definitions?</td>
<td>❏❏</td>
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<tr>
<td>4. Do the definitions for centers distinguish between units that receive central university support and oversight and those that do not?</td>
<td>❏❏</td>
<td></td>
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<tr>
<td>5. Are center reporting lines aligned with the center’s research scope and breadth of faculty participation?</td>
<td>❏❏</td>
<td></td>
</tr>
<tr>
<td>6. Is there a formal mechanism for chartering new centers?</td>
<td>❏❏</td>
<td></td>
</tr>
<tr>
<td>7. Are there procedures in place to avoid the duplication of centers?</td>
<td>❏❏</td>
<td></td>
</tr>
<tr>
<td>8. Do the university’s best-resourced centers reflect institutional strategic priorities?</td>
<td>❏❏</td>
<td></td>
</tr>
</tbody>
</table>
Practice #1: Tiering the Multidisciplinary Portfolio

Imposing a Rational Order on the Proliferation of Centers

Centers vary enormously in size, resources, breadth of faculty involvement, and alignment with broader university priorities. Without formal rules that differentiate the long and growing lists of multidisciplinary research units on most campuses, it is impossible to manage them appropriately. Burdened with oversight of units that would be more effectively managed within colleges or departments, provosts and chief research officers struggle to know where to focus attention and scarce resources. Successful portfolio management depends on consistently applied terms for multidisciplinary units that clearly indicate different levels of institutional priority.

Creating a Common Vocabulary for Centers and Institutes

Definitions for centers and institutes vary significantly from one institution to another and even within a single campus. The range in usage is so extreme that calling a research unit a center often conveys little or no information about its scale, scope, or degree of permanence.

Whether a unit is called a center, institute, or something else matters less than where it falls within the university hierarchy. Tiering clarifies the institution’s top priorities and ensures that the appropriate level of oversight and support is targeted at each level. The hierarchy can also be used as an incentive for improved performance. High-performing centers can be moved up the hierarchy as they meet certain performance standards. Conversely, centers that no longer represent the university’s priorities or fail to meet performance criteria may be demoted. Fig. 1.1

Sophisticated institutions typically differentiate between four organizational levels based on the breadth of research, the funding sources, and the reporting line. Specific terminology differs from campus to campus, but the levels can be described generically as:

- University-Wide Institutes
  – Represent long-term university research priorities
  – Bring together researchers from multiple colleges
  – Report to provost or chief research officer
  – Receive funding from central administration

- University-Wide Centers
  – Have narrower research focus and intended to be less permanent than a university institute
  – Bring together researchers from multiple colleges
  – Report to a university institute director

- College-Based Centers
  – Represent college research priorities
  – Bring together researchers from a single college
  – Report to the dean
  – Receive some funding from the dean

- Department-Based Centers
  – Highly discipline-specific
  – Bring together researchers primarily from a single department
  – Report to the department chair
  – May receive funding from the dean

Implementation Considerations

Impossible to Ensure Total Compliance

Even universities that have aggressively used a tiering approach never include every center. Centers are all unique, and there may be valid reasons for adopting a different approach for certain centers. Laying out a clear system, however, communicates both internally and externally the breadth and priority of centers on campus. Isolated exceptions need not detract from the overall structure.
Practice #2: Center Recertification Inventory

Prioritizing Existing Centers

Many universities have accumulated decades of institutional detritus in the form of centers and institutes of uncertain status. Some universities even lack a comprehensive list of all centers on campus. To deal with this disarray a number of universities have attempted a center recertification inventory, listing all centers and applying some basic standards to sort them into different levels of priority, support, and oversight.

Source: University Leadership Council interviews and analysis.

Setting a New Bar for Center Performance

Motivated by the desire to align research more closely with its new strategic plan, a large land-grant university decided to perform a comprehensive review of all of its centers. In the spring of 2002, the vice president for research asked each of the deans to submit a list of all centers operating within their schools. The resulting list of 235 centers reflected just how unfocused existing efforts were.

The centers on the list were sorted into four categories. By far the largest category (203 out of the 235) included duplicate names, centers that were not engaged in research, and “file cabinet” centers that existed in name only with no ongoing activity. The centers in...
this category were shuttered, renamed, or combined. Those centers with significant state or federal funding were automatically recertified since they had already been evaluated by external reviewers and had ongoing sources of support. Remaining centers were required to submit a current strategic plan and were evaluated according to three basic criteria—alignment with the university strategic plan, potential for extramural funding, and breadth of faculty interest. Fig. 1.2

Ultimately, the university went from a diffuse list of 235 centers to 32 viable centers aligned with the new strategic plan. Fig. 1.3

Implementation Considerations

**Raising Standards Elicits Resistance**

The center recertification process in this case lasted more than three years and faced a great deal of resistance from faculty and administrators who were frustrated by the amount of effort required to justify the continuation of their centers.

**Without Continued Attention Proliferation Returns**

In 2007, the university was considering relaunching the recertification process. In the intervening years, centers had proliferated once again and there was a sense that some of the centers that had made the bar in the last review might no longer be viable.

**Reducing the Clutter**

Fig. 1.3

**Decrease in Number of Centers Following Recertification Inventory**

Source: University Leadership Council interviews and analysis.

---

### Legacy Center Review Process at a Large Land-Grant University

**Fig. 1.2**

<table>
<thead>
<tr>
<th>235 “Legacy” Centers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 2002: Deans and vice president for research compile list of university centers</td>
</tr>
</tbody>
</table>

**Center Categories**

- **State Funding**
- **Federal Funding**
- **Institutional Funding**
- **Duplicates and “File Cabinet” Centers**

<table>
<thead>
<tr>
<th>Review Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Is it a university priority?</strong></td>
</tr>
<tr>
<td>Alignment with university strategic plan</td>
</tr>
<tr>
<td><strong>A chance of federal funding?</strong></td>
</tr>
<tr>
<td>Extramural revenue projections</td>
</tr>
<tr>
<td><strong>Are faculty interested?</strong></td>
</tr>
<tr>
<td>Critical mass of faculty participation</td>
</tr>
</tbody>
</table>

Source: University Leadership Council interviews and analysis.
Ensuring New Centers Fit Clearly Within the Existing Portfolio

Many institutions consider proposals for new centers in isolation, evaluating simply whether they meet some minimum bar for performance. Recognizing that a university’s portfolio of centers communicates its strategic priorities to both internal and external stakeholders, sophisticated institutions take pains to ensure that each new center represents a worthy use of the institution’s name, a strategic priority, and a unique, non-overlapping addition to the current research portfolio.

Keeping the Clutter Out

Most universities have a process for approving new centers that requires the proposed unit to meet certain minimum criteria. While such basic standards are an important quality control mechanism, it is equally important to have a process that takes an institution-wide view of all new proposed centers. Sophisticated universities recognize that there are costs to the proliferation of centers, even for centers that are viable.

The simple solution is to require that all proposals for new centers go through a single review process. The review can be by a single individual (such as the chief research officer) or by a committee. The reviewing body evaluates not only whether the center has met the minimum standards set by the university’s policy but also how it relates to other centers already on campus. The result of the review is approval, denial, or, if multiple proposals are similar in scope, consolidation. Fig. 1.4

Communicating Clear Priorities

Proliferation is not simply a problem in terms of duplicated efforts or multiple subscale centers; it also represents a failure to clearly communicate institutional priorities to internal and external stakeholders. Allowing a research unit to use the name “center” and to be listed on an institutional website signifies a certain level of institutional commitment, potentially putting the university’s brand at risk. Multiple centers with similar names make it difficult to determine where expertise resides within the university, frustrating the efforts of researchers looking for collaborators, funders looking for proposals, and administrators hoping to build on institutional strengths.

Implementation Considerations

Knowing When Consolidation Makes Sense Requires Judgment

Bigger is not always better. Determining when a “clean energy” center and a “global warming” center should be combined, for example, depends on a broad range of factors including the specific faculty members involved, the level of resources that each center has, and each center’s mission. The involvement of the center director, key faculty, and potentially even outside experts can provide critical input into the process.

Case in Brief

Approval process for new centers promotes consolidation of related efforts

- Single point of contact (an individual or committee) reviews all new center proposals
- Closely related proposals are sent back for joint resubmission
- Potential center impact on university reputation is evaluated

All We Have Is Our Name

“It is critical that the central administration is involved with the creation and review of centers and institutes. All a university has is its name and reputation, so only the best collaborations and research endeavors should be allowed to brand themselves with that name.”

Former Vice President for Research
Midsized Land-Grant University
University Review Process for New Centers

Fig. 1.4

Source: University Leadership Council interviews and analysis.

1. **Approved**
   - Center established as proposed

2. **Consolidated**
   - Proposals from two or more centers must be resubmitted jointly

3. **Denied**
   - Proposal must be altered significantly

**Center Proposals**

- Chief Research Officer
- Provost’s Proposal Review Panel
II. Seed Funding Strategies

How Do We Design Seed Fund Competitions to Discover Viable Collaborations?

Best Practices

#4 Seed Fund Synergy Reviews

#5 Synchronized Portfolio Review

#6 Permanent Multidisciplinary Operating Budgets
How Do We Design Seed Fund Competitions to Discover Viable Collaborations?

Typical University Problem: Traditional Seed Funds Fail to Align College and Faculty Interests with Institutional Priorities and to Produce Viable Large-Scale Collaborations

Many universities hope that a large centralized seed fund will help overcome divisional silos and encourage faculty from across the institution to collaborate on a handful of strategic research priorities. Without strong central funding, school-based initiatives remain small scale and limited in scope, but without the support of faculty and deans, large centrally funded initiatives fail to take root.

Best Practitioner Approach: Use Seed Funding as a Mechanism for Discovering Collaborative Opportunities and Securing Dean Commitments

Requiring a firm commitment from multiple deans to support initiatives proposed for central seed funding enhances the long-term viability of new projects. Central funding serves as an incentive for deans to align their efforts with broad institutional goals and to identify partners in other schools. The seed funding competition becomes an opportunity to discover nascent cross-campus research strengths that already have substantial support from deans and faculty and to provide them with the resources needed to reach new levels of scale, scope, and sophistication.

Case Profiles

Practice #4: Seed Fund Synergy Reviews .......................................................... p. 33

*THE OHIO STATE UNIVERSITY (Columbus, Ohio)*

Required commitment from deans screens out weak proposals and encourages collaborative projects

Key Attributes:
- Deans can serve as lead on three proposals, but may partner on additional proposals
- Deans commit to funding their proposals whether or not they win central funding
- Provost identifies opportunities to consolidate proposals from different colleges

Practice #5: Synchronized Portfolio Review .................................................... p. 39

*The University of Alabama at Birmingham (Birmingham, Alabama)*

Regular performance comparisons across centers (new and existing) enable objective resource allocations

Key Attributes:
- All centers (including proposals for new centers) are reviewed simultaneously every three years
- Deans allocate funds to centers based on quality and relevance
- Provost's funds for university-wide centers match deans' allocations

Practice #6: Permanent Multidisciplinary Operating Budgets ............................. p. 43

*Duke University (Durham, North Carolina)*

A recurring line item in the provost’s budget ensures financial stability for institutes and centers and obviates distraction of “pass the hat” funding

Key Attributes:
- Provost provides a “core budget” to support key operating costs of university-wide centers
- All indirect cost recovery is returned to the deans
- Senior administrator and business support office dedicated to serving university-wide centers
Typical University Problem

Traditional Seed Funds Fail to Align College and Faculty Interests with Institutional Priorities and to Produce Viable Large-Scale Collaborations

Increasing Commitment of Institutional Seed Funds Not Translating into Successful Multidisciplinary Collaborations

As provosts have raised their expectations, striving to seed large-scale collaborations involving multiple departments, multiple schools, and external partners, many have found that simply increasing the level of institutional funding for such initiatives does not translate into greater success.

Most Faculty Are Unprepared to Propose Viable Large-Scale Collaborations

Institutions without a history of large-scale multidisciplinary collaborations often hope that a large seed fund will solve the problem, but most faculty-proposed initiatives that lack a history of collaboration are not viable even with seed funding. Faculty new to the process either fail to set their sights high enough, or they team up with faculty from other disciplines just for the proposal process.

Both Bottom-Up and Top-Down Funds Court Misalignment Between University Strategic Priorities and College Research Strengths

Faculty, departments, and schools have a broad range of non-overlapping research agendas. A bottom-up approach that supports proposals from individual faculty, departments, or schools will not lead to collaboration around a few institutional priorities. However, while faculty typically do not self-organize into large-scale collaborations, neither do they respond to administrative fiat. Top-down attempts to seed major initiatives that do not have the backing of deans, departments, and faculty almost always fail.

“Pass the Hat” Funding Rewards Lobbying Rather Than Research and Misdirects Center Director Time

When funding is at the discretion of a handful of individuals, researchers commonly spend a significant amount of time lobbying for resources. The ideas that are funded are not necessarily the most promising but rather the ones with the most politically skilled advocates. Attempts to avoid charges of favoritism by spreading investments “fairly” across the entire campus are also ineffective, making it impossible to build large-scale initiatives in strategically targeted areas.

Staggered Calendar and Ad Hoc Evaluation Criteria Preclude Rational Allocation of Funds

Opportunistic funding decisions based on subjective criteria obscure the trade-offs inherent in any decision to allocate funds. Decisions hinge on whether a proposal is worthwhile rather than whether it is a better use of funds than other proposals. New centers are funded without consideration of the potential impact on funding for existing centers. Prioritization becomes impossible because there are no common metrics to evaluate proposals.

Short-Term Emphasis on Winning Large Grants Ignores the Need for Long-Term Support

The ultimate goal of seed funding is to support initiatives that will generate significant external support. Many seed funding programs fail to require evidence of the long-term viability of proposals, which is dependent not only on extramural funding opportunities, but also more critically on long-term commitments from deans and faculty. Even projects that win large grants continue to require significant institutional support, though few institutions have a plan for providing it.
Best Practitioner Approach

Use Seed Funding as a Mechanism for Discovering Collaborative Opportunities and Securing Dean Commitments

The Process Matters as Much as (or More Than) the Amount

Seed funding is about more than providing the resources necessary for a group of faculty to do preliminary research. Seed funding is one of the few mechanisms available to the provost for promoting strategic university-wide research priorities against the backdrop of the competing interests of faculty, deans, and existing centers. For this reason, the level of support is typically less important than how funding is allocated and structured.

Front-Loading Long-Term Viability

Long-term sustainability requires that support for a center come from more than a single funding source. A broad range of stakeholders must be committed to the success of the center. When properly structured, the seed funding process can determine whether there is a sufficient degree of support both inside and outside the university and can help bolster that support.

Surfacing Consolidation Opportunities

Large-scale collaborations cannot be built from scratch or grown from a single research group. Typically they require identifying a number of groups, both on and off campus, and encouraging them to work together toward a set of common research goals. This does not happen spontaneously, and there are a range of barriers that make it challenging even in the best of cases. A major university-wide seed funding program can help to overcome those barriers.

Enforcing Dean Commitments

Deans have a critical role to play in selecting, guiding, and supporting major multidisciplinary initiatives. Without their support, such initiatives are likely to wither on the vine. Making central seed funding dependent on deans’ commitments leverages the provost’s investment and ensures support from deans. Limiting the number of proposals that deans can submit assists in prioritization, and requiring multiple deans to support a center as a condition for central investment promotes multidisciplinarity.

Providing Deans with More Complete Information for Allocating Own Commitments, Provost Contributions

A regular university-wide competition with clear rules and explicit criteria ensures that funding goes to the proposals with the highest likelihood of success. Using a broad range of stakeholders for review promotes fairness and maximizes the amount of information available to decision makers. Reviewing existing and proposed centers simultaneously clarifies resource trade-offs, enabling rational resource allocations.

Funding Floors for Long-Term Multidisciplinary Priorities

The most effective universities recognize that the distinction between seed funding and ongoing support for centers is an artificial one. The ultimate goal is to build a strong portfolio of centers, and that requires reallocating funds from lower priority to higher priority research goals and from less effective to more effective research projects. Only by considering all centers together can this be accomplished. Ultimately, successful practitioners look beyond the initial seed stage to consider mechanisms for the long-term support of centers, budgeting for ongoing administrative costs that cannot be recovered from grants.
These diagnostic questions reflect the essential ingredients of approaches used by best-practice institutions. Members may use them to determine if the full range of best practices is being used on campus and evaluate whether absences represent an opportunity for investment or action.

### Seed Funding Strategies

<table>
<thead>
<tr>
<th>Diagnostic Questions</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Are central seed funds allocated through an open competition with explicit rules and evaluation criteria?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>2. Are proposals for central seed funds vetted by faculty and deans before submission?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>3. Are deans required to make long-term commitments of funds as a prerequisite for central seed funding?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>4. Does the university require financial commitments from more than one dean to ensure broad support before allocating seed funds?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>5. Do proposals for central seed funds include realistic plans for long-term sustainability?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>6. Does each institute receiving support from the central administration have a detailed contingency plan to deal with unexpected outside funding shortfalls?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>7. Does the central seed fund process consolidate related proposals to achieve scale?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>8. Do all old and new centers compete against each other for funding at regular and predictable intervals, making resource trade-offs apparent?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>9. Do all center directors provide standardized proposals in competing for central seed funds?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>10. Does the center proposal evaluation process consider both the value of each center to individual schools as well as its value to the university as a whole?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>11. Does the university budget for the institutional funding required to sustain the ongoing needs of its highest-priority centers?</td>
<td>❏</td>
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</table>
Over the past 15 years, The Ohio State University held four large competitions for central funding to strengthen its most promising research activities and foster multidisciplinary collaborations. The first of the major university-wide initiatives, launched in the early 1990s, was the Academic Enrichment Fund. Its stated goal was to enhance instruction, research, outreach, and service—all of the major activities on campus. Individual faculty members were invited to submit proposals in any of these areas and on any theme. Ohio State found that the resulting proposals were uncoordinated (there could be an outreach proposal, a research proposal, and a service proposal all in the same field but from different individuals) and lacked support from their departments since they came directly from faculty members with no requirement of support or approval from department chairs or deans. In the end, Ohio State awarded grants to individual faculty members working toward different goals, significantly diluting the intended impact of the program.

In the university’s next seed fund competition, the Selective Investment Fund (1998–2000), Ohio State addressed this issue by focusing on departments rather than individual faculty. The stated goal was to elevate the reputation of the best programs; however, there were diminishing returns to focusing on the top departments. Increases in publications and graduate student enrollments were modest. The fund also failed to spur multidisciplinary collaborations—not surprising considering its focus on traditional departments. The central administration realized that the top-down selection of where to concentrate resources alienated faculty and hindered collaboration.

The next iteration, the Multidisciplinary Research Grants Program (2000–2001), directly addressed this shortcoming. It funded cross-school projects that mapped onto the state of Ohio's new economic development road map. Rather than fund individual faculty members or individual departments, grants were awarded to faculty groups with members from multiple schools. Ohio State ended up, however, with a large number of small proposals of widely varying quality. Many groups came together solely for the purpose of applying for the grant. These groups had no history of collaboration, no real commitment to working together, and little hope of winning additional funding after the provost’s money ran out.

The next seed fund competition, the Large Interdisciplinary Grant Program (2003–2004), targeted faculty groups applying for large federal grants. Funds were awarded to formally designated centers that needed additional support to win the grant. However, investing in centers that had already

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**Practice #4: Seed Fund Synergy Reviews**

Universities lament that even large, well-publicized multidisciplinary seed funds can fail to catalyze innovative collaborations if imperfectly structured. The most sophisticated institutions use the seed funding competition as a mechanism to encourage researchers to seek collaborative partners, encourage deans to concentrate resource commitments behind the most robust concepts, spotlight opportunities for center consolidation and shared facilities, and focus funds on fewer, larger proposals. Ohio State’s experience with its Targeted Investment in Excellence (TIE) program illustrates many of these principles.
### Climbing the Seed Funding Experience Curve

**Fig. 2.1**

Fifteen Years of Lessons Learned at The Ohio State University

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Seed Funding Program</strong></td>
<td>Academic <strong>Enrichment Fund</strong> 1991–1998</td>
<td><strong>Selective Investment Fund</strong> 1998–2000</td>
</tr>
<tr>
<td><strong>University Funds Available</strong></td>
<td>$\approx$14.5 M</td>
<td>$1.0$ M per department</td>
</tr>
<tr>
<td><strong>Goal</strong></td>
<td>Enhance instruction, research, outreach, service</td>
<td>Elevate reputation of best programs</td>
</tr>
<tr>
<td><strong>Origin of Proposals</strong></td>
<td>Individual faculty</td>
<td>Departments</td>
</tr>
</tbody>
</table>
| **Drawbacks**                | • No prioritization  
• No departmental support  
• Uncoordinated grants dilute impact | • Modest increase in publications, graduate students  
• No spontaneous multidisciplinarity |
| **Lesson**                   | Seed funds benefit from "investment theme" | Diminishing returns to "making strong stronger" |

Source: University Leadership Council interviews and analysis.
Seed Funding Competitions

III  
**Multidisciplinary Research Grants Program**  
2000–2001  
~$1.5 M per project  
Fund cross-school projects relevant to state’s economic development road map

IV  
**Large Interdisciplinary Grant Program**  
2003–2004  
Up to $0.5 M per project  
Assist faculty groups applying for federal grants > $1 M

V  
**Targeted Investments in Excellence**  
Current  
Faculty groups  
- High-volume, variable-quality small-scale proposals  
- No proof of resource commitment from deans  
- Supported faculty groups already preparing large-scale proposals  
Focus on earlier-stage ideas at “tipping points”
demonstrated success had limited returns, as in the case of the Selective Investment Fund. Fig. 2.1

Getting It Right—Targeted Investments in Excellence

Ohio State’s current seed fund is known as Targeted Investments in Excellence (TIE). Five elements of this competition overcome the inadequacies of the previous approaches:

1. Sustainability Planning
2. Proposal Limits
3. Binding College Commitments
4. Multiple Rankings
5. Proposal Consolidation

The ultimate objective behind these rules is to attract fewer, higher quality, higher impact proposals.

1. Sustainability Planning

Proposals must have a long-term plan for continuing after the initial investment. All of the components of the TIE proposals speak to the question of sustainability. They require the team to demonstrate support from deans (often more than one), to catalog existing research strengths on which they will build, to analyze the potential for extramural funding in these areas, and to show how centrally provided funds would be used to generate even greater impact.

2. Proposal Limits

In order to generate fewer, larger proposals and to encourage greater cross-school collaboration, Ohio State designated deans as proposal gatekeepers, limiting the number of proposals on which any one dean could serve as the lead to three while permitting them to collaborate with one another on any number of proposals. This system allowed for a maximum of 54 proposals across 18 colleges. (Ultimately, 52 were submitted.) Fig. 2.2

3. Binding College Commitments

Deans must commit to funding their proposals regardless of whether they win additional support from the provost. Deans actually make two proposals. The first proposal describes how they will support the initiative with their own funds, and the second indicates what they could accomplish with additional central funds. This requirement forces deans to propose only those initiatives that they are truly committed to supporting and further limits the number of weak or unsustainable proposals. It also requires deans to demonstrate how the proposals will support the broader institutional strategic plan and demonstrates cross-college commitment to the endeavor.

4. Multiple Rankings

Several different stakeholder groups evaluate and rank all proposals. Each group rates the proposals according to a set of common criteria, including scientific merit, external funding, and cost. The rankings provide the provost with critical information on the various proposals and allows the provost and the provost’s advisors to decide where the institution should be making strategic investments.

5. Proposal Consolidation

The proposal process surfaces opportunities to bring together groups working on related research to build larger-scale collaborations. The provost offers additional funding to support these efforts. The example in figure 2.3 shows three individual proposals, one for a climate and water center, one for a carbon center, and one for a clean energy center. Through a preliminary review the provost suggested that the climate and water center combine with the carbon...
The provost then proposed an additional $2 million for equipment to be shared between the Climate, Water, and Carbon Center and the Center for Energy, Sustainability, and Environment. Consolidation achieves the scale Ohio State was unable to achieve when the seed funding process focused on individual faculty members or departments.

The TIE resulted in 10 major new initiatives that received support from the provost, listed in Fig. 2.4 in rank order. There is no correlation between rank and funding because the overall level of support and the level of provost support were determined by the needs of the individual project rather than by rank. In addition to these 10 provost-supported initiatives, the deans funded...
another 42 initiatives that would not have existed without the TIE process. Figs. 2.4, 2.5, 2.6

With this approach, Ohio State is finally beginning to achieve some of the results that previous funding strategies did not. Figure 2.7 shows submissions for extramural funding from 4 of the 10 new initiatives, totaling nearly $280 million. Ohio State also recently won a Materials Research Science and Engineering Center (MRSEC) after almost 20 years of effort. Success is attributed to the new Advanced Materials TIE, which was able to coordinate the proposal effort across the campus. Fig. 2.7

**Combining Central and Local Support**

Five-Year Budget for Ohio State’s TIE Program


**Encouraging Locally Funded Initiatives**

New College- and Department-Funded Initiatives Launched Through TIE


**Early Returns from Ohio State’s TIE**

Proposals for Extramural Funding from New Initiatives


**Implementation Considerations**

*Applicable to All Institutions, Especially Relevant to the Largest*

Ohio State is a large research university, with more than 5,000 faculty members across 18 colleges and $700 million in research expenditures. Individual deans at Ohio State have larger budgets and oversee more faculty than many university provosts. The TIE is effective in part because the deans have the resources to support large-scale collaborative research projects. At smaller institutions, it may be more appropriate to use another gatekeeper (such as department chairs) and to expect a lower level of “local” commitment. But the essence of the practice—providing central funds only after local funds have been committed—can be implemented regardless of the university’s size.

*Requires Dean Commitments to Leverage Provost Investment*

Leveraging the investments of deans increases the impact of the provost’s funds. Ultimately, the central investment attracts significantly more funding from both internal and external groups. Forty-two new collaborations were funded entirely by deans.
Providing Deans with Perfect Information

The University of Alabama at Birmingham (UAB) decided to fundamentally transform its approach to funding multidisciplinary research centers in the early 2000s. To put an end to the highly politicized and ad hoc distribution of resources, UAB developed a transparent and objective process that goes beyond seed funding to address financing for all university-wide centers, both new and existing.

Like Ohio State (see Practice #4), UAB recognized the need to engage deans in the seed funding process. Funding decisions for all centers are made every three years, with all centers being reviewed simultaneously.

“Rack and Stack,” Depoliticized Seed Fund Competition

A common problem with seed funds is an ad hoc and politicized decision-making process. Funds become available sporadically and accessing them often depends on the political connections of individual center directors. As a result, the ideas that get funded are not always the most promising but the ones that happen to be proposed at the right time or by the right person. An ad hoc or serial approach considers each proposal on its own merits, failing to recognize the trade-offs implied in each funding decision. The University of Alabama at Birmingham reviews all funding proposals for university-wide centers (both new and continuing) simultaneously every three years. Their synchronized approach allows for a rational allocation of resources across centers based on their priority.

Case in Brief

The University of Alabama at Birmingham, Birmingham, Alabama

Regular performance comparisons across centers (new and existing) enable objective resource allocations

- All centers (including proposals for new centers) are reviewed simultaneously every three years
- Deans allocate funds to centers based on quality and relevance
- Provost’s funds for university-wide centers match deans’ allocations

to funding multidisciplinary research centers in the early 2000s. To put an end to the highly politicized and ad hoc distribution of resources, UAB developed a transparent and objective process that goes beyond seed funding to address financing for all university-wide centers, both new and existing.

Like Ohio State (see Practice #4), UAB recognized the need to engage deans in the seed funding process. Funding decisions for all centers are made every three years, with all centers being reviewed simultaneously.

UAB’s Virtual Center Model

Fig. 2.9

Center Assets Are on Loan from Schools

- Primary appointment with department
- Schools assign existing space; no “rent” charged
- Schools pay utilities and debt service
- Jointly sponsored by multiple centers and schools
- Schools have option to withdraw funding every three years

Source: University Leadership Council interviews and analysis.
University-wide centers, 25 high-priority research centers cutting across multiple schools and departments, are funded both from the provost’s budget and from individual deans’ contributions. The provost’s funds account for 70 percent of the total budget for university-wide centers (drawn from a tax on the university’s overall indirect cost recovery) and deans’ funds make up the remaining 30 percent. Fig. 2.8

Underlying this process is an approach to supporting centers that temporarily borrows most resources from the schools. Centers do not pay faculty salaries or receive overhead reimbursement; faculty are all paid through their departments. Space is loaned to the center by schools (no rent is charged), core facilities are jointly sponsored with other centers and schools, and direct funding from the deans is reviewed (and potentially withdrawn) every three years. Fig. 2.9

Ultimately, the deans collectively decide which centers will be funded and at what level. The funding process is designed to provide the deans with all of the relevant information that they need to make these decisions and to ensure that the final result reflects the overall priorities of the university.

The process has three primary components:
1. Standardized Proposal Applications
2. Two-Tiered Forced Rankings
3. Formula-Based Funds Matching

Prioritizing Centers at UAB
Fig. 2.10

Evaluators

Key Question

Ranking Criteria

Final Rankings

Dean’s Advisory Group
- Department Chairs
- Star Faculty

Research Advisory Group
- Vice President for Research
- School Representatives

Will the school derive value?

Sponsor School Utilization
- Faculty participation
- Junior faculty support
- Core facility use
- Help with recruitment

Total Impact
- Societal significance
- Core facilities benefit multiple investigators
- Innovation
- University reputation

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Source: University Leadership Council interviews and analysis.
1. Standardized Proposal Applications

All centers—new and continuing, full centers and pilot centers—complete the same application with comparable information about science thrust, the names of sponsoring schools, and budget projections. Applications may also have multiple cover letters addressed to specific sponsoring deans that address the center’s relevance to that particular school.

2. Two-Tiered Forced Rankings

The standardized applications are reviewed by two parallel processes. Each dean has an advisory group composed of department chairs and/or key faculty members who evaluate each center based on its contribution to their school. For example, deans might look at the number of faculty or students from the school that are involved in the center’s work, the core facilities supported by the center, or the center’s importance for recruiting new faculty. Each advisory group assigns scores to centers based on the National Institutes of Health (NIH) 1–5 scale, ranking them in order of priority. Fig. 2.10

The centers are also evaluated and ranked by a university-wide research advisory group that includes the vice president for research and representatives from each of the schools. This group focuses on the broader significance of the center for the university—the quality of the science, societal significance, contribution to the development of core facilities that benefit a wide range of researchers, and importance to the university’s reputation.

All proposals, cover letters, and scores are published to an intranet site that can be accessed by everyone participating in the review process. UAB believes that this information, and the fact that it is presented with such transparency, lays the groundwork for rational collaboration.

3. Formula-Based Funds Matching

Using the information posted to the intranet site, UAB’s deans decide on the level of financial investment that they want to make in each center. The provost then allocates central funds in a 70/30 ratio to the deans’ commitments. This process has a number of advantages over the previous ad hoc approach to funding centers:

- Making the funding process transparent and objective
- Producing comparable information about the performance and contributions made by each center
- Asking deans to commit their own resources to centers they value
- Encouraging multiple deans to support each center
- Identifying cross-school priorities
- Making budgetary trade-offs among centers explicit

Encouraging Cross-School Collaboration

While the School of Medicine is by far the largest supporter of university-wide multidisciplinary research centers (contributing 62 percent of all

A Subsidy Proportional to Dean Commitment

"Deans have to really think what they want to put into and get out of involvement with centers. Once they've done this, and made three-year commitments, the university fund match is just arithmetic. There are still negotiations and deal making, but it's in the open, better-informed, and much less political."

Dr. Richard Marchase, VP, Research
The University of Alabama at Birmingham

Fig. 2.11
Funding Contributions to University-Wide Centers by School

Source: University Leadership Council interviews and analysis.
funding), all of the schools now contribute to the centers. Many centers receive support from a broad range of schools. Fig. 2.11

In October 2007, a survey of life scientists by The Scientist ranked UAB as the fifth best place to work in the nation. The magazine credited an environment that encourages scientists from many disciplines to work together.

Supporting Proposals for Large Multidisciplinary Grants

Funding agencies typically look for strong evidence of cross-school collaboration when evaluating proposals for large multidisciplinary grants. UAB believes that its recent successful application for a Clinical and Translational Science Award (CTSA) benefited significantly from the demonstrated support from all 13 campus deans.

The team that proposed the CTSA leveraged UAB’s seed funding process to build support across schools.

When it came time to apply for the grant, the funding mechanism was used to demonstrate an institutional commitment to multidisciplinary research.

The other centers funded through this process have also become magnets for large multidisciplinary grants. UAB currently has 29 NIH center grants, 21 of which are based in their university-wide centers (as opposed to individual schools). Twelve of their 23 Institutional Research Training Grants (T32s) are based in the centers. Fig. 2.12

Implementation Considerations

Works Well for Centers Focused on Extramural Funding

UAB’s process, specifically scoring centers on the NIH 1–5 scale and force ranking them, is particularly well suited to the biomedical focus of all of their university-wide centers. Other institutions with more diverse sets of centers would probably use a different set of metrics. The important lesson is that centers are compared to each other using an agreed-upon set of objective criteria, and those comparisons are used to allocate resources.

Particularly Applicable to RCM Institutions

It is also important in the UAB case that the deans have resources to commit to this process. UAB is a Responsibility Center Management (RCM) institution and half of the indirect cost recovery goes to the deans. Universities using a more centralized budget system may need to find alternative methods of measuring a dean’s level of commitment to specific centers.
Practice #6: Permanent Multidisciplinary Operating Budgets

Providing a Budget Floor for High-Profile Initiatives
At most universities, funding even for high priority centers and institutes is both precarious and contentious, with directors spending undesirable amounts of time negotiating with deans for resources and indirect cost recovery funds from shared grants. Duke University, as part of an institutional emphasis on global research preeminence through multidisciplinarity, has created a core operating budget (funded directly from the provost’s office) for its most strategic initiatives, a visible sign that collaboration is central to the university and not an add-on.

Acknowledging the Reality of Structural Deficits
The central administration at Duke University recognizes that external grants will never cover the full cost of supporting multidisciplinary research. Overhead return on grants is simply insufficient to fund all the activities in which centers are expected to engage. While colleges and departments have budgets and administrative infrastructures to keep them going, multidisciplinary centers and institutes typically lack that level of support and struggle to find resources by continuous fundraising both on and off campus.

Core Budgets for Centers
As UAB recognized (see Practice #5), Duke found that when center directors are forced to cover ongoing costs through annual negotiations with deans and other administrators, budgeting becomes reactive, political, and time-consuming. In response, Duke has

Case in Brief
Duke University
Durham, North Carolina
A recurring line item in the provost’s budget ensures financial stability for institutes and centers and obviates distraction of "pass the hat" funding
- Provost provides a "core budget" to support key operating costs of university-wide centers
- All indirect cost recovery is returned to the deans
- Senior administrator and business support office dedicated to serving university-wide centers

Duke’s University Institutes
Fig. 2.13
implemented core budgets for university-wide institutes. These seven institutes report directly to the provost and sit at the top of Duke’s hierarchy of centers and institutes (see Practice #1). In addition to receiving certain hiring privileges that the college-based centers do not, the seven institutes also receive core budget funding. These five-year budgets provide support for those costs that cannot typically be covered by external funding. Fig. 2.13

The core budgets accomplish a number of related goals:

- Providing centers with a stable resource base
- Enabling center directors to plan and grow despite fluctuating external support
- Reducing the amount of time center directors spend negotiating for institutional resources
- Replacing a single-minded focus on increasing extramural funding with a more balanced set of incentives

Five-Year Budgets for Duke’s University-Wide Institutes

![Fig. 2.14](image)

<table>
<thead>
<tr>
<th>Institute</th>
<th>Provost Support as Percentage of Total Institute Budget</th>
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</thead>
<tbody>
<tr>
<td>Institute for Genome Sciences and Policy*</td>
<td>15% Provost Subsidy</td>
</tr>
<tr>
<td>Social Science Research Institute</td>
<td>50% Provost Subsidy</td>
</tr>
<tr>
<td>John Hope Franklin Humanities Institute</td>
<td>99% Provost Subsidy</td>
</tr>
</tbody>
</table>

*Represents Provost and School of Medicine commitments. Source: University Leadership Council interviews and analysis.

- Removing tensions with deans and departments over dividing indirect cost recovery (ICR) with centers
- Allowing the provost to set and enforce performance criteria for the centers

The total size of the core budget and the portion of the institute’s total budget that comes from the provost vary by discipline. The Institute for Genome Sciences and Policy, for example, which operates in a field with significant opportunities for extramural funding, receives only 15 percent of its budget from the provost (in partnership with the School of Medicine), while the John Hope Franklin Humanities Institute, which has few opportunities to generate extramural funds, receives nearly all of its funding from the provost. Fig. 2.14

Creating a “College” for Multidisciplinary Research

Duke has modeled its approach to multidisciplinary institutes on the example of the different colleges at the university—with a core budget set by the provost, rigorous accountability, administrative oversight from a vice provost for interdisciplinary studies, and business support from a dedicated Office of Interdisciplinary Program Management. (For more information on how this office functions, see Practice #7.) Duke’s ever-changing portfolio of multidisciplinary projects is managed and supported within this permanent administrative structure. Duke’s approach reflects the need for oversight and accountability to accompany a significant institutional investment.

Getting to the Next Level

Duke’s success at rising in the research rankings has paralleled its emphasis on multidisciplinary research. Since 2001, Duke has risen from twenty-first to seventh, a unprecedented accomplishment among
top-tier research universities. However, administrators at Duke are clear that growing external funding and rising in the rankings are not their ultimate goals nor are they the primary motivations for major investments in multidisciplinary research. Their focus is on the pursuit of institutional excellence:

- Recruiting top scholars with an interest in collaborative research
- Exposing students to team approaches to learning and problem-solving
- Implementing Duke’s vision of “knowledge in the service of society”

**Implementation Considerations**

*Shifting from an ICR Model to a Budget Model Presents Major Challenges*

Many institutions see the benefits of sending indirect cost recovery back to the schools and creating a separate funding stream for centers, but not every institution can find the resources to make such a shift. Even at Duke, the decision was made to migrate to core budgets before the long-term financing plan had been finalized. They believed that the transition was essential because it made the already existing structural deficit explicit and addressable and because the core budgets enable superior support and accountability for centers.
III. Professionalized Business Planning

What Critical Business and Operations Expertise Do Centers Require?

Best Practices

#7 Multidisciplinary Program Office

#8 Launch Specialist
What Critical Business and Operations Expertise Do Centers Require?

Typical University Problem: Top Scientists Are Not Business Managers (Nor Do We Want Them to Be)

Many centers struggle, particularly in the first six to nine months, due to a lack of experienced support for managing the complex task of developing all necessary administrative processes and procedures. Research delays, faculty frustration, and compliance problems are common. Center directors also commonly miss this critical opportunity to create a plan for the center’s long-range financial viability.

Best Practitioner Approach: Share Task-Specialized Professional Business Support Across Newly Launched Units

Multidisciplinary exemplars are providing professionalized management and business planning support to center directors—preempting typical failure paths, reducing time to steady-state, avoiding compliance issues, and setting clear expectations for future funding. Faculty and center directors are more satisfied and can spend valuable time on research rather than administration. Center launch and business planning experts can be leveraged across multiple centers, generating significant benefits with a relatively small investment.

Case Profiles

Practice #7: Multidisciplinary Program Office ................................................................. p. 53

Duke University (Durham, North Carolina)

A provost-funded office provides business support for directors of university-wide institutes

Key Attributes:
• Business manager works with institute directors to develop strategic plans
• Strategic plans identify common risks to center sustainability
• Mitigation plans created to address the most important risks

Practice #8: Launch Specialist ................................................................. p. 55

Purdue University (West Lafayette, Indiana)

Dedicated professional manager assists new centers during the launch phase

Key Attributes:
• Temporary managing director sets up all administrative processes for new center
• Launch specialist manages two to four center launches concurrently
• Portion of specialist’s salary is charged directly back to grants
Managing Modern Centers Requires a Complex Array of Scarce Administrative Skills

The already significant administrative tasks required to manage a center have become even more complex over the past decade as performance expectations have grown. Centers are now expected to manage a range of partnerships—with other departments and colleges on campus, with other universities (domestic and foreign), with corporations and foundations, and with government partners (local, state and federal). As centers are asked to perform a wider variety of tasks—technology transfer, outreach, undergraduate research experiences, diversity, etc.—the level of bureaucracy risks overwhelming the ability of researchers to stay focused.

Faculty and Staff Typically Lack the Experience Necessary to Manage a Major Center

Center directors are typically drawn from the ranks of faculty, but managing a center requires more than just research skills. Many compare it to starting a small business, with all of the logistical, financial, administrative, and human resources issues that it entails. It is rare to find faculty members with both the skills and the desire to manage all of these activities while continuing to advance their research agenda, and it is not clear that such a drain on research productivity is the best use of their time. Center support staff are generally drawn from other administrative units within the university or from the research team itself (i.e., postdocs), but neither of these groups typically has experience managing large multidisciplinary centers.

New Centers Do Not Leverage Institutional Expertise, (Imperfectly) Reinvent Launch Wheel

Experience gained in one center is rarely leveraged in others. As directors and staff move up the experience curve in a specific center they lack a mechanism (or the time) to share their knowledge with other centers on campus. As a result, staff often end up imperfectly duplicating existing administrative processes.

Failure to Manage Center Launch Efficiently Causes Endemic Delays, Waste of Resources

Administrative obstacles are particularly critical during the first six to nine months of the center’s existence, when critical processes have to be put in place, strategic decisions made, and staff hired. If the first few months are poorly managed, valuable time is wasted, research results will be delayed, and the initiative risks alienating key faculty as well as current and potential funders.

Centers “Plan for Perfection,” Failing to Anticipate or Develop Contingencies for Common Threats to Long-Term Sustainability

Centers typically launch with great optimism and high expectations, focusing on exciting new research opportunities and previously unattainable grants. Few center directors have the discipline or the tools to identify and mitigate common problems around hiring, partnering, and funding, forcing them into a reactive mode further down the line when easily anticipated problems occur.
Best Practitioner Approach

Share Task-Specialized Professional Business Support Across Newly Launched Units

Professional Managers Support Faculty Directors

Top institutions recognize the importance of experienced, professional management for large centers. While faculty members still generally play the role of center director, they are supported by managers with significant experience with large-scale multidisciplinary research (often in industry as well as academia). The center director focuses on setting the research strategy and building support among faculty, department chairs, deans, and other university administrators, while the managing director establishes the processes and systems that the center will require to function effectively.

Professional Managers and Process Expertise Leveraged Across Multiple Centers

Once developed, center management expertise can be leveraged across the entire institution. Professional managers can typically support multiple centers simultaneously, establishing standard procedures, selecting and training new staff, and intervening at critical moments such as launch, site visits, and sunsetting. Options range from an advisory committee of existing center managing directors to a dedicated manager responsible for all launches, to shared administrative infrastructure designed to support new centers in a specific area (on this last point, see Practices #9 and #10).

Toolkit of Replicable Launch Processes Executed by Temporary Center Director to Minimize Delays

Rather than reinventing the wheel with every center launch, an experienced center manager can standardize the process, developing reusable timelines, templates, and plans. Appointing this launch specialist as the temporary director for the center during the startup phase leads to significant efficiency improvements, and the launch specialist’s expertise can be leveraged across multiple centers.

Strategic Planning Support Identifies and Mitigates Common Failure Paths

An expert can walk center directors through the strategic planning process, asking a standard set of questions to help identify common problems around funding, philanthropy, hiring, and other areas. Once potential pitfalls are identified, the planner can help directors develop a robust plan for avoiding them as well as contingency plans in case problems come to pass.
Professionalized Business Planning

These diagnostic questions reflect the essential ingredients of approaches used by best-practice institutions. Members may use them to determine if the full range of best practices is being used on campus and evaluate whether absences represent an opportunity for investment or action.

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<td>2. Does the university leverage the expertise of these professional managers across centers?</td>
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<td>3. Are center directors provided with coaching in the development of business plans for long-term sustainability?</td>
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<td>4. Has the university created templates and repeatable administrative processes to facilitate efficient center launch?</td>
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<td>5. Does the university provide support and expertise to center directors during the launch phase?</td>
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Practice #7: Multidisciplinary Program Office

Supporting the Strategic Planning Process

In the rush to establish a new center after the excitement of winning a big grant, directors rarely take the time to think through a long-term strategy in sufficient detail. Many also lack the expertise or tools to identify and mitigate the most common risks to center sustainability. In 2007 Duke established an Office of Interdisciplinary Program Management (OIPM) to provide oversight and accountability to seven university-wide institutes and their affiliated centers. The OIPM executive director and two staff members provide a range of services, including business planning, development of performance metrics, and identification of best practices in finance, human resources, and other activities.

Institutionalizing Multidisciplinary Research

Duke University has a long history of supporting multidisciplinary research and has built a support infrastructure for these activities that includes a vice provost for interdisciplinary studies, core budgets for university-wide multidisciplinary centers, and an Office of Interdisciplinary Program Management (OIPM). Together, these elements are intended to provide university-wide centers with the same level of financial and administrative support as a college.

Launched in 2007, the OIPM provides oversight and accountability to the seven major university-wide institutes and their affiliated centers as well as offering select support services. Its executive director and two staff members provide a range of services, including business planning, development of performance metrics, and identification of best practices in finance, human resources, and other activities. OIPM’s purpose is not to provide all services centrally but to identify and support existing centers of excellence in the institutes.

Support for Strategic Planning

A major focus for the office in its first year was to work with institute directors to ensure that each had a robust long-range business plan. The director of OIPM worked individually with institute directors to identify and mitigate five of the most common management challenges that centers encounter:

1. Itemizing recurring unrecoverable costs
2. Defining philanthropy projections
3. Conducting faculty gap analyses
4. Mapping critical dependencies
5. Developing contingency plans

Each is an issue that institute directors cannot typically address on their own, and while OIPM cannot overcome all five challenges, it does enable institute directors to identify and plan for them.

1. Itemizing Recurring Unrecoverable Costs

Duke’s core budgets for university-wide institutes are intended to cover those costs that cannot be supported by external grants (see Practice #6). Creating these budgets requires a detailed analysis of current and expected expenditures for each institute. The director of OIPM works with each of the institute directors to create a long-term financial plan and to identify those areas where institutional support is likely to be required.
2. Defining Philanthropy Projections

Large centers and institutes often depend on philanthropic contributions to support some of their activities. Yet in many cases, actual contributions fail to meet early expectations. OIPM helps institute directors build reasonable projections for donations, evaluate necessary levels of development staff, and coordinate with broader university development activities.

3. Conducting Faculty Gap Analyses

OIPM helps institute directors think through how they will add the faculty necessary to build the expertise required by the institute. The hiring plan includes the number and type of faculty needed, the expected timing of faculty hires, and funding sources. It also lays out opportunities for joint hiring with other departments and colleges on campus.

4. Mapping Critical Dependencies

OIPM also makes sure that institute directors have thought through the sequencing of activities over the first few years, to determine when critical people, equipment, partners, and funding sources need to be in place.

5. Developing Contingency Plans

Recognizing that even the best plans depend on critical assumptions that may be invalid, OIPM helps institute directors to think through where their plans might go awry and to agree on potential responses. If a major donor backs out or the National Institutes of Health (NIH) mandates 20 percent budget cuts, for example, the institute director will have a backup plan.

Implementation Considerations

Full-Scale Office Most Applicable to Larger Institutions

Creating an entire office to support university-wide multidisciplinary institutes makes sense only at a certain scale. Part of the rationale for the OIPM is to ensure that Duke’s significant institutional investment is managed well. However, even institutions that cannot justify an entire office can find ways to support center directors with an experienced manager.

In Duke’s case, where millions of dollars are being invested annually to support university-wide institutes, a small office supporting the full range of institutes is a relatively small cost to support and protect such a large investment.

Emphasizing Support Role to Minimize Faculty Resistance

OIPM was explicitly created to support the directors of the institutes and affiliated centers. Its approach is not to dictate but to offer advice and guidance. OIPM’s development of customized performance metrics is an excellent example of how it does this. As a result, it has met with little resistance to date.
Practice #8: Launch Specialist

Streamlining the Center Launch Process

Universities acknowledge that the first six months of a center are critical. Unfortunately, center launches are typically left to faculty and staff with neither the experience nor the desire to manage the process. Delays in hiring administrative and technical staff, opening project accounts, purchasing equipment, and ensuring implementation of intellectual property and compliance policies waste time, risk alienating key stakeholders, and may delay research results. Purdue University addressed this dilemma by developing a new position—a center launch specialist who can support the simultaneous launch of multiple centers while scientific directors focus on advancing the research agenda.

Plug-and-Play Infrastructure

Like Duke, Purdue University has made major efforts to institutionalize multidisciplinary research, specifically by creating Discovery Park in 2001, a “campus within a campus” devoted to large-scale collaborative research. Covering 40 acres, it includes 102,000 square feet of laboratory space, 59,000 square feet of office space, and $25 million in shared equipment as well as temporary research space for corporate and university partners.

Discovery Park represents an innovative approach to the management of multidisciplinary research that could be called a “plug-and-play infrastructure” (see Practice #16). It is built around 11 major centers that host a constantly changing portfolio of “project centers” (similar to UAB’s “virtual centers,” see Practice #14). The facility includes flexible and shared space as well as dedicated administrative support for all centers within Discovery Park.

A Managing Director for Launching Centers and Institutes

Research teams across campus compete for space in Discovery Park, and each year four to six new centers are launched. This “high-throughput” approach makes it essential that the launch process flow smoothly.

Purdue addressed the launch issue by creating a new position—Managing Director for Launching Centers and Institutes (MDLCI) in 2007. The first holder of the position, Dave Kotterman, had extensive experience working in industry as well as with academic research centers on campus.

The MDLCI leads new centers through a three-part process: launch, startup, and daily operations. Focusing on management-related aspects of establishing the new unit, like completing formal paperwork, recruiting and hiring personnel, and establishing financial reports, the MDLCI ensures the long-term stability of a new center while allowing the scientific director to focus on research. The launch specialist has identified 22 key activities that he engages in during the three phases of establishing a new center. Fig. 3.1

Funding the Position

Purdue’s launch specialist has created an efficient and repeatable process for launching new centers, and can now manage two to four center launches simultaneously. A portion of the launch specialist’s salary can be charged directly to each of the grants being managed. At Purdue, the expectation is that the chief research officer will continue to cover at least half of the launch specialist’s salary in order to provide a backstop as well as flexibility in time allocation. Fig. 3.3
### Twenty-Two Key Activities of Purdue’s Dedicated Launch Specialist

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<th>Launch Phase</th>
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<td>Center Grant Awarded</td>
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<td>Complete formal center approval process</td>
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<tr>
<td>Complete sponsor award document and contracts</td>
<td>3</td>
</tr>
<tr>
<td>Locate and confirm office and lab space</td>
<td>4</td>
</tr>
<tr>
<td>Establish strategic and tactical plans</td>
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<tr>
<td>Train and transfer responsibility to permanent managing director</td>
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<tr>
<td>Confirm communication with sponsor</td>
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<tr>
<td>Review personnel performance</td>
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<tr>
<td>Publish financial and performance reports</td>
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<tr>
<td>Resolve faculty conflicts of interests</td>
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<tr>
<td>Resolve IP and compliance issues</td>
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</table>

**Time saved reinventing the business-process wheel…**

> “There’s such an experience curve. We’ve launched many centers, we know exactly what needs doing, and we have the templates for doing it. The power is in reducing the administrative burden on faculty, driving down waste, and adding value in a process to a function that faculty previously thought of as a drain to their research budget.”

Dave Kottermann  
Managing Director for Launching Centers and Institutes  
Purdue University

Source: University Leadership Council interviews and analysis.
<table>
<thead>
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<th>Start-up Phase</th>
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<tr>
<td>Define performance metrics</td>
<td>Identify internal and external stakeholders</td>
<td>Convene executive and advisory committees</td>
<td>Organize kickoff meetings</td>
<td>Advertise, recruit, and hire personnel</td>
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<tr>
<td>Coordinate review meetings with directors and deans</td>
<td>Communicate with institutional partners and subcontractors</td>
<td>Develop financial and performance report format</td>
<td>Create website</td>
<td>Ensure appropriate cyberinfrastructure security standards</td>
</tr>
</tbody>
</table>

...reinvested in coordination and relationship-building

**Courting Key Players**

“By now, I’ve worked with most of the deans, center directors, and major external partners. We know what to expect from each other, and I know where to go for quick decisions. I represent a singular, consistent face. Because of the established trust, I’m more likely to get my calls returned promptly than a new face off the street.”

Dave Kotterman  
Managing Director for Launching Centers and Institutes  
Purdue University
Purdue believes that having a launch specialist also gives them an advantage in competing for new grants. Funding agencies want to see that an institution has a track record of success in managing large-scale grants and has resources already in place to support them.

**Discovery Park’s Impact**

Discovery Park was launched as part of an effort to bolster Purdue’s ability to win and manage large-scale multidisciplinary collaborations. Its impact over the past six years has been institution-wide. Discovery Park now houses two Engineering Research Centers (ERCs), a NASA center, two NIH centers, and a Clinical and Translational Science Award (CTSA) grant, among others. Moreover, more than half of Purdue’s growth in research expenditures between 2002 and 2008 has come from Discovery Park projects. Purdue’s launch specialist has personally been involved in 28 percent of all Discovery Park funding over the past five years. Fig. 3.4

**Implementation Considerations**

*Optimized for High Throughput*

The creation of Discovery Park involved the investment of $100 million, a scale justified by the strategic importance of large-scale multidisciplinary research for Purdue and the expectation of a high volume of projects to leverage the facility. Clearly, only a handful of institutions have the resources and the level of activity that would justify such an investment. But while the launch specialist position was created to meet the needs of Discovery Park, it could be leveraged in a broad range of situations. Many campuses are launching three or four new centers a year, and the launch specialist can also be used at other phases in the center life cycle.
Purdue’s Launch Specialist Salary Support Model

Fig. 3.3

Launch Specialist Salary Support

Number of Centers in Launch Phase Simultaneously

Source: University Leadership Council interviews and analysis.

Plug-and-Play Infrastructure Fuels Extramural Funding

Fig. 3.4

Selected Discovery Park Accomplishments, 2002–2008

Run of multidisciplinary research wins... ...contributes outsize share of total research growth

2 ERCs
2 NIH Centers
CTSA Grant
Kauffman Campus Grant
ADVANCE Grant
300 Faculty Recruits
40 Patents
24 Startup Companies

Extramural Research Funding, in Millions

IV. Build-as-You-Go Shared Services

How Can We Improve the Quality of Administrative Support Across All of Our Centers?

Best Practices

#9 Center of Excellence Channeling

#10 Distributed Grant Writer Network
How Can We Improve the Quality of Administrative Support Across All of Our Centers?

Typical University Problem: Supply of Administrative Support Is Mismatched to Actual Need

Centers and institutes are typically organized as independent administrative units. As a result, administrative positions are duplicated across multiple centers. Some centers are over-resourced while others lack the basic staff and skills that they need to support faculty and comply with regulations. However, center directors and faculty are often resistant to the idea of sharing staff with other centers or institutes, preferring to stay with their own inadequate staff rather than trust the central administration to provide superior services.

Best Practitioner Approach: Create Shared Services Tailored to the Needs of Multidisciplinary Research Units

Strengthening existing administrative services and allowing centers to opt into the service is a cost-effective way of building efficiencies and improving service levels without imposing rigid requirements on researchers. Administrative positions that report jointly to both unit leaders (deans or center directors) and central administrators enable responsiveness to faculty needs while maintaining high quality standards, realizing new levels of efficiency, and offering greater professional opportunities for administrative staff.

Case Profiles

Practice #9: Center of Excellence Channeling

**University of California, Berkeley (Berkeley, California)**

Administrative unit from top-performing center offers services to other centers

Key Attributes:
- Existing administrative unit established as a separate research service organization
- New unit absorbs, retrains, and redeploys staff from centers that opt in
- University offers a comprehensive range of administrative services to related centers

Practice #10: Distributed Grant Writer Network

**University of Missouri-Columbia (Columbia, Missouri)**

Central office coordinates grant writers based in individual units

Key Attributes:
- Grant writers based in units preserve responsiveness to local needs
- Network of grant writers encourages specialization and collaboration
- Professional staff support large-scale multidisciplinary grants
Typical University Problem

Supply of Administrative Support Is Mismatched to Actual Need

Centers Managed as Independent Fiefdoms

Centers are separate administrative units, created so researchers from across the university can come together to focus on topics or pursue lines of inquiry that are not well-supported by traditional disciplinary units. While this approach allows for intellectual flexibility, it also typically creates bureaucratic inflexibility, with each center acting as an independent organization, fiercely protective of its own staff and budget.

Administrative Balkanization Perpetuates Inefficiencies and Compliance Risks

This administrative atomization results in a mismatch between the actual support needs of a given center and its staffing level. Positions are unnecessarily duplicated across centers (HR, accounting, Web design, etc.) while at the same time smaller centers lack backup when key staff are unavailable. Centers use nonstandard processes, making it difficult to cross-train or share staff with specialized training to deal with more complex compliance issues. Staff also lack opportunities for skill development and advancement. As a result, neither center directors, faculty, staff, nor central administrators are satisfied with the level of service.

Despite Dissatisfaction with the Status Quo, Institutions Still Resist Shared Services

While creating shared services—allowing or requiring a group of centers to use a single central provider for IT, HR, accounting, or other services— is an obvious solution, there are major barriers to this approach. Building a new shared service typically requires a significant institutional investment that must be scaled to meet future, not just current, needs. Institutions run the risk of overbuilding to meet a projected future demand that never materializes. Perhaps most importantly, center directors and affiliated faculty are often deeply skeptical of the quality and responsiveness of centrally provided services. Without faculty buy-in, no level of institutional investment will lead to a more efficient use of resources.
Best Practitioner Approach

Create Shared Services Tailored to the Needs of Multidisciplinary Research Units

Identify Opportunities for Sharing Administrative Support Across Multiple Centers

The vast majority of centers require some level of dedicated administrative support, but few centers require full-time support across the entire range of business functions (HR, finance, communications, etc.). Sharing staff resources across centers, departments, and colleges enables centers to access skilled professionals when needed while at the same time ensuring that staff are not underutilized.

Channel Administrative Work to High-Performing Groups in Existing Units

On most campuses, administrative services are duplicated across many centers. While duplication and variation in service quality are challenges, they also offer an opportunity to leverage high-performing units. Rather than building a new shared service unit from scratch, expanding an existing unit reduces the initial investment and makes it easier to convince faculty that the new unit will offer superior service levels.

Build Shared Services on an Opt-In Basis, Attracting New Users Through Demonstrated Superior Performance Rather Than Commanding Participation in a Consolidated Provider

Allowing center directors to decide whether to use the new service or to maintain their existing staff empowers faculty and at the same time forces the new service to demonstrate its superiority to existing support services. Allowing faculty to opt in also enables the service to scale with demand. A relatively small initial central investment broadens the service, and as additional units join, their contributions enable the new unit to grow.

Emphasize Quality Improvements to Center Directors Concerned About Giving Up Their Administrative Staff

Faculty are often suspicious of efforts to centralize administrative support, seeing them as cost-saving initiatives implemented at the expense of responsiveness or quality. New shared services, particularly those offered on an opt-in basis, must be able to demonstrate that they will provide a higher level of service than faculty currently receive.

Design a Networked Model for Administrative Staff Across Units to Balance Workload and Support Specialization

Coordinating staff in the same functional area across units can be an alternative to pulling them out of their units into a central service provider. Each unit can leverage the expertise of all of the members of the network and access backup capacity when needed. At the same time, units are able to maintain the flexibility of having their own dedicated administrative support.

Create Dual Reporting Lines for Administrative Staff, Both to Local Unit Heads and to a Central Administrator

To address faculty concerns that centralized services will not be responsive, staff in the new unit typically have a dual reporting structure. They report to the local unit (dean, center director, etc.) but also to a central administrator. While reporting locally ensures that administrative staff remain responsive to individual faculty needs, reporting centrally facilitates coordination and also presents training and development opportunities that local units could not provide on their own.
Build-as-You-Go Shared Services

These diagnostic questions reflect the essential ingredients of approaches used by best-practice institutions. Members may use them to determine if the full range of best practices is being used on campus and to evaluate whether absences represent an opportunity for investment or action.

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<td>2. Does the university take advantage of opportunities to leverage high-performing units to improve administrative support services for centers?</td>
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<td>3. Does the university provide services to centers on an opt-in basis, attracting new users through demonstrated superior performance and allowing service to scale with demand?</td>
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<td>4. Can new shared services demonstrate to faculty that they will provide a higher level of service than faculty currently receive?</td>
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<tr>
<td>5. Are administrative activities across units coordinated in order to balance workload and to support specialization?</td>
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<td>6. Are administrative service staff offered or required to receive standardized training and to continue professional development?</td>
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<tr>
<td>7. Does the central administration share the costs and reporting lines of administrative service staff in local units?</td>
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</table>
Practice #9: Center of Excellence Channeling

Improving Quality While Preserving Responsiveness

At most universities multidisciplinary centers and institutes are independent units providing their own administrative services, leading to resource inefficiencies and inconsistent service quality. Many, however, are reluctant to implement university-wide shared services due to faculty skepticism and significant up-front costs. The University of California, Berkeley mitigated these concerns by choosing to expand the offerings of an existing high-performing administrative unit. In July 2008, Research Enterprise Services (RES) was launched to provide a range of support services to seven select centers on campus.

Elevating a Top Performer to a Shared Service

Although the University of California, Berkeley had been contemplating creating a research administration unit that would serve multiple centers for years, it lacked the funds and feared that faculty might be resistant. The university’s opportunity came when an existing unit, the research administration group at the California Institute for Quantitative Biosciences (QB3), successfully competed for the $500 million BP biofuels grant. QB3, which involves 180 researchers across three University of California System campuses (Berkeley, San Francisco, and Santa Cruz), was asked to prepare Berkeley’s proposal. The grants and contracts team at QB3 had six weeks to turn around one of the largest multi-institutional grant proposals in history. Their success (in partnership with The Lawrence Berkeley

Case in Brief

University of California, Berkeley

Berkeley, California

Administrative unit from top-performing center offers services to other centers

- Existing administrative unit established as a separate research service organization
- New unit absorbs, retrained, and redeployed staff from centers that opt in
- University offers a comprehensive range of administrative services to related centers

Elevating Staff Skills, Expanding Service Scope

Fig. 4.1

Individual center staff reassigned to RES for retraining

Training

- Financial reporting
- Agency grant procedures
- Specialized hiring
- IS skills

Service Center

Staff provide comprehensive grants management and business services to previous directors and other centers concurrently

Source: University Leadership Council interviews and analysis.
Scaling the Multidisciplinary Research Back Office

Overview of Research Enterprise Services

Beth Burnside  
Vice Chancellor for Research

Diane Leite  
Assistant Vice Chancellor, RES

Grants Management and Business Services

Large-Scale Grants
- Grants Analyst
- Program Development
- Writer
- Program Support

Contracts and Grants
- East Campus Analysts
- Specialists
- Compliance
- West Campus Analysts
- Specialists
- Human Subjects

Purchasing
- Manager
- Sourcing Specialists
- Reimbursement

Receiving
- Manager
- Assistants
- Storekeeper

Human Resources
- Talent Manager
  - Payroll Manager
    - Analysts
    - 6 FTEs
    - 9 FTEs

Communications
- Editing
- PR
- 5 FTEs

Resources Management
- Pricing
- Operations
- 3 FTEs

Financial Analyst
- 6 FTEs
National Laboratory and the University of Illinois at Urbana-Champaign) convinced the administration to expand their services to other units on campus. It also convinced faculty across campus that having access to this staff could significantly improve the level of support they received.

Research Enterprise Services (RES) was not unprecedented at Berkeley. The College of Engineering had created a similar unit in 2005, known as Engineering Research Support Organization (ERSO), to support centers with significant involvement of engineering faculty (and ultimately to support engineering faculty more broadly). Concerned that expanding ERSO’s scope might render it too large to remain responsive to faculty needs, the university decided instead to create a separate unit (RES) to support the cluster of institutes related to QB3.

Reallocating and Retraining Staff

The administrative staff at the centers that decided to use RES were retrained and then reassigned to one of the seven centers. Assignment depended on the needs of each center and the skills of the individual staff members. Some ended up where they started, while others were reassigned to a different center within the group. Adjusting the mix of staff over a larger number of centers allows RES to make optimal use of staff with different levels of training and experience. Distributing the staff physically across the centers ensures that they are easily accessible to faculty and responsive to requests. Center directors receive higher levels of service from better trained staff while RES takes responsibility for hiring, evaluation, and training, Fig. 4.1

In its first year, RES expanded from the original 27 administrative staff members in QB3 to 50 staff in RES. Much of the funding for this expansion came from reassigning existing budget lines. Berkeley returns 7.5 percent of direct costs to research units to cover administrative costs. As staff are reassigned to RES, their budget lines follow them. RES was budgeted at 6 percent of direct costs in order to build in a certain level of cost savings, Fig. 4.2

Improving Service Quality

The primary objective of RES, however, was to improve service quality. The scale of RES allowed not only for more flexible access to better trained

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<thead>
<tr>
<th>Support Activity</th>
<th>Typical Center</th>
<th>RES</th>
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<tbody>
<tr>
<td>Reporting</td>
<td>No/infrequent reporting</td>
<td>Real-time access with portfolio and project drill-downs</td>
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<tr>
<td>Staffing</td>
<td>Director spends significant time interviewing, managing staff members</td>
<td>RES hires, supervises all administrative personnel</td>
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<tr>
<td>Pre-award Support</td>
<td>PIs responsible for all proposal content</td>
<td>PIs focused exclusively on science content</td>
</tr>
<tr>
<td>Reimbursement</td>
<td>Six months</td>
<td>Two weeks</td>
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Source: University Leadership Council interviews and analysis.
staff, but also for an intranet portal that provides the units RES supports with tools for financial reporting, expense reimbursement, staffing, and effort reporting. Rolling out the shared service offered an opportunity to standardize and streamline a number of systems essential to research administration. At the same time, the new tools significantly improved service levels, increasing the appeal of the unit to potential client centers. Fig. 4.3

While Berkeley’s primary goal in creating RES was to elevate service quality, not save costs, the university had every reason to believe that it could achieve both in creating this unit. ERSO, the unit on which RES was modeled, has reduced the College of Engineering’s research administration headcount from 100 FTEs in 2005 to 85 FTEs in 2008 through attrition alone. Additionally, ERSO has identified and eliminated $8 million in overdrafts and has increased effort reporting compliance to 98 percent. Fig. 4.4

Implementation Considerations

**Investment in Shared Service Unit Should Reflect Scale of Research Enterprise**

At the time that RES was created, Berkeley not only had an existing high-performing administrative unit (QB3) on campus, but also a range of large centers in need of sophisticated administrative support. This fact, in addition to the enormous scale of the university’s research enterprise, justified a central investment in research administration services. It may not be necessary or even possible to create a shared service unit with the scale and scope of RES at smaller or less research-intensive universities. The key lesson offered by this case, however, is that irrespective of its size, an existing and highly respected administrative team can be leveraged and gradually expanded to provide opt-in service to a wider campus constituency.

**Institutions Should Attempt to Build in Cost Savings**

The funding model for RES, based on a reallocation of existing streams of indirect costs, allows RES to grow without requiring client centers to contribute discretionary funding. If RES is able to survive on 6 percent of direct costs rather than 7.5 percent as planned, it will create significant savings for the university while at the same time improving service quality.

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**Seeking to Emulate Engineering Shared Service Cost Savings**

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<th>2005</th>
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<tr>
<td>100 FTE</td>
<td>85 FTE</td>
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<table>
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<tr>
<th>2005</th>
<th>2008</th>
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<tbody>
<tr>
<td>$8 M</td>
<td>$0 M</td>
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</table>

$1 M Savings*

98% effort reporting compliance

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* Assuming 12.5 percent interest rate.

Source: University Leadership Council interviews and analysis.
Practice #10: Distributed Grant Writer Network

Large-Scale Proposals Require Professional Support

Many aspects of center management have grown so complex and time-consuming that it no longer makes sense to expect researchers to accomplish them without significant professional support. Proposals for large-scale multidisciplinary grants present a particular challenge. They demand effort and expertise that often exceed the capacity of an individual researcher. The University of Missouri-Columbia’s Grant Writer Network provides a centrally coordinated group of professional grant writers who remain based in individual units. The distributed network allows for specialization and surge capacity for large projects, encourages multidisciplinary collaboration, and furthers the extramural funding agenda of the institution.

Typical Approaches to Grant Writing Support

Universities commonly use a combination of four basic approaches to proposal support. The most common option is to offer faculty release time. However, while faculty are best qualified to develop the research plan, shifting their attention away from valuable instructional duties and asking them to focus instead on the logistical and bureaucratic aspects of proposals may not be the most productive use of their time. A second approach is to hire external consultants. While they bring specialized expertise, the expense of this approach makes it feasible only in isolated cases. Universities may also choose to create an institutional proposal development team to handle large cross-college proposals. Faculty, however, often doubt the quality and responsiveness of a team that is not based in their unit. A final approach is to place grant writers in individual units. While these grant writers may be responsive to faculty needs, they tend to perpetuate a siloed mentality and fail to surface new opportunities for collaboration.

The Grant Writer Network

The University of Missouri-Columbia’s Grant Writer Network overcomes the disadvantages of these typical approaches to grant writing support. The network includes 3 staff members in the Office of Research and 12 based in centers and colleges across the university. These individuals meet regularly to share information, and they collaborate on larger grants. (Each large-scale grant proposal is automatically assigned two grant writers.) The network encourages multidisciplinary research on campus by identifying potential collaborators and generally furthers the extramural funding agenda of the institution. The scale of the network also enables Missouri to offer additional
services to faculty members, such as an annual grant writing institute.

Building the Network

The Office of Research has grown the Grant Writer Network by partnering with units around campus to jointly fund new grant writing positions. The first step was to hire a director of grant writing and publications for the Office of Research in 1999. The university then provided the director with funding to partner with a single academic unit (center, school, or department) each year to hire a new grant writer to be based in the unit. During the first year, the unit agrees to fund half of the position’s cost and the Office of Research funds the other half. Each jointly hired grant writer is based in the Office of Research for the first year to receive training and support from the director before being permanently relocated to the home unit. After the first year, the Office of Research continues to fund 5 percent of the grant writer’s salary while the unit covers 95 percent. The grant writer has access to flexible space in the Office of Research for work on collaborative grants and continues to share resources and expertise with the network.

Within a year after the first grant writer was hired with support from the Office of Research, a number of divisions and units across campus became so enthusiastic about the prospect of having a grant writer that instead of waiting for support from the Office of Research they decided to fully fund the position themselves. While some units chose to hire grant writers independent of the network, they soon found that setting expectations and providing professional training and development was problematic. It had become clear that participating in the network had real benefits for individual units.

Leveraging the Network

Creating the Grant Writer Network has contributed to a dramatic increase in the volume and success of Missouri’s large-scale multidisciplinary grant proposals. Prior to the launch of the Grant Writer Network in 1999, the university had won only three large-scale multidisciplinary grants. Between 1999 and 2007, it won 25—a result of the quality of research taking place on campus and the unprecedented support provided by its network of professional grant writers.

The role of the Grant Writer Network on campus now transcends simple proposal management. It acts as what one administrator called “the distributed nervous system of the research organization on campus.” The grant writers not only have their fingers on the pulse of the federal funding agencies, but they are also the only group on campus with a comprehensive knowledge of the entire research enterprise. When the development office was recently contacted by a donor interested in supporting a specific research area, they sought the Grant Writer Network’s help in identifying the appropriate investigators. The network has played an important role in fostering communication and collaboration across what was once a very siloed university.

Implementation Considerations

Distributed Network Especially Beneficial at Decentralized Institutions

The model of a network of professional administrators housed both in the central administration and in individual units can be transferred to a broad range of institutions and can be applied beyond grant writing to other support functions as well. The benefits are likely to be highest on campuses with a decentralized structure.

Broad Range of Metrics Demonstrate Return on Investment

A network like Missouri’s can begin with a relatively small investment in the form of support for a single FTE in a central office and a half FTE hired and funded jointly with a partnering unit. However, while startup costs are relatively low, it is still important to collect success metrics to demonstrate a return on investment. Missouri tracks a broad range of metrics and regularly evaluates the performance of the Grant Writer Network.
V. Objective, Actionable Evaluation Criteria

How Can We Create Actionable, Consistent Metrics for Multidisciplinary Units?

Best Practices

#11 Center Scorecard Configurator
#12 Multidisciplinary Niche Mapping
#13 Fractional Credit Calculator
How Can We Create Actionable, Consistent Metrics for Multidisciplinary Units?

**Typical University Problem: Undisciplined Evaluation Prevents Objective Comparisons, Obscures (Non-financial) Contribution**

Most universities lack an objective, regular review process for multidisciplinary centers and institutes. Centers use inconsistent metrics and are reviewed irregularly in closed-door negotiations. Resource allocation decisions are often disconnected from performance evaluations, and it can be challenging to distinguish the impact of the center from that of the home departments of its affiliated faculty.

**Best Practitioner Approach: Develop Objective Metrics That Enable Portfolio-Wide Comparisons While Recognizing the Distinct Missions of Individual Centers**

Regular review cycles for all centers and institutes enable objective comparisons and form the basis for budgeting decisions. Evaluation metrics are developed by individual center directors in consultation with university administrators, striking a balance between standardization and flexibility. Sophisticated universities are attempting to quantify the unique value added by multidisciplinary units, providing a tool to better allocate research investments among centers and departments.

**Case Profiles**

**Practice #11: Center Scorecard Configurator .............................................................. p. 81**

*Duke University (Durham, North Carolina)*

Center directors develop customized performance metrics from a standard set of options

**Key Attributes:**

- Multidisciplinary program office develops list of potential metrics
- Center directors select subset of metrics customized to their specific mission
- Broad set of metrics avoids overemphasis on extramural funding success

**Practice #12: Multidisciplinary Niche Mapping ......................................................... p. 84**

*University of California, San Diego (San Diego, California)*

Co-citation analysis identifies research strengths at the intersection of traditional disciplines

**Key Attributes:**

- Specialized bibliometric analysis assigns publications to interdisciplinary clusters
- Clusters with highest publication share represent institutional strengths
- Comparison of publication and reference share indicates previous success or emerging dominance

**Practice #13: Fractional Credit Calculator ................................................................. p. 87**

*Virginia Polytechnic Institute and State University (Blacksburg, Virginia)*

Formula calculates impact generated by investment in institutes

**Key Attributes:**

- Rules assign partial credit for research output to institute
- Current attributable grant revenue is compared to earlier investment to calculate leverage factor
- Leverage factor enables comparisons of investment impact across units
Typical University Challenge

Undisciplined Evaluation Prevents Objective Comparisons, Obscures (Non-financial) Contribution

Individualized and Irregular Review Process Prevents Comparisons Across Centers

At most institutions the center review process focuses on evaluating individual centers in isolation. Each center has its own time frame for review and often defines its own unique performance metrics. Individual directors are evaluated behind closed doors and negotiate one-off deals for renewed institutional support. Such an approach makes it impossible to set clear performance standards or to hold directors publicly accountable for performance. Without objective and transparent reviews, personal and political considerations drive the process.

Center Performance Reviews Are Not Linked to Resource Allocation Decisions

Center reviews often become performance reviews for the center director, resulting in recommendations on where to improve or which new research avenues to pursue. When centers undergo individualized reviews, funding decisions are made with no evaluation of the relative merits of different centers.

Research Performance Metrics Aggregated at the Disciplinary Level, Missing Institutional Strengths in Multidisciplinary Niches

In the competition for faculty and graduate students, rankings of research eminence at the departmental level play an important role in shaping an institution’s reputation. At the same time, such rankings miss excellence in multidisciplinary niches simply because they cut across disciplinary categories. The higher value placed on departmental excellence creates disincentives to invest in multidisciplinary research and may obscure some of the institution’s greatest research strengths.

Difficult to Evaluate Performance and Calculate “Value Add” Given the Challenge of Allocating Credit for Research Output Between the Center and the Researchers’ Home Departments

Grants are awarded to faculty members who are typically affiliated with a department as well as one or more centers. Determining whether the department or the center is responsible for the grant is often impossible, and many institutions “double count,” assigning equal credit to both for the sake of encouraging collaboration. However, without some method for allocating credit, administrators have no way to determine the impact of their investments in departments or centers.
Best Practitioner Approach

**Develop Objective Metrics That Enable Portfolio-Wide Comparisons While Recognizing the Distinct Missions of Individual Centers**

Develop a Metrics “Confi gurator” That Combines a Set of Common Core Metrics for the Entire Portfolio with Customized Metrics for Each Unit’s Distinctive Purpose

Broad performance comparisons across centers require a set of common metrics, but differences in mission and activities make any one-size-fits-all system of metrics inappropriate. An alternative approach is to define a broad set of standard metrics and allow center directors to select a subset of those metrics that best captures their goals.

Use Citation Analysis to Create a Map of Research Topics That Highlights the Institution’s Specific Strengths in Multidisciplinary Niches

A bibliometric analysis of the university’s output can correct for a traditional emphasis on disciplines. Building new taxonomies from the ground up—starting with individual references and grouping them with the works they cite—can identify multidisciplinary strengths that may have gone unrecognized because they do not align with standard disciplines.

Assign Partial Credit to Centers for Research Output Proportional to Their Role in Supporting Research Activity

While analyzing the precise impact that a center makes may be impossible, a handful of simple assumptions about the relationship between the center’s contribution to a given research grant and the share of research output for which it is responsible can allow an estimate of the effectiveness of center investments in generating additional extramural funding. Using a three-year lag between center investments and research output attributable to the center provides a rough estimate of the impact of the center and a tool for evaluating different mechanisms for fostering growth in research funding.
Objective, Actionable Evaluation Criteria

These diagnostic questions reflect the essential ingredients of approaches used by best-practice institutions. Members may use them to determine if the full range of best practices is being used on campus and evaluate whether absences represent an opportunity for investment or action.

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<td>2. Are the metrics used to evaluate each center tailored to its particular mission?</td>
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<td>3. Have the center director and provost agreed on metrics that should be shared across centers?</td>
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<td>4. Does the university have a method for measuring its strength in multidisciplinary research fields?</td>
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<td>5. Does the university have a means of assigning credit for multidisciplinary research between departments and centers?</td>
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<td>6. Does the university have a way of evaluating the impact of its investment in centers on extramural funding?</td>
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Practice #11: Center Scorecard Configurator

Using Metrics to Balance Autonomy and Standardization

A common failure in center performance evaluation is an inappropriate choice of metrics. Universities tend to err toward one of two extremes. In many cases, the center director creates a unique set of metrics that, while reflecting the center’s particular mission and priorities, makes comparisons impossible. At the other extreme, some universities attempt to measure all centers by the same yardstick, creating perverse incentives that steer centers away from their most important goals. Duke’s Center Scorecard Configurator combines the strengths of both approaches, allowing for flexibility as well as standardization.

A Menu of Multidisciplinary Metrics

Duke University has seven university-wide institutes, each with a broad but distinct mission, such as genomic science, humanities, or ethics. The Office of Interdisciplinary Program Management (OIPM) provides management advice and support to the institute directors, serving their needs while at the same time ensuring that Duke’s significant institutional investment is well managed.

In 2008, the director of OIPM worked with the institute directors to develop a common set of performance metrics. Together, they generated a list of metrics in a broad range of areas, including funding, faculty engagement, collaboration, and undergraduate education. The majority of the metrics data could be compiled directly by OIPM, taking the burden off of institute directors and ensuring the objectivity of the data.

Tailoring Measures to Mission

For any given institute, some of these metrics will be relevant while others will not. In consultation with OIPM, each director developed a customized set of metrics for his or her institute using a combination of measures from the list. Customization ensures that the metrics by which the center’s success will be evaluated align closely with its mission. For example, the metrics for the Social Science Research Institute emphasize education and research, those of the Nicholas Institute for Environmental Policy Solutions focus on policy impact, and those for the John Hope Franklin Humanities Institute highlight scholarship and outreach. This approach enables OIPM to track certain common metrics across all institutes for the purposes of budgeting and accountability, while allowing for variation according to mission.

The Scorecard Configurator Supports Duke’s Budget Model for Centers

When centers are funded out of indirect cost recovery, their ability to win extramural funding becomes the ultimate measure of their success, to the exclusion of other important activities such as involving undergraduates in research or impacting policy debates. Duke prevents this situation by using a scorecard configurator that supports its broader budget model approach to multidisciplinary centers and institutes (see Practice #6). By shifting to core budgets provided by the provost, the institutes become less dependent on external grants, freeing them up to pursue a broader range of activities in fulfillment of their respective missions. An institute’s extramural funding is no longer the only measure of its success. The Center Scorecard Configurator recognizes a

Case in Brief

Duke University
Durham, North Carolina

Center directors develop customized performance metrics from a standard set of options

- Multidisciplinary program office develops list of potential metrics
- Center directors select subset of metrics customized to their specific mission
- Broad set of metrics avoids overemphasis on extramural funding success
Duke’s 47 Proposed Metrics for University Institutes and Centers

Fig. 5.1

**Funding**
- Extramural Grants
- "Attributed" Extramural Grants
- Administered Grant F&A
- "Attributed" Grant F&A
- University Subsidy (Operating Budget)
- Gifts
- Unrestricted Gifts
- Annual Operating Budget
- University-Provided Funding
- Service Revenue
- Service "Customers"

**Resources**
- Assigned Square Feet (On-site—Duke-owned)
- Assigned Square Feet (Off-site—rented/leased)
- Assigned Research-Program Square Feet
- Direct Funding
- Administrative FTEs
- Grant Administrative FTEs
- Research/Program Support FTEs
- Administration Expenses

**Extramural Grant Activity**
- Proposals Submitted
- Proposals Awarded
- Success Rate
- PIs Supported

**Efficiency**
- Administered Grant Award Amount/Research-Program Square Feet
- F&A on Administered Award/Research-Program Square Feet
- Program Annual Budget/Administrative Annual Budget
- Direct to Indirect FTEs
- Annual Grant Expenditures/Grant Administrative FTEs

**Education**
- Students Taught/Trained
- Students Enrolled in UIC Degree/Certificate Programs
- Students Receiving UIC Degree/Certificate
- Students Participating in Sponsored Activities

**Faculty**
- Tenured/Tenure Track Faculty
- Faculty
- Peer-Reviewed Publications
- Outreach Publications
- Faculty Collaborations
- New Tenured/Tenure Track Faculty

**Interdisciplinary Activities and Outreach**
- Extramural Funding Attributed to UIC Pilot Funding
- UIC Assigned/Joint/Affiliated Faculty External Speeches, Testimonies/Talks
- Media Stories Citing UIC Assigned/Joint/Affiliated Faculty
- Symposia Events Held
- Unfunded but Externally Requested Activities
- Event Attendance

**Collaboration**
- Active Affiliate MOUs
- Active Affiliate MOUs—within Duke
- Active Affiliate MOUs—External Organizations

Source: University Leadership Council interviews and analysis.
broader variety of goals, creates a system for promoting those goals, and holds institutes accountable for their performance against them.

**Implementation Considerations**

**Metrics Linked to Funding Model**

Duke’s approach to metrics largely stems from the provost’s significant investment in seven university-wide institutes. The provost needs a mechanism to gauge center performance, and institute directors have a financial incentive to comply with reporting requirements. The OIPM coaches institute directors on the selection of metrics and generates much of the necessary data. Institutions with smaller investments in multidisciplinary research, however, can still benefit from an approach that tailors each center’s performance metrics to fit its mission while maintaining a small set of common metrics across all centers.

---

**Duke’s University Institutes’ Scorecards (Illustrative)**

**Tracked Across All Institutes**

**Customized for Each Institute**

**Social Science Research Institute**
- University funding/total funding
- Square feet per administrative FTE

**Nicholas Institute for Environmental Policy Solutions**
- University funding/total funding
- Square feet per administrative FTE

**John Hope Franklin Humanities Institute**
- University funding/total funding
- Square feet per administrative FTE

**Education and Research Metrics**
- Students graduated/trained
- Proposal volume and success rate
- Faculty collaboration

**Policy Impact Metrics**
- Newspaper stories citing faculty/staff
- External requests for consultation
- Number of outreach publications

**Scholarship and Outreach Metrics**
- Publications and citations
- Symposia and conference attendance
- Student participation in workshops/events

NOTE: The set of metrics listed for each institute here is illustrative. At the time of publication, the official metrics were still under development.

Source: University Leadership Council interviews and analysis.
Practice #12: Multidisciplinary Niche Mapping

Identifying Research Strengths at the Intersection of Traditional Disciplines

Multidisciplinary research units often compete with traditional departments for recognition and resources. While standard rankings typically provide clear evidence of strengths in major disciplines, they often miss pockets of excellence in multidisciplinary niches that fail to show up in common data sources. The University of California, San Diego (UCSD) leverages an innovative approach to co-citation analysis to build a bottom-up view of research competencies across the institution, ultimately identifying 10 multidisciplinary areas of global preeminence.

Common Disciplinary Metrics Obscure Strength in Multidisciplinary Niches

Despite growing interest and activity around multidisciplinary research, academic disciplines remain the basic units around which most research is organized. Academic departments are also the most common units by which to rank research activity. The National Research Council’s Survey of Research Doctoral Programs, one of the oldest and most prestigious rankings of research excellence, tracks research activity in 62 separate disciplines. *U.S. News and World Report* ranks 110 different graduate programs, and the National Science Foundation uses 127 disciplines in its bibliometric analysis. Academic Analytics, a newcomer to the rankings world, covers 172 disciplines. Fig. 5.3

Reducing the enormous breadth of academic research interests to just over 100 disciplinary categories has a number of negative implications, not the least of which is that such a high level of aggregation undercounts science at the intersection of disciplines. A department that leads the world in optical bioengineering, for example, might not rank highly in either biology or engineering. As a result, institutions experience pressure to invest in the kind of disciplinary excellence that registers on major rankings, potentially at the expense of more viable multidisciplinary research areas. Discipline-focused metrics also tend to favor larger departments at established institutions. The larger the chemistry department, for example, the more likely it will lead in publications and citations.

The Limits of Traditional Rankings

Fig. 5.3

<table>
<thead>
<tr>
<th>Disciplines Tracked by Major Rankings Bodies</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Research Council Survey of Research Doctoral Programs</td>
</tr>
<tr>
<td>U.S. News and World Report America’s Best Graduate Schools 2009</td>
</tr>
<tr>
<td>National Science Foundation Science and Engineering Indicators</td>
</tr>
<tr>
<td>Academic Analytics Faculty Productivity Index</td>
</tr>
</tbody>
</table>

Identifying Niche Strengths

While the University of California, San Diego (UCSD) is a highly ranked public research university, the National Science Foundation’s (NSF) citation analysis ranks UCSD number one in only two fields—oceanography and general engineering. UCSD’s strength in oceanography is no surprise given the global preeminence of its Scripps Institution of Oceanography. Administrators at UCSD, however, have felt that the rankings neglect their key strengths and recently sought a classification system that reflects the faculty’s own sense of the areas in which UCSD leads the world.

Turning Citation Analysis Upside Down

To identify areas of multidisciplinary strength, UCSD worked with Dick Klavans of SciTech Strategies, Inc., who has developed a novel approach to bibliometrics. Rather than starting with broad disciplines, Klavans builds relevant categories starting at the level of individual references. Using major publication databases, he has identified 40,400 clusters of related papers (based on citation patterns). He then assigns 5.6 million publications (from 2003 to 2007) to these clusters on a fractional basis, enabling him to calculate any particular individual’s or institution’s share of the total publications (or total citations) in each cluster. Klavans identified 626 clusters in which UCSD is a strong performer (i.e., generates at least half as many publications as the leader in the field).

Having more than 600 micro-level categories in which UCSD has relative strengths is not particularly useful,
however. Administrators want to identify a handful of major institutional strengths, so Klavans aggregated related clusters to produce 39 subfields broad enough to be recognized by researchers working in those fields. Dropping subfields that were subscale (fewer than 1,800 publications globally over the past five years) and focusing on those in which UCSD ranks first in terms of publication share or citation share, he identified 10 multidisciplinary areas in which UCSD is especially strong. Fig. 5.4

Measuring Multidisciplinary Competencies

Klavans’ analysis demonstrates that beneath the disciplinary rankings in which only oceanography and general engineering stand out, there are 10 clearly defined niches in which UCSD leads the world. Drawing on as few as 5 to as many as 20 different disciplines, these competencies are multidisciplinary research fields such as “-omic technology” (genomics, proteomics, bio-informatics), cerebral vascular imaging and neural functioning, non-linear dynamics and neuroscience, and optical bioengineering. Oceanography still appears (though not as the top niche), but it is now linked to instrumentation and earth sciences. Fig. 5.5

Since Klavans’ analysis is based on specific publications and references, it is possible to drill down and identify the specific faculty members who participate in each competency. One could even use this approach to identify faculty members at other institutions publishing in each area, allowing what Klavans calls a “fantasy baseball” exercise where an institution can calculate precisely how much their standing in a niche would increase with the addition of a specific faculty member.

Implementation Considerations

Klavans’ sophisticated bibliometric analysis makes most sense for large research universities where the complicated connections between hundreds of faculty researchers and the thousands of publications that they produce are impossible to visualize. The analysis, conducted for approximately $150,000, is likely to be more cost-effective for larger institutions.

<table>
<thead>
<tr>
<th>Niche Competencies</th>
<th>Publication Share</th>
<th>Reference Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>-omic technology and molecular basis of disease</td>
<td>1.51</td>
<td>1.97</td>
</tr>
<tr>
<td>Cerebral vascular imaging and neural functioning</td>
<td>2.36</td>
<td>3.10</td>
</tr>
<tr>
<td>Oceanography: Instrumentation and earth sciences</td>
<td>1.75</td>
<td>1.67</td>
</tr>
<tr>
<td>Non-linear dynamics and neuroscience</td>
<td>2.31</td>
<td>2.68</td>
</tr>
<tr>
<td>Optical bioengineering</td>
<td>1.45</td>
<td>1.61</td>
</tr>
<tr>
<td>Clinical aspects of biorhythm disorders and aging</td>
<td>1.11</td>
<td>1.44</td>
</tr>
<tr>
<td>Cellular control mechanisms</td>
<td>1.47</td>
<td>2.32</td>
</tr>
<tr>
<td>Genomic regulation</td>
<td>1.63</td>
<td>2.32</td>
</tr>
<tr>
<td>Behavior disorder (smoking, drinking, drugs)</td>
<td>1.38</td>
<td>2.22</td>
</tr>
<tr>
<td>Optics and plasma flows</td>
<td>1.41</td>
<td>1.86</td>
</tr>
</tbody>
</table>

Publication Share: The share of publications by researchers at a university divided by the share of publications of the largest competitive university. High publication share demonstrates leadership in current activity.

Reference Share: The share of references to researchers’ publications at a university divided by the share of references at the largest competitive university. High reference share is an indicator of past success.

Practice #13: Fractional Credit Calculator

Allocating Partial Credit to Evaluate Center Impact

For universities focused on growing overall research expenditures through major institutional investments in multidisciplinary research centers, it is critical to have a method for evaluating the performance of these investments. Yet because grants go to faculty who are members of a department as well as one or more centers, it can be difficult to determine the unique impact of multidisciplinary research units. Virginia Tech has developed a method for allocating credit for grants between colleges and multidisciplinary institutes as a tool for evaluating their institutional investments.

Counting on Multidisciplinary Research

Virginia Tech’s 2006 strategic plan sets an ambitious goal for the university—to grow total research expenditures from $291 million to $541 million over six years. This level of growth, the university believes, cannot be achieved simply by increasing colleges’ resources. In fact, administrators project that 63 percent of expected growth will come through research supported by multidisciplinary centers.

Institutes as Investment Vehicles

To drive such ambitious growth, Virginia Tech is counting on five university-wide institutes that cover a range of disciplines, including life sciences, applied science, and environmental sciences. Provost Mark McNamee likens Virginia Tech’s institutes to investment vehicles. That is, they are set up to fund research that will be performed primarily in existing units. Like venture funds, their mission is to seek out and support opportunities throughout campus. Across all five, the university has committed nearly $20 million annually to accomplish this goal. Fig. 5.6

Where Credit Is Due

With these ambitious growth targets and major investments in research, Virginia Tech faces the challenge of measuring performance and assigning credit for new grants received. They have encountered the perennial problem of how to credit research done by faculty with multiple affiliations on campus. If they count research expenditures based on where the research is performed, the colleges fail to receive credit for work their faculty carry out in an institute, but if they count expenditures based on the faculty’s college, the centers fail to get credit for their impact on research productivity. Fig. 5.7

Like many institutions, Virginia Tech has traditionally granted credit for research expenditures to both the performing unit and the faculty member’s home unit. Such double counting removes barriers to collaboration and promotes better relationships between centers and colleges. However, while this approach may soothe tensions, it also makes it impossible to measure the true impact of an investment in a college versus a research institute. In order to determine which investments are most effective and what level of investment is required to achieve their targets, Virginia Tech has adopted a new approach to assigning credit.

Beyond “Touch It, Count It”: The Investment Leverage Factor

The double-counting approach can also be described as “touch it, count it”—any unit involved in a grant gets credit for all of the output. Virginia Tech has decided instead to allocate partial credit based on the financial contribution of each unit to four major types of research
investments—faculty salaries, startup packages, seed funding, and shared infrastructure. For each type of investment, Virginia Tech has devised a rule for calculating the share of output that should be assigned to the contributing unit. The basic premise is that a unit should receive credit for research output in proportion to its share of the original investment in the research.

Virginia Tech operates on several assumptions in implementing this formula. For example, the university assumes that half of each faculty member’s salary is for teaching. If an institute contributes 25 percent of a faculty member’s total salary, then that is deemed equivalent to 50 percent of the “research salary,” and the institute receives credit for 50 percent of the faculty member’s research output. For startup packages, the institute receives credit for a portion of the output proportional to their investment for the first five years. For seed funding for large proposals, Virginia Tech determined that since it is too difficult to calculate the total investment (which typically includes significant non-monetary resources provided by the colleges), it should simply assume that 25 percent of the output is due to the institute’s contribution. Similarly, for shared infrastructure (e.g., new core

<table>
<thead>
<tr>
<th>Performing Unit</th>
<th>Faculty Home</th>
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</thead>
<tbody>
<tr>
<td>Engineering</td>
<td>$62.6</td>
</tr>
<tr>
<td></td>
<td>$75.4</td>
</tr>
<tr>
<td>Agriculture</td>
<td>$29.0</td>
</tr>
<tr>
<td></td>
<td>$43.6</td>
</tr>
<tr>
<td>Science</td>
<td>$19.4</td>
</tr>
<tr>
<td></td>
<td>$26.1</td>
</tr>
<tr>
<td>Natural Resources</td>
<td>$12.4</td>
</tr>
<tr>
<td></td>
<td>$12.4</td>
</tr>
<tr>
<td>Liberal Arts</td>
<td>$8.5</td>
</tr>
<tr>
<td></td>
<td>$9.5</td>
</tr>
<tr>
<td>Veterinary Medicine</td>
<td>$4.7</td>
</tr>
<tr>
<td></td>
<td>$4.7</td>
</tr>
<tr>
<td>Architecture</td>
<td>$3.1</td>
</tr>
<tr>
<td></td>
<td>$4.2</td>
</tr>
<tr>
<td>Business</td>
<td>$2.7</td>
</tr>
<tr>
<td></td>
<td>$3.0</td>
</tr>
<tr>
<td>Multidisciplinary Units</td>
<td>$14.9</td>
</tr>
<tr>
<td>Bioinformatics Institute</td>
<td>N/A</td>
</tr>
<tr>
<td>Transportation Institute</td>
<td>$12.2</td>
</tr>
<tr>
<td>Other (15 Units)</td>
<td>$12.3</td>
</tr>
<tr>
<td></td>
<td>$2.9</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$181.9</td>
</tr>
<tr>
<td></td>
<td>$181.9</td>
</tr>
</tbody>
</table>

Colleges do not get full credit for faculty work with centers

Centers get no credit for research productivity
facilities), the university decided that estimating the overall output would be too complicated given the potentially large number of users across campus. Therefore, institutes receive no credit for investments in shared infrastructure in calculations of the investment leverage factor, but neither do these investments count against them when calculating impact. Fig. 5.8

Driving Accountability by Measuring Returns

Assuming a three-year lag between investment and outcome, Virginia Tech annually calculates an investment leverage factor for each college and institute by comparing each unit’s share of total research output for that year to the central investment made three years prior.

Due in part to their singular focus on research, Virginia Tech’s institutes have significantly higher leverage factors than do its colleges. The goal however is not to compare the investment performance of the institutes and colleges but rather to create a metric to track the impact of individual units over time. Having this metric creates a new level of accountability not only for the institutes but also for the research groups in which they invest. If the institutes know that they will be evaluated on their ability to increase extramural research funding, they will focus their efforts on selecting and supporting research teams that are likely to win significant levels of funding. Fig. 5.9

Implementation Considerations

A Focus on Increasing Funding Need Not Preclude Other Priorities

Virginia Tech’s approach to evaluating institute performance is designed to maximize levels of new funding. Central administrators believe it is a critical tool to achieve the goals laid out in the university’s strategic plan. However, funding is not the only metric by which institutes and colleges are evaluated. Investment leverage is one factor among many, including publications, faculty recruitment, and undergraduate engagement with research.

### A First Try at Moving Beyond “Touch It, Count It”

**Fig. 5.8**

**Guidelines for Calculating Institutes’ Impact**

<table>
<thead>
<tr>
<th>Institute Contribution (Investment)</th>
<th>Share of Output Attributed to Institute (Impact)</th>
<th>Key Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Faculty Salaries</strong></td>
<td>Percentage of researcher salary contribution multiplied by 2</td>
<td>Half of salary allocated to teaching</td>
</tr>
<tr>
<td><strong>Startup Packages</strong></td>
<td>Percentage of startup contribution, ending year 5</td>
<td>Startups fully depreciate after five years</td>
</tr>
<tr>
<td><strong>Seed Funding</strong></td>
<td>Base assumption of 25 percent, subject to negotiation</td>
<td>Contribution must be negotiated case by case</td>
</tr>
<tr>
<td><strong>Shared Infrastructure</strong></td>
<td>One-time contribution to shared equipment purchase subtracted from institute costs</td>
<td>Unwinding usage and transfer pricing across campus is not worth the effort</td>
</tr>
</tbody>
</table>

Source: University Leadership Council interviews and analysis.
Calculating the Impact of Investments in Research at Virginia Tech


### Colleges

<table>
<thead>
<tr>
<th>Colleges</th>
<th>Three-Year Lagging Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering</td>
<td>2.47</td>
</tr>
<tr>
<td>Natural Resources</td>
<td>1.72</td>
</tr>
<tr>
<td>Science</td>
<td>1.20</td>
</tr>
<tr>
<td>Agriculture and Life Sciences</td>
<td>0.63</td>
</tr>
<tr>
<td>Architecture and Urban Studies</td>
<td>0.59</td>
</tr>
<tr>
<td>Liberal Arts and Human Sciences</td>
<td>0.55</td>
</tr>
<tr>
<td>Veterinary Medicine</td>
<td>0.38</td>
</tr>
<tr>
<td>Business</td>
<td>0.38</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td><strong>1.14</strong></td>
</tr>
</tbody>
</table>

### Institutes

<table>
<thead>
<tr>
<th>Institutes</th>
<th>Three-Year Lagging Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virginia Tech Transportation Institute</td>
<td>7.13</td>
</tr>
<tr>
<td>Institute for Critical Technology and Applied Sciences</td>
<td>5.51</td>
</tr>
<tr>
<td>Institute for Biomedical and Public Health Services</td>
<td>3.98</td>
</tr>
<tr>
<td>Virginia Bioinformatics Institute</td>
<td>1.98</td>
</tr>
<tr>
<td>Institute for Society, Culture and the Environment</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td><strong>3.20</strong></td>
</tr>
</tbody>
</table>

Multidisciplinary initiatives posting higher returns than college-based research.
VI. A Separate Infrastructure for Temporary Initiatives

What Organizational Structures and Funding Policies Foster Objective Sunsetting?

Best Practices
#14 Virtual Centers
#15 Evergreen Multidisciplinary Areas
#16 Plug-and-Play Infrastructure
What Organizational Structures and Funding Policies Foster Objective Sunsetting?

Typical University Problem: Too Many Underperforming Centers Are Allowed to Persist

While centers are never intended to be permanent, universities rarely have objective and effective metrics to determine when a center has come to the end of its useful life. Underperforming centers linger on, underutilizing human, financial, and physical resources that could be better deployed for other uses. Sunsetting decisions become highly politicized, limiting the university’s ability to change course or explore new avenues of research.

Best Practitioner Approach: Segregate Permanent Multidisciplinary Infrastructure from Temporary Projects

Rather than create each new multidisciplinary initiative as a semi-permanent administrative unit, best practitioners are creating an overarching multidisciplinary infrastructure to flexibly support a dynamic portfolio of multidisciplinary projects. Physical infrastructure and administrative support services are shared across multiple units, minimizing the disruption when centers are launched or dissolved, maximizing the utilization of scarce resources, and enabling rapid responses to changing demands for research.

Case Profiles

Practice #14: Virtual Centers ................................................................. p. 97

*The University of Alabama at Birmingham (Birmingham, Alabama)*

All center assets on loan from colleges, enabling less disruptive dissolution

Key Attributes:
- Faculty, space, and equipment are on loan from colleges and shared facilities
- Funding determined by deans on a three-year cycle
- Centers not funded by deans are automatically dissolved

Practice #15: Evergreen Multidisciplinary Areas .............................................. p. 99

*Duke University (Durham, North Carolina)*

Semipermanent institutes support targeted, temporary centers

Key Attributes:
- Institutes have broad, long-horizon research themes
- Institutes provide facilities, basic administrative support
- Centers come and go based on changing research interests

Practice #16: Plug-and-Play Infrastructure ......................................................... p. 101

*Purdue University (West Lafayette, Indiana)*

Flexible physical and administrative infrastructure enables high turnover among centers

Key Attributes:
- Major investment in flexible infrastructure facilitates collaborative research
- Shared administrative services support centers
- Centers can be launched or dissolved with minimal disruption
Typical University Problem

Too Many Underperforming Centers Are Allowed to Persist

Centers Lack Term Limits or Clear Sunsetting Criteria

Most universities have no center term limits or objective criteria for determining when centers are no longer the best use of university resources. They operate on the assumption that such units will continue indefinitely. Many institutions lack effective processes for terminating even those centers that are clearly failing to perform to expectations.

Centers Accumulate Proprietary Resources, Making Dissolution More Challenging

As centers grow, they add faculty, staff, facilities, equipment and other resources that depend on the continued existence of the center. The larger the center or the longer its tenure, the more disruptive it becomes to disband it. Few centers have explicit plans for what to do with these resources when the work of the center ends.

Center Funding Comes to Be Seen as an Entitlement, Making Reallocation of Funds Politically Sensitive

Sunsetting a center is a difficult governance decision that often generates significant political resistance. Having done little to correct the prevailing expectation that once granted, center funding will continue in the absence of catastrophic failure, provosts lose the ability to hold centers accountable.
Best Practitioner Approach

**Segregate Permanent Multidisciplinary Infrastructure from Temporary Projects**

Continued Center Support Depends on Success in Regular Funding Competitions

Sunsetting is the default if the center fails to garner sufficient support in periodic funding competitions that force prioritization across existing centers as well as proposed new centers.

“Virtual Centers” Use Assets Borrowed from Other Units, Removing Barriers to Entry and Allowing Fast Repatriation of Center Is Dissolved

Rather than set up independent structures, centers leverage resources on loan from other units on campus. Centers no longer deemed priorities by the deans are dissolved and faculty, space, and funds are returned to their home colleges. In this model, the sunk costs of individual centers no longer warp the decision about whether to continue an initiative or not.

“Plug-and-Play” Multidisciplinary Facilities

The university builds a flexible facility designed for rapid response and high throughput pursuit of collaborative, specialized research opportunities. Permanent physical and administrative infrastructure are able to support a changing portfolio of collaborative projects. Opportunities that fail to materialize are slotted out, with a queue of new projects waiting to use the space. The largest investments support a handful of perennially vital scientific topics likely to attract significant faculty interest and/or extramural funding opportunities, allowing specific projects to start and end with little additional investment or loss.
A Separate Infrastructure for Temporary Initiatives

These diagnostic questions reflect the essential ingredients of approaches used by best-practice institutions. Members may use them to determine if the full range of best practices is being used on campus and evaluate whether absences represent an opportunity for investment or action.

<table>
<thead>
<tr>
<th>Diagnostic Questions</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Does the university ever sunset centers?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2. Do centers have term limits or clear sunsetting criteria?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3. Is there a plan for redeploying resources (space, equipment, people) used by any given center at the end of its life cycle?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4. Are center budgets regularly reallocated based on a ranking of all proposed and existing centers?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>5. Is there a distinction between semipermanent institutes with broad research portfolios and shorter-term centers with more focused research objectives?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>6. Is there a permanent administrative and physical infrastructure that supports a changing portfolio of multidisciplinary projects?</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
Practice #14: Virtual Centers

Making Sunsetting the Default Option

At most institutions, centers operate under the assumption that they will continue to function barring a major catastrophe. They acquire a kind of permanence that makes sunsetting difficult and disruptive. The University of Alabama at Birmingham (UAB) has addressed this problem by treating centers as “virtual” units that use resources on loan from other permanent units and by resetting their budgets every three years based on rigorous performance evaluations. The result is a dynamic portfolio of centers that is always aligned with the institution’s top research priorities.

Virtual Centers Are Easier to Sunset

The University of Alabama at Birmingham’s (UAB) approach to sunsetting depends critically on the fact that the institution establishes multidisciplinary units as “virtual centers.” All of the major resources remain with the schools but are loaned temporarily to the center. Deans provide basic funding for the centers through a triennial competition (see Practice #5). The schools pay all faculty salaries and receive overhead on their grants. They also loan space to the centers rent-free, and core facilities (jointly sponsored by multiple centers and schools) house critical equipment. In this way, center directors do not assume that they are entitled to ongoing support, and defunding a center creates relatively little disruption. Faculty retain their primary appointments (and their salaries). Space reverts back to the schools, and core facilities remain available to other individuals and units. The deans simply reallocate the center’s institutional funding and assets to other, higher priority centers. Fig. 6.1

Promoting and Demoting Centers Based on Performance and Priority

UAB approaches centers with the assumption that they will continue only as long as a critical mass of deans agrees to support them. Every three years all existing university-wide centers and proposals for new centers are reviewed and ranked. Deans use these rankings to decide how much support they would like to allocate to each center, and the provost matches the deans’ contributions on a 70/30 ratio. As a result, any center can be sunset during one of these triennial reviews. In fact, sunsetting is the default outcome if at least two deans do not decide to support the center.

The review process also allows less mature centers to develop over time. UAB has two categories for university-wide centers: full centers and pilot centers. A full center must already exist as an interdisciplinary research center within the university and must demonstrate a history of substantive involvement of faculty from more than two schools. A pilot center does not need to demonstrate significant previous activity but is limited to $55,000 in annual support (full centers have no limits on the amount of support they can receive). If they perform well, pilot centers can become full centers; if they do not, they can easily be sunset. Over the decade from 1996 to 2006, UAB had 23 full centers. Of the 23, 21 were renewed in the three-year reviews, while 2 were returned to the department or school in which they started and were no longer classified as university-wide centers. Over this same period there were 17 proposed centers that received pilot status. Of the 17, 8 were promoted to full centers, 4 were renewed as pilots, and 5 were sunset. Fig. 6.2

Case in Brief

The University of Alabama at Birmingham, Birmingham, Alabama

- Faculty, space, and equipment are on loan from colleges and shared facilities
- Funding determined by deans on a three-year cycle
- Centers not funded by deans are automatically dissolved
Implementation Considerations

Allowing Deans to Determine Institutional Priorities

UAB’s review process empowers deans to determine funding allocations for university-wide centers. If a center fails to garner enough support from the deans then it will not be funded. Other institutions may feel that decision-making power should be placed with an alternate or broader group. The synchronized review process can be adapted to allow another set of stakeholders to decide where to allocate resources.
**UAB’s Synchronized Portfolio Review**

**Fig. 6.2**

*Side-by-side, forced ranking of existing centers and new ideas…*

**Dean’s Council**

<table>
<thead>
<tr>
<th>Center</th>
<th>Priority</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1.0</td>
<td>1</td>
</tr>
<tr>
<td>B</td>
<td>1.8</td>
<td>2</td>
</tr>
<tr>
<td>C</td>
<td>3.0</td>
<td>3</td>
</tr>
<tr>
<td>D</td>
<td>3.0</td>
<td>3</td>
</tr>
</tbody>
</table>

Deans re-negotiate funding commitments, allocate provost match for next three-year term.

...allows centers to rise, fall, or expire by mutual consent.

**UAB Center Portfolio Turnover, 1996–2006**

Department

- Promoted (8)
- Rechartered (21)
- Returned to department or school funding (2)
- Rechartered (4)
- Sunset (5)

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**Practice #15: Evergreen Multidisciplinary Areas**

**Broader Institutes Maintain Continuity While Targeted Centers Come and Go**

Duke University’s strategy to institutionalize multidisciplinary research includes the creation of seven well-resourced institutes organized around broad research areas that have been thoroughly vetted and determined collectively by the campus community. These units serve as umbrella bodies and support infrastructure for smaller, shorter-term research centers. Centers reporting up to the institutes rely on them to house ongoing activities. Because of their relative transience as focused, project-based units, centers may be sunset when they are no longer viable with less difficulty and disruption than if they were independent units that housed their own activities and support services.

**Case in Brief**

*Duke University Durham, North Carolina*

Semipermanent institutes support targeted, temporary centers:

- Institutes have broad, long-horizon research themes
- Institutes provide facilities, basic administrative support
- Centers come and go based on changing research interests

**Balancing Short-Term and Long-Term Research Commitments**

Duke’s multidisciplinary efforts are supported by seven major university institutes and their affiliated centers (see Practice #6). The institutes focus on...
broad research topics (social sciences, humanities, ethics, genomics, global health, brain sciences, and environmental policy) that are likely to represent institutional priorities for the foreseeable future. Their affiliated centers, however, are more targeted and more flexible, with less of an expectation of longevity. This approach allows the university to experiment with new approaches and new topics by launching centers. The broader institutes represent longer-term commitments, providing a degree of continuity as well support and guidance to the centers, Fig. 6.3

**Enduring university investments in broad multidisciplinary terrains...**

...accommodate a dynamic portfolio of discrete projects

Source: University Leadership Council interviews and analysis.

**Implementation Considerations**

**Requires Significant Levels of Activity Within Each Institute**

Duke’s major investment in long-term infrastructure for its university institutes is justified by its confidence that these fields will continue to be fruitful and of interest to faculty and students for the foreseeable future. While Duke cannot predict the precise form that future activity will take, they believe the institutes will require a significant level of infrastructure to support them.
Practice #16: Plug-and-Play Infrastructure

Designing Research Infrastructure for Funding Volatility

Purdue University has made large-scale multidisciplinary research a core element of its strategy. Planning for a high volume of new centers and the unpredictable nature of research funding, Purdue established Discovery Park as a flexible facility to support a broad range of research activities. New centers can use shared facilities and administrative staff to launch quickly, and centers that are no longer viable can be decommissioned easily, allowing resources to flow to new centers.

Rapidly Adjusting the Research Portfolio to Changing Demands

Purdue’s Discovery Park is built around 11 major centers, similar in breadth and permanence to Duke’s institutes, that host a constantly changing portfolio of what the institution calls “project centers.” The facility includes flexible and shared space as well as dedicated administrative support for all centers within Discovery Park. (See Practice #8.) This flexibility allows Purdue to respond to the cyclical nature of funding without over- or under-building infrastructure. The aim is not necessarily to launch centers that will last forever but to constantly adjust the mix of research activities to address the most urgent priorities of faculty, funding agencies, and partners. If there is a sudden termination of funding for one project, there are any number of projects ready to use this physical infrastructure that can be ramped up quickly.

Implementation Considerations

Optimized for Engineering Research

Discovery Park was created to enhance Purdue’s strengths in engineering research. Its plug-and-play structure is particularly suited to extramurally funded engineering projects that involve multiple partners with the potential for rapid changes in scale and scope. This approach may be less relevant for multidisciplinary research in the humanities and social sciences where initiatives, supported with institutional or philanthropic funds, tend to have long lead times and less volatility in support.

Case in Brief

Purdue University
West Lafayette, Indiana

Flexible physical and administrative infrastructure enables high turnover among centers

- Major investment in flexible infrastructure facilitates collaborative research
- Shared administrative services support centers
- Centers can be launched or dissolved with minimal disruption

Implementation Considerations

Massive university investment in permanent physical infrastructure...

Discovery Park Investment: $100 M

...justified by expectation of high volume of future multidisciplinary projects

Launch Specialist

Funding Terminated

Projects in Waiting

Embedded tech transfer

Source: Purdue University Discovery Park, available at: http://www.purdue.edu/dp; University Leadership Council interviews and analysis.
Appendix

• Selected Bibliography
• Diagnostic Questions


Committee for Assessment of NIH Centers of Excellence Programs. Board on Health Sciences Policy. Institute of Medicine. The National Academies. NIH Extramural Center Programs: Criteria for Initiation and Evaluation.


Selected Bibliography


## Diagnostic Questions

<table>
<thead>
<tr>
<th>I. Managing Center Proliferation</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Does the university maintain a current inventory of all centers and institutes on campus?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>2. Does the provost’s office or office of research’s office website post standard definitions for centers and institutes?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>3. Are the university’s centers reviewed regularly to ensure compliance with these definitions?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>4. Do the definitions for centers distinguish between units that receive central university support and oversight and those that do not?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>5. Are center reporting lines aligned with the center’s research scope and breadth of faculty participation?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>6. Is there a formal mechanism for chartering new centers?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>7. Are there procedures in place to avoid the duplication of centers?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>8. Do the university’s best-resourced centers reflect institutional strategic priorities?</td>
<td>❏</td>
<td>❏</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>II. Seed Funding Strategies</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Are central seed funds allocated through an open competition with explicit rules and evaluation criteria?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>10. Are proposals for central seed funds vetted by faculty and deans before submission?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>11. Are deans required to make long-term commitments of funds as a prerequisite for central seed funding?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>12. Does the university require financial commitments from more than one dean to ensure broad support before allocating seed funds?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>13. Do proposals for central seed funds include realistic plans for long-term sustainability?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>14. Does each institute receiving support from the central administration have a detailed contingency plan to deal with unexpected outside funding shortfalls?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>15. Does the central seed fund process consolidate related proposals to achieve scale?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>16. Do all old and new centers compete against each other for funding at regular and predictable intervals, making resource trade-offs apparent?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>17. Do all center directors provide standardized proposals in competing for central seed funds?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>18. Does the center proposal evaluation process consider both the value of each center to individual schools as well as its value to the university as a whole?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>19. Does the university budget for the institutional funding required to sustain the ongoing needs of its highest-priority centers?</td>
<td>❏</td>
<td>❏</td>
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<thead>
<tr>
<th>III. Professionalized Business Planning</th>
<th>Yes</th>
<th>No</th>
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</thead>
<tbody>
<tr>
<td>20. Does the university have professional managers who support faculty center directors?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>21. Does the university leverage the expertise of these professional managers across centers?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>22. Are center directors provided with coaching in the development of business plans for long-term sustainability?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>23. Has the university created templates and repeatable administrative processes to facilitate efficient center launch?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>24. Does the university provide support and expertise to center directors during the launch phase?</td>
<td>❏</td>
<td>❏</td>
</tr>
<tr>
<td>IV. Build-as-You-Go Shared Services</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>------------------------------------</td>
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<tr>
<td>25. Has the university identified opportunities for sharing administrative support across multiple centers?</td>
<td>❏❏</td>
<td>❏❏</td>
</tr>
<tr>
<td>26. Does the university take advantage of opportunities to leverage high-performing units to improve administrative support services for centers?</td>
<td>❏❏</td>
<td>❏❏</td>
</tr>
<tr>
<td>27. Does the university provide services to centers on an opt-in basis, attracting new users through demonstrated superior performance and allowing service to scale with demand?</td>
<td>❏❏</td>
<td>❏❏</td>
</tr>
<tr>
<td>28. Can new shared services demonstrate to faculty that they will provide a higher level of service than faculty currently receive?</td>
<td>❏❏</td>
<td>❏❏</td>
</tr>
<tr>
<td>29. Are administrative activities across units coordinated in order to balance workload and to support specialization?</td>
<td>❏❏</td>
<td>❏❏</td>
</tr>
<tr>
<td>30. Are administrative service staff offered or required to receive standardized training and to continue professional development?</td>
<td>❏❏</td>
<td>❏❏</td>
</tr>
<tr>
<td>31. Does the central administration share the costs and reporting lines of administrative service staff in local units?</td>
<td>❏❏</td>
<td>❏❏</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>V. Objective, Actionable Evaluation Criteria</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>32. Has the provost’s office worked with each center director to generate a set of clearly defined metrics that can be used to evaluate the center’s progress over time?</td>
<td>❏❏</td>
<td>❏❏</td>
</tr>
<tr>
<td>33. Are the metrics used to evaluate each center tailored to its particular mission?</td>
<td>❏❏</td>
<td>❏❏</td>
</tr>
<tr>
<td>34. Have the center director and provost agreed on metrics that should be shared across centers?</td>
<td>❏❏</td>
<td>❏❏</td>
</tr>
<tr>
<td>35. Does the university have a method for measuring its strength in multidisciplinary research fields?</td>
<td>❏❏</td>
<td>❏❏</td>
</tr>
<tr>
<td>36. Does the university have a means of assigning credit for multidisciplinary research between departments and centers?</td>
<td>❏❏</td>
<td>❏❏</td>
</tr>
<tr>
<td>37. Does the university have a way of evaluating the impact of its investment in centers on extramural funding?</td>
<td>❏❏</td>
<td>❏❏</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VI. A Separate Infrastructure for Temporary Initiatives</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>38. Does the university ever sunset centers?</td>
<td>❏❏</td>
<td>❏❏</td>
</tr>
<tr>
<td>39. Do centers have term limits or clear sunsetting criteria?</td>
<td>❏❏</td>
<td>❏❏</td>
</tr>
<tr>
<td>40. Is there a plan for redeploying resources (space, equipment, people) used by any given center at the end of its life cycle?</td>
<td>❏❏</td>
<td>❏❏</td>
</tr>
<tr>
<td>41. Are center budgets regularly reallocated based on a ranking of all proposed and existing centers?</td>
<td>❏❏</td>
<td>❏❏</td>
</tr>
<tr>
<td>42. Is there a distinction between semipermanent institutes with broad research portfolios and shorter-term centers with more focused research objectives?</td>
<td>❏❏</td>
<td>❏❏</td>
</tr>
<tr>
<td>43. Is there a permanent administrative and physical infrastructure that supports a changing portfolio of multidisciplinary projects?</td>
<td>❏❏</td>
<td>❏❏</td>
</tr>
</tbody>
</table>