Research and Strategic Partnerships Third Year Review: ReTHINKing Research at PSU

J. Fink, M. Sytsma, E. Flynn, J. Janda, A. Kolibaba, D. Boatman

On the third anniversary of the launch of the Research and Strategic Partnerships (RSP) Office, we provide an overview of the organization’s current status, accomplishments to date, and future opportunities and challenges. The report includes sections on RSP’s component parts: Research Administration, Strategic Partnerships, Innovation and Intellectual Property, Research Integrity, and Centers and Institutes. It also suggests strategies for increasing research funding. It may serve as useful background for PSU’s new Board of Trustees.

BACKGROUND: ESTABLISHMENT OF RSP

The creation of the Office of Research and Strategic Partnerships in 2010 was motivated by a sense of momentum among faculty and administrators, driven by recent funding success. The university had just won a $3M interdisciplinary graduate training grant from NSF, and the local Miller Foundation had recently given PSU a $25M challenge grant for sustainability. Planning for the Oregon Sustainability Center (OSC), billed as the first multistory “Living Building” in the US, lifted the sustainability credibility of both PSU and Portland. Newly hired research-active faculty in Chemistry and Biology were winning federal grants, transplants from the Oregon Graduate Institute in environmental chemistry, computer sciences, and materials science were building strong partnerships with industry and government, federal stimulus funds were boosting the success rates of programs from all granting agencies, and PSU was continuing to benefit from the earmarking of research funds by Oregon’s Congressional delegation. A 40% increase in research volume over three years provided a sense of an institution on the move, and the administration boldly declared the goal of reaching a $100M annual expenditure milestone within five years.

There were also growing expectations among the university’s many partners in the industrial, government and non-government sectors about the role that PSU should play in regional economic and cultural development.

Much of PSU’s research portfolio, as well as its distinctive approach to community-based learning, grew out of relationships established by faculty members with companies, agencies, and non-profits. PSU leaders felt that better integrating this legacy with its research mission could bring economic, political, and social benefits, while continuing to define PSU’s unique brand.

Research and partnership success also revealed a number of deficiencies in PSU’s administrative infrastructure and experience. Principal Investigators (PIs) were frustrated by coordination problems between user-friendly (and in some cases overly lax) pre-award activities, managed by the Research office, and risk-averse post-award accountants in Research Accounting (RA), who reported to the VP for Finance and Administration (FADM). PSU’s main partners, like Portland General Electric (PGE), Intel, and Oregon Health and Science University (OHSU), expressed uncertainty about how to most effectively interact with the University. Because of our relatively low level of expenditures, Oregon’s three larger research universities tended to not view us as a peer. PSU’s low effective overhead rate generated too little revenue to pay for high quality administrative services.

Understaffing in the compliance area put PSU at increasing risk of possible sanctioning by the federal government. Although RSP had provided basic technology transfer capabilities for a few years, the number of faculty involved and revenue generated were small, and service was at times slow. Further, despite the administration beginning to state that the university was prioritizing research in areas such as Sustainability, “P-20” Education, and Life and Health Sciences, it was a challenge to coordinate and provide strategic focus for research agendas of individual PIs, departments and colleges. Overlying these issues was the inherent tension of a predominately teaching-oriented faculty culture.
being expected to evolve into a metropolitan research university that served its region with a greater balance between training and discovery.

In response to these emerging opportunities and challenges, President Wiiewel and his leadership team decided to move research oversight from the Provost to the President’s office, while also centralizing economic development and strategic partnership management in the Research office. This led to the recruitment of Jonathan Fink as Vice President for Research and Strategic Partnerships (VPR) in the summer of 2010. The new VPR was provided resources to shift the Associate VP for Research from a half time to full-time role, and to create a new position of Associate VP for Strategic Partnerships. Searches led to the hiring of Mark Sytsma in January 2011 and Erin Flynn in July 2011 to fill these positions.

RESEARCH ADMINISTRATION

Assessment of research administration at PSU

In 2009, Vice Provost for Research Bill Feyerherm and Provost Roy Koch began to assess PSU’s research administrative capabilities. VPR Fink ramped these up to identify the greatest needs for infrastructure investment and reorganization. Five consultants were hired from 2010 to 2012.

1) Business process analysis In late 2010, Strata Information Group (SIG) analyzed processes associated with proposal preparation and submittal, and grants and contracts management. They generated maps that showed highly convoluted processes, and recommended merging pre- and post-award functions into one organization, setting up of teams to track discipline-specific projects from proposal development through award closeout, better coordination and training of central and college research administrative staff, and adoption of an electronic research administrative system (ERA) as soon as possible to increase bureaucratic efficiency and accuracy.

2) NCURA peer review In 2011, the National Council of University Research Administrators’ review placed PSU’s research structure in a national context. NCURA confirmed SIG’s earlier recommendations, but put more emphasis on the need for consistent university-wide training and skills. They urged us to assess our vulnerability in the compliance area, and to get an ERA system to improve financial processing and potentially reduce staff size.

3) Research integrity program review Research Compliance Consulting identified several areas of immediate concern regarding the knowledge of our staff and their ability to manage the growing volume of compliance cases. This led to the recruitment of Lorraine McConnell as director of Research Integrity in 2011. She worked with the Office of General Counsel and FADM to draft new policies, started coordinating with OHSU and OSU, and hired a CIP-certified IRB administrator to mitigate institutional risk.

4) Electronic Research Administrative (ERA) System Huron Consulting provided many options for ERA implementation. Kuali Coeus (KC), the cheapest and most flexible to put in place, would require added software and programming staff, and take about three years. PSU’s budget concerns put these investments on hold in 2012, even though the reorganization then underway was predicated on the presence of a fully functioning ERA. RSP is now evaluating a scaled down, greatly discounted version of KC as a bridge to a future full implementation.

5) F&A rate calculation In 2012, Huron also successfully negotiated a higher federal indirect cost (F&A) rate for PSU, going against a national trend of generally lower rate assignments. This rate will help RSP better cover its administrative expenses.

Sponsored Projects Administration (SPA) reorganization

In response to these reviews and PSU’s first PI survey, RSP launched a major, two-part initiative.

- Sponsored Projects Administration reorganization In July 2011, after six months’ of discussions with FADM, post-award staff in RA joined the pre- award and contracts staff in RSP, creating the office of Sponsored Projects Administration.
Sponsored Projects Administration (SPA). Over the next two years, a comprehensive new structure was planned around 3-person teams serving specific colleges or disciplines and comprised of cross-trained pre-award, post-award, and contracting experts. The teams would provide better options for career advancement, coverage during absences, and seamless “cradle-to-grave” grant service to PIs. This radical structural change required a new set of positions, which all existing staff had to apply for. After six months of incubation, hiring, and terminations, the team structure was launched in summer 2013 with a much higher level of staff competence.

- **Cross campus coordination** The second thrust of the reorganization involved harmonizing skills and procedures of central, college, and departmental research administrative staff. Some of the distributed staff and the units they served had had inconsistent implementation of procedures, leading to the setting up of many problematic grants and contracts that would later need to be renegotiated. RSP initiated extensive training protocols for staff, and worked with deans to create a timetable for upgrading research administrative services across the university. In the College of Liberal Arts and Sciences (CLAS), RSP recruited, paid for, and assigned three new grants and contracts staff to shore up capabilities that had become critically depleted. This approach was considered a pilot that could later be replicated.

**Sponsored Projects Administration - Next steps**

Staffing for the SPA reorganization is now complete, with excellent personnel throughout. RSP’s primitive research databases have been unable to provide necessary financial information, making PSU potentially vulnerable to compliance violations and audits, and frustrating PIs and staff. While a fully functional replacement system is still beyond our means, OIT and RSP have recently contracted to implement a far less expensive “plain vanilla” cloud-based interim solution, which we expect will meet most of our needs for many years to come.

Technical skills of staff in several colleges are still too variable, but the successful approach taken in CLAS, Education, Business (SBA), and the Arts is now ready to be extended to Social Work and CUPA; we hope to add Engineering (MCECS) within the next two years. One option would be for RSP to cover the salaries of some of these distributed staff; this would require retention of a larger percentage of the overhead from grants, reducing by ~6% the 33% returned to deans. The biggest remaining gap in the service RSP provides to researchers is in identifying proposal opportunities and assisting with proposal preparation. At present, we make available a few online RFP announcement services, and we occasionally hire grant-writers and proposal managers, but more needs to be done once research revenue picks up.

**STRATEGIC PARTNERSHIPS (SP)**

The main motivation for adding Strategic Partnerships (SP) to the Research office was to give PSU a better “front door” for partners seeking access and information. Other goals included: (1) Inventory research strengths through a standard methodology, (2) Identify partner-driven research opportunities that matched PSU expertise, (3) Analyze strategic opportunities on topics identified by chairs, deans and VPs, (4) Coordinate and grow on- and off-campus entrepreneurial programs, (5) Better organize PSU’s economic development agenda, (6) Build alliances with key deans and directors, and (7) Help the President’s Office prioritize which organizations PSU should be a part of. Today, the mission of SP is to “Identify and cultivate public and private partnerships that simultaneously address pressing metropolitan challenges (economic, social, environmental) while building PSU’s reputation and capacity as a world-class, urban-serving university.”

**Strategic Partnerships staffing**

SP’s staffing, along with its mission, agenda, and funding were initiated when Fink became VPR, and when Flynn was hired as AVP. Today, two full time professionals help Flynn oversee SP’s rapidly expanding portfolio: research analyst Natalie Wilson and Portland State Business Accelerator and Center for Entrepreneurship Director Angela Jackson. In
addition, two less than half-time staff members help with specific initiatives.

**Strengthening existing partnerships**

Flynn’s appointment immediately increased PSU’s credibility with the Oregon business community and government agencies based on her previous position as head of Economic Development for the Portland Development Commission, and her recent appointment by Governor Kitzhaber as Chair of the Oregon Business Development Commission. Since arriving at PSU, she and Jackson have worked closely with MCECS and SBA leadership and faculty to build an entrepreneurship agenda at the university. This work is now coming to fruition with the creation of the Center for Entrepreneurship, year round programming, new certificate programs, and a new student incubator.

A considerable amount of Flynn’s effort and time in the first two years has focused on better organizing existing partnerships. Portland General Electric (PGE), which had raised concerns about a lack of consistency in their dealings with PSU, is a good example. Flynn clarified the relationship by establishing regular reporting and meeting schedules, documenting accomplishments, and communicating frequently with various stakeholders on both sides. This led to increased good will and more funding for research, especially in renewable energy, as well as for workforce development and philanthropy.

Strategic Partnerships has (or is in the process of) replicating this model with several other private and public sector partners, including:

- Intel – created first comprehensive, annually updated inventory of PSU-Intel relationships; set up regular meetings to review partnership; launched Intel-PSU annual leadership luncheon; and gave presentation on Intel-PSU partnership at Fall 2013 SSTI conference.
- OHSU – established new organizational structure for partnership; staff implementation committee meetings; with Sytsma and Fink, track progress of key initiatives – e.g., Collaborative Life Science Building, School of Public Health, STEM, joint faculty hires.
- Multnomah County – serve as main liaison with County Commissioners and oversee expanded relationship associated with Urban Renewal Area (URA).
- Technology Association of Oregon – Meet regularly with TAO leaders; co-organized kick-off with S. Fleming from Georgia Tech and Health Ignite event.
- Port of Portland – building on 10-year relationship with Community Environmental Services (CES), expanding Port partnership along with ISS Sustainable Neighborhoods Initiative.
- South of Market EcoDistrict Energy Efficiency (SoMa3E) – with Economic Development Administration, ISS and CES, plan and implement the “SoMa3E + Energy Certificate.”
- OMSI – with MCECS, RSP helped move NW Collaboratory for Sustainable Manufacturing to OMSI; RSP/OMSI planning joint programs that will take advantage of completion of new multimodal transit bridge.

**Mapping of PSU Assets**

SP has undertaken asset mapping in several key areas to determine if/how PSU can better position existing capabilities to deliver on community goals and/or generate new research and learning/teaching opportunities. To date SP has completed analyses and/or produced proposals (internal and external) in the following areas:

- Transportation – working with OTREC to create PSU transportation brand; coordinating with Drive Oregon and PGE on transport electrification agenda.
- Energy – building on ISS work to craft comprehensive energy strategy using EDA proposal; developing professional energy certificate based on industry demand; clarifying CES energy strategy for airports and other facilities.
- Computer Science/Electrical Engineering – launching partnership with TAO to address regional workforce demand.
- Early Childhood (EC) – assessed EC capabilities leading to the formation of an EC Council.
• Entrepreneurship – conducted campus wide assessment; linked relevant faculty and programs from Engineering and Business; hired Angela Jackson full time to lead agenda.
• Aging – prospectus on aging opportunity created with Institute on Aging; explored potential technology-assist ed living for seniors, in partnership with Intel, OHSU, and City of Portland.
• Regional Economic Development – identified key ways in which PSU delivers on regional economic development agenda (industry clusters, entrepreneurship, exports, workforce development, research).

Strategic Partnerships funding

Funding has been a critical challenge associated with placing SP in RSP. Most of RSP’s budget comes from overhead on federal grants, which can only be used for specific research purposes. For traditional research-related functions like grants management, increased activity leads to additional overhead that can be used to expand staff. However, SP does not generally contribute directly to PSU’s research expenditures, so it is not possible to divert grant-derived overhead to SP’s budget. Thus, when demand for SP’s services increases, there are no funds to respond, since deans and vice presidents who typically request assistance and analysis do not contribute to SP’s staffing. SP does help PSU get funding from non-research sources, like Flynn’s central role in negotiating the URA agreement with the City of Portland and Multnomah County, and in writing the proposal to the Economic Development Administration to redirect $1.5M of OSC funding to PSU’s South of Market EcoDistrict. However, these revenues do not generate overhead that could be used to directly fund SP operations.

Strategic Partnerships – Next steps

In two and a half years, Strategic Partnerships has built a diverse portfolio involving a large number of off- and on-campus stakeholders. These projects have demonstrated the value of a centralized effort, but also revealed the challenges of bringing together activities that historically were fragmented and uncoordinated. In the next year, in addition to continuing the work described above, SP will seek to establish a more versatile and useful web presence, launch a PSU Partnership Council, clarify its role in the Cradle to Career initiative (specifically relating to the STEM and Early Childhood work) and better organize an institution-wide partnership agenda with buy-in from the President’s Executive Committee and the Administrative Leadership Team. Within RSP, critical steps will be to identify a more stable and scalable funding mechanism and to clarify the relationship between SP and the pursuit of funded research grants and contracts.

INNOVATION AND INTELLECTUAL PROPERTY (IIP)

The principal reason a relatively young research university like PSU maintains an Innovation and Intellectual Property (IIP) office is to meet the expectations of its most accomplished faculty members and their corporate partners. Also important is expanding the pipeline of new ideas that may be license-able and exposing students to entrepreneurial activities. PSU established a technology transfer office in 2008 with a full-time Director (Dana Bostrom) and a part-time assistant. Joe Janda joined the office as Associate Director in 2008, did a stint at OHSU’s Knight Cancer Center, and returned to PSU as Director in 2011 when Bostrom left.

The original goals of the IIP office were to: (1) Provide adequate service to faculty engaged in technology transfer and industry-sponsored projects, (2) Expand the number of faculty involved with technology transfer, (3) Increase the number of research projects receiving support from royalty revenues, and (4) Launch startup companies. More recently, these goals have expanded: (5) Coordinate policy development with other technology transfer offices in Oregon and the NW region, (6) Increase funding to start-ups and entrepreneurship programs through the state of Oregon’s University Venture Development Fund (UVDF) mechanism, (7) Publicize tech transfer successes and promote faculty projects through publications and websites, (8) Reduce administrative costs of doing technology transfer at PSU, and (9) Provide advice to campus constituencies about the IP
policies of the State of Oregon, OUS and PSU. IIP’s mission is to promote the use and increase the impact of PSU innovation through the tool of intellectual property. IIP staff consists of the director, a junior licensing officer, a coordinator (who handles the patent docket, financial management, agreement compliance, and business management), and a communications professional who also services all of RSP.

Over the past three years, IIP has consistently exceeded its targets for faculty cultivated, revenue generated, number of disclosures and licenses issued, and startup companies launched (Fig. 1). Janda has also taken the lead on raising private funds through the UVDF, and has worked closely with Jackson, Flynn and the Schools of Business and Engineering to expand PSU’s entrepreneurial activities. In response to concerns raised by faculty in Engineering, he negotiated a master agreement with Intel that clarified the difference between grants (requiring full overhead but including I.P. rights) and gifts (charged only a professional service fee but lacking I.P. rights).

Challenges and next steps

Like most technology transfer offices, IIP tries to cover a growing workload with limited staffing. As new projects, licensees, and partners accumulate, IIP and RSP will need to identify a level of activity that is sustainable and appropriate for an institution of PSU’s size. A second issue is how IIP can better exploit the fundraising potential of the donor-based UVDF, funding from which is crucial to IIP and all our entrepreneurship programs. UVDF has high legislative visibility, and offers the best tax benefit of any university-based giving program in Oregon.

Growing this program will require greater coordination with University Advancement (UA), the unit with primary responsibility for philanthropic fund-raising. A third concern is getting better agreement with deans, chairs and faculty, especially in MCECS, about who leads in negotiations with corporate partners. In the next few years, IIP seeks to expand the number of faculty they interact with, projects supported by royalty revenue, projects licensed, startups launched, programs funded by UVDF, and advice provided about IP.

As PSU’s research portfolio has grown, oversight of regulatory issues has become increasingly complex. The Research Integrity Office reduces institutional risk by improving compliance and providing leadership and management of legally mandated areas including: Research Misconduct, Financial Conflict of Interest, Institutional Review Board (for human subjects research), Institutional Animal Care and Use Committee (IACUC), Institutional Biosafety Committee (IBC), Financial Conflict of Interest Committee (FCOI), Responsible Conduct of Research training, Biosafety Program Management, Animal Care Management, and Human Subject Protections Program Management. The office provides investigative support and is responsible for interfacing with federal oversight bodies for maintaining federal assurances/certifications, program reviews, audits, site visits and for handling non-compliance matters.

<table>
<thead>
<tr>
<th>PSU</th>
<th>Comparator’s median</th>
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<tr>
<td>FY 11</td>
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<tr>
<td>new licenses</td>
<td>17</td>
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<tr>
<td>cumly active licenses</td>
<td>26</td>
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<tr>
<td>new disclosures</td>
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<tr>
<td>new startups</td>
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<tr>
<td>licensing income</td>
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<td>net legal costs</td>
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</table>

Figure 1. PSU vs comparators’ medians for key tech transfer metrics
RESEARCH INTEGRITY (RI)

As PSU’s research portfolio has grown, oversight of regulatory issues has become increasingly complex. The Research Integrity Office reduces institutional risk by improving compliance and providing leadership and management of legally mandated areas including: Research Misconduct, Financial Conflict of Interest, Institutional Review Board (for human subjects research), Institutional Animal Care and Use Committee (IACUC), Institutional Biosafety Committee (IBC), Financial Conflict of Interest Committee (FCOI), Responsible Conduct of Research training, Biosafety Program Management, Animal Care Management, and Human Subject Protections Program Management. The office provides investigative support and is responsible for interfacing with federal oversight bodies for maintaining federal assurances/certifications, program reviews, audits, site visits and for handling non-compliance matters.

When Director McConnell came to PSU in 2011, her initial goals were to: (1) Complete the assessment of benchmarks and regulatory gaps; (2) Review and harmonize policies, procedures and practices with legal requirements and make them available online; (3) Coordinate with OHSU and other organizations throughout the region; and (4) Improve research integrity training for researchers and administrative staff. Over the past two years, the benchmark and gap assessments found PSU’s IBC to be in significant non-compliance with NIH requirements, resulting in a report to the Office of Biotechnology Activities (OBA), which subsequently approved PSU’s action plan. A variety of new policies, procedures, guidance documents and training modules were developed and made available online. Collaboration with OHSU on compliance issues has been greatly expanded. HIPAA guidelines have been completed, FCOI reporting has been streamlined, committee training has been placed online, chair and committee member workloads have been reduced, and a Research Integrity Advisory Board has been established. PSU and various partners are planning a regional IRB conference to be held at PSU in February 2014.

One of RI’s major roles has been to investigate research misconduct allegations. Prior to 2012, PSU had not had any misconduct cases. Six were subsequently filed, which took a great deal of time for Director McConnell and AVP Sytsma. Other challenges moving forward are that compliance requirements are becoming more stringent, the number of IRB cases has expanded dramatically, resources for staff training are inadequate, and the lack of an electronic research administrative system makes processes cumbersome, slow, and subject to errors. On the positive side, the competence of PSU’s staffing in compliance has increased dramatically, and PI satisfaction has gone up accordingly.

PSU INTERDISCIPLINARY INSTITUTES AND CENTERS

Another important role of RSP is overseeing the organizational wellbeing of several of PSU’s interdisciplinary institutes and centers. PSU has a mix of such units, some of which have large budgets, staffs, and scopes, while others consist of a single faculty member and his or her students. Over the past twenty years, PSU department chairs or deans have approved centers and institutes with little central administrative oversight or organizational logic. A few of the larger ones report to the Research office rather than to chairs or deans, mostly because their scope involves more than one college. These include the Institute for Sustainable Solutions (ISS), Oregon Transportation Research and Education Consortium (OTREC), Center for Electron Microscopy and Nanofabrication (CEMN), and the Materials Manufacturing and Research Institute (MMRI). Assistant Vice President for Research Alan Kolibaba has managed these organizations for RSP, primarily providing administrative support and budgetary oversight, as well as participating on some of their advisory boards. Since RSP was formed, we have moved to standardize the processes for creating, reviewing, and (when appropriate) closing such entities across campus. Evaluation of these programs by RSP and the Office of Academic Affairs (OAA) is accelerating as part of PSU’s budgetary prioritization process and the “reTHINK PSU” initiative.

Institute for Sustainable Solutions (ISS)

ISS, the largest of PSU’s interdisciplinary organizations, shifted its reporting line from the Provost’s office to RSP in July 2012. ISS has had a complex history, emerging from
longstanding faculty and student interests in environmental and social science research and teaching programs across PSU in the early- to mid-2000s, getting a major boost with the awarding of a $25M challenge grant from the local Miller Foundation in 2008. One of the original faculty members driving the creation of the Institute’s predecessor organization (CSP2), Jennifer Allen, took over as Director of ISS in 2011. She and Associate Director Fletcher Beaudoin helped focus the ISS agenda on urban sustainability, which involved coordination with key partners such as the City of Portland’s Bureau of Planning and Sustainability and Mayor’s office, Metro regional government, Portland Development Commission, First Stop Portland, Portland Sustainability Institute (later renamed “EcoDistricts”), and various groups on campus. ISS helps fund a number of research and teaching initiatives, and oversees many relationships between PSU and community organizations. Resources from the Miller Foundation provide the most significant pool of flexible investment capital currently available for promoting research initiatives on campus.

Part of the original agreement with the Miller Foundation was that PSU would hire a set of faculty members to expand its sustainability capabilities. Miller stipulated that their funds would provide initial support for each position for a few years, but that OAA would pick up these costs so that additional hires could be made in the future. Four faculty were originally hired this way. After five years only two of these have been fully covered by PSU, which has limited our ability to leverage ISS funds as intended. OAA is developing a plan to roll these positions off of Miller funds. In annual meetings with PSU, the Miller Board has expressed satisfaction that we are meeting all of their objectives.

While ISS has made significant progress in partnering with the community and integrating sustainability in various aspects of campus operations and curriculum, transformational change will require a plan for ensuring a legacy when the Miller funds are fully expended in 2018. The largest priority is to build an endowment that can keep PSU’s sustainability programs running after Miller funds are gone. In addition, we have begun discussions of ways to permanently embed ISS activities into one or more existing academic units, like School of the Environment and SBA. However, to have a greater university-wide reach, regional impact, and national prominence, ISS will need to better incorporate PSU’s expertise in business, engineering, and economic development, while also more sharply branding its urban prowess. One option being considered would set aside some Miller funds as an investment account to help create climate-, transportation-, energy-, and food-related technological innovations and startup companies, with the goal of realizing the oft-cited concept of Portland as an urban laboratory, but one that builds more directly on the local high-tech foundation of Intel, CH2M Hill, OHSU, and the open-source community.

STRATEGIES FOR INCREASING FUNDED RESEARCH AT PSU

The funding landscape for research-active faculty, staff, and institutions has changed dramatically in the past three years. The ongoing effects of the recession and Congressional gridlock have invalidated earlier assumptions about steadily growing federal research budgets (Fig. 2). At the same time, the declining demographic bulge of “GenY” students has caused the long-term financial stability of many universities, including PSU, to be questioned. Part of the challenge in evaluating the research funding potential of PSU derives from “spikiness” caused by our relatively few large grants and PIs. Fig. 3 shows that our recent expenditures were influenced by ARRA, earmarks and training contracts, some of which involved mostly pass-through funds. Most expenditures at PSU come from traditional grants and contracts. Even when increases caused by ARRA funding are subtracted, this core research support continues to show a steady rise.

Besides carrying more prestige because of their greater competitiveness, more of the dollars from “traditional” grants come with full overhead, which covers more administrative costs. Fig. 4 and Table 1 indicate how small the group is that brings in much of our funding. Figs. 5a and 5b illustrate that research activity tends to peak within the first 10 years after faculty receive tenure, and that the amount of funding brought in by non tenure track research faculty increased between 2009 and 2013. Figure 6 shows that PSU’s proposals
tend to have good success rates. Against this backdrop, and as part of PSU’s reTHINK initiative, RSP is re-assessing how it can best support those faculty members whose professional identities and greatest contributions hinge on the conduct of research.

Motivating faculty to carry out more funded research

Strategies for increasing sponsored research can focus on expanding the number and types of opportunities research-active faculty can pursue, increasing the success rates of all those seeking grants, or increasing the number of faculty that seek funding. The first approach assumes that research-active faculty have untapped capacity for proposal writing, so that if new RFPs or new funding sources were identified, investigators would be willing to go after them. This in turn requires that the faculty in question have high enough motivation and low enough teaching loads that they will find additional time to write the proposals and, if successful, conduct the research.

Figure 2. Non-defense discretionary spending as a percent of GDP, 1962-2023. This graph provides a sobering backdrop for PSU’s aspirations to expand its research capability and success. In light of expected major drops in federal funding, PSU will need to focus more on support from industry, philanthropy, and state government.
Figure 3. Research Expenditures vs time. Individual grants and contracts (“traditional” funding) make up most of the total. Earmarks (including first years of UTC), training grants (“technical assistance programs”), and ARRA funds tended to increase the overall numbers for 2008-2012. Specific ARRA grants are indicated in pink. ARRA supplements to federal agencies also increased funding rates of traditional proposals. Taking these factors into account, individual PI grants have grown about 2% per year, long term.

Figure 4. FY12 expenditures for PSU’s 24 most research-active faculty members. This group accounts for more than half of PSU’s expenditures. As shown in Table 1, several of these individuals are nearing retirement, and many of their grants are for training programs and earmarks.
Figure 5a. Proportion of FY 2013 research expenditures for different groups of faculty.

Figure 5b. Comparison of research expenditures by PI tenure status for FY 2009 and FY 2013. In 2009, faculty expenditures peaked during the first five years after tenure. In 2013, the peak was less pronounced and occurred more or less equally for the first 15 years after tenure. Success rates for Research Faculty increased significantly between 2009 and 2013.
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<th>Principal Investigator</th>
<th>College</th>
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<td>Katherine Cahn</td>
<td>SSW</td>
<td>Child Welfare Partnership</td>
<td>Research faculty; mostly training contract</td>
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<td>Jennifer Allen</td>
<td>CUPA</td>
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<td>OTREC (was earmark, now competitive)</td>
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<td>OR Ctr for Career Development</td>
<td>Research faculty</td>
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<td>CLAS</td>
<td>Chemistry</td>
<td>Tenured Professor</td>
</tr>
<tr>
<td>Mike Riscoe</td>
<td>CLAS</td>
<td>Veterans Admin./Chemistry Dept</td>
<td>Research faculty</td>
</tr>
<tr>
<td>Jim Pankow*</td>
<td>CLAS/MCECS</td>
<td>Chemistry &amp; Civil Env. Engineering</td>
<td>Tenured Professor (but only partial FTE)</td>
</tr>
<tr>
<td>Loren Lutzenhiser*</td>
<td>CUPA</td>
<td>Urban Studies and Planning</td>
<td>Tenured Professor</td>
</tr>
<tr>
<td>Mark Sytsma</td>
<td>CLAS</td>
<td>Env. Science and Management</td>
<td>Primarily RSP Administrator</td>
</tr>
<tr>
<td>Sandra Freels*</td>
<td>CLAS</td>
<td>Foreign Languages and Literature</td>
<td>Tenured Prof; Russian flagship program</td>
</tr>
<tr>
<td>Bill Wood</td>
<td>MCECS</td>
<td>Mechanical &amp; Materials Eng.</td>
<td>Retirement imminent</td>
</tr>
<tr>
<td>Jun Jiao*</td>
<td>MCECS</td>
<td>Mechanical &amp; Materials Eng.</td>
<td>Tenured Professor</td>
</tr>
<tr>
<td>Linda George*</td>
<td>CLAS</td>
<td>Env. Science and Management</td>
<td>Tenured Professor</td>
</tr>
<tr>
<td>Debra Elliott</td>
<td>SSW</td>
<td>Regional Research Institute</td>
<td>Research faculty</td>
</tr>
</tbody>
</table>

Table 1. Top PIs based on FY 2013 research expenditures. Several of these are now full-time administrators. Less than half (marked by *) are “traditional” PIs with full-time, tenured or tenure track, non-administrative positions and competitive federal research grants.
A main goal of RSP’s reorganization has been to reduce frustration with administrative processes and increase incentives so faculty are not discouraged from expanding their research. RSP staff members have been inculcated with the idea that their top priority is to remove bureaucratic barriers to PIs’ conduct of research. RSP has also begun annual PI satisfaction surveys, convened faculty and student research advisory councils, held a research-oriented Winter Symposium, and started returning a fraction (initially 2%) of overhead directly to PIs in the form of flexible “research incentive” accounts, which can be spent on items not allowable in federal grant budgets.

Faculty in fields with fewer grant opportunities can still participate by joining large interdisciplinary teams or identifying new niches. Historians, economists, and philosophers can strengthen or even lead some sustainability- or technology-related proposals. Anthropologists and sociologists across the country have won major grants dealing with climate change. PSU’s entrepreneurial Applied Linguists have received more grant funding than most of their national peers. However, all competitions have lately become much more stiff, so unless a unit strongly encourages its faculty to pursue grants through social pressure, reduced teaching loads, or other incentives, the status quo is unlikely to change.

RSP and deans can encourage more proposal preparation by providing writing assistance. While we have increased the availability of such consulting services in the past three years, more could be done if we had more flexible funding. Equally important factors that are less under RSP’s control are the relatively heavy teaching loads and low salaries of research-active faculty. Surveys of these individuals consistently identify time spent on instruction as the main limitation on expanding proposal submissions; low salaries compared to peers at other institutions are another serious drain on motivation.

Right-sizing teaching assignments

The past three years have seen a series of increasingly stringent budget reductions at PSU. FY2015 cuts are expected to be even deeper, coinciding with implementation of a comp-
prehensive academic program prioritization exercise. As part of this assessment, we expect faculty workloads to be more carefully scrutinized. From RSP’s perspective, many faculty members have not been held sufficiently accountable for their combined productivity in teaching, research and service. For PSU’s research expenditures and stature to grow, there must be quantitative targets, in at least some units, for number of proposals submitted, and grants and contracts obtained, at college, department, and individual levels. This means many research inactive faculty might need to teach more, while research success will need to factor more directly into decisions about promotion and tenure, salary increases, teaching assignments, and space allocation.

To help advance the conversations about which teaching loads should increase, RSP has prepared a series of graphs showing faculty grant expenditures as a function of student credit hours (SCH) generated, for individual departments and groups of departments. While the data vary by unit, there are consistent trends, as shown for an aggregate of the 19 most research-active departments in Fig. 7.

Grant and teaching activity tend to be inversely correlated, with a “maximum performance line” having a slope of approximately $300/SCH. Faculty nearest this line (i.e., with the highest combinations of funding and teaching loads) are in the Chemistry, Biology, and Environmental Science and Management Departments, research-active units with large courses generating high SCHs and with P.I.s who lead several of PSU’s largest federally-funded interdisciplinary research projects.

Figure 7. Relationship between research and teaching of tenured and tenure track faculty in Chemistry, Biology, Environmental Science and Management, Physics, Geology, Geography, Anthropology, Psychology, Civil and Environmental Engineering, Applied Linguistics, Communications, Materials and Mechanical Engineering, Computer Science, Electrical and Computer Engineering, Urban Studies and Planning, Sociology, Math, Community Health, and Public Administration.
The slope of the “Maximum productivity line” in Fig. 7 suggests that a high-performing faculty member released from teaching a 4 credit course with 50 students could be expected to bring in up to an additional $60K per year in grant support (4 credits x 50 students x $300/SCH). Although the position and slope of the maximum line will vary by department, the same general principle is likely to apply. Below those maxima lines, all departments have a range of individuals with lower teaching and research activity. While in some cases there may be extenuating circumstances (such as additional administrative responsibilities, sabbatical leave, or partial FTEs), others reflect a lack of supervisory oversight. These discrepancies can be particularly demoralizing to younger faculty members trying to build research programs while carrying heavy teaching responsibilities. In addition, some faculty hired to teach University Studies courses but with tenure homes in departments have appointment terms that limit their teaching within their home department. This limits the chair’s ability to increase teaching assignments for those University Studies faculty with small or nonexistent research programs.

PSU is planning to launch a new performance-based budget model in FY2015, which will be tied to revenue generation. If implementation of this model by the provost, deans, and department chairs fails to reinforce the importance of research activity, PSU’s identity as an urban-serving research university will be jeopardized. Plots such as Fig. 7 can suggest the kind of quantification of research and teaching that might be appropriate.

**Non-federal funding opportunities – Philanthropic foundations & individual giving**

The two largest untapped reservoirs of funding in an environment of diminished federal budgets are philanthropy and industry. RSP works with University Advancement to identify appropriate private foundations and potential donors to cultivate. UA staff has connected PSU with representatives from several regional and national foundations. PSU researchers have a solid track record with NW-based foundations including Murdock, Bullitt, Miller, and Lemelson. We have also had a few modest grants from national foundations like Keck and Gates. Success with the latter group requires a coherent multi-decadal strategy. Although PSU has many outstanding faculty members with strong individual reputations, the low overall ranking of the institution can hurt proposals subject to peer review. The fact that foundation decision-making relies more on program officers’ judgment than on anonymous reviews works to our advantage.

For private giving, the University’s current emphases are on scholarships and capital for the Stott Center and School of Business Administration Building, much of which does not contribute directly to PSU’s research mission. UA leaders are working to interest major prospects like Lorry Lokey in PSU’s research programs, but this is not yet a top priority. At other universities, some of the most sophisticated donors are cultivated based on their social, environmental, or technological interests. While PSU has a few of these (mostly self-identified, like Stephen Wille for freshwater research), it still represents an untapped opportunity.

**Non-federal funding opportunities – Corporate partnerships**

PSU’s corporate funding has grown modestly over the past decade, and some of our most research-active faculty members in Engineering, along with Dean Renjeng Su, Business Dean Scott Dawson, IIP Director Janda, and AVP Flynn have excellent ties with local and regional companies like Intel, Boeing, and Mentor Graphics. The planning work that Strategic Partnerships has been doing over the past two years with faculty groups interested in key topics like renewable energy and transportation, along with their effort to clarify relationships with individual corporate partners, positions PSU to expand the investments made by these companies in our research. Longer term, we need to shift the perception of many of these firms from PSU as just a source of workforce, or a local recipient of charitable giving, to a comprehensive partner that can help them solve some of their most vexing and strategic technical problems. Coordinating advisory boards in Engineering, Business, and Strategic Partnerships can also help grow corporate funding.
Non-federal funding opportunities - State support for research

PSU may have an opportunity to grow the State support it receives for research related to regional economic development. In the last legislative session, VPR Fink and his counterparts at OHSU, OSU, and UO successfully crafted an $8M bill that supported research infrastructure related to three statewide initiatives—upgrading IT connectivity, building university-affiliated business incubation facilities, and strengthening ties to the metals manufacturing industry. This bill complemented legislative support that already exists for Oregon InC, and the Engineering and Technology Industry Council. In coming sessions, supporters in the legislature may be receptive to arguments that strategic investments in Oregon’s four research universities can collectively stimulate economic development, as has been the case in Ohio, Arizona, and several other states.

Setting targets for research expenditures

As mentioned, in 2009 President Wiewel announced a goal of PSU reaching $100M in research expenditures by 2017. Given federal agency budget reductions, and the reality that “flat is the new doubling,” it is difficult to establish revised specific targets. Assuming PSU can reestablish its long-term 2% growth rate in expenditures without further investments in new research facilities or research-active senior faculty, we would not hit $100M for more than a decade. The fastest way to accelerate that pace in the short term would be to hire more research-active faculty or free up the time of the ones we have. On the other hand, in our most research-active departments, new younger hires tend to be more research oriented than the older faculty they replace. Furthermore, collaborations with OHSU and other strategic partners are increasing significantly, giving hope that PSU’s long-term funding will resume a steeper upward trajectory.

SPECIFIC ACTIONS FOR FY2014 AND 2015

In RSP’s three years of operation, each of its divisions has had notable successes. Research administrative infrastructure throughout the university has been greatly improved, providing more professional, efficient, compliant, and responsive service to PIs and other units on campus. PSU’s engagement with strategic partners is now more consistent, organized, and anticipatory. PSU’s central role in promoting the region’s vibrant entrepreneurial ecosystem is more widely acknowledged, thanks to on-campus coordination and the leveraging of several key external relationships. Although smaller in scale, PSU’s tech transfer operation is now comparable in sophistication to those of OHSU, OSU, and UO.

And yet, assuring PSU’s stature as an urban-serving research university will require a series of short- and long-term actions, some of which can be carried out by RSP, and others that will need to be performed by other units.

Activities to be led by Research and Strategic Partnerships in 2014 and 2015

Change teaching assignments to encourage research

- RSP will provide deans, department chairs, and OAA with SCH and research expenditure data for faculty and encourage chairs to have annual meetings with each faculty member to set goals for increasing teaching-related revenue generation and/or sponsored project activity.
- RSP will work with OAA to encourage departments to develop pedagogies that allow faculty more time for research (e.g., larger class sizes, credit for prior learning, fewer undersubscribed degree offerings, etc.). The Provost’s Challenge is a positive step in this direction.
- With deans and OAA, RSP will develop an incentive program to reward departments for improving their combined year-over-year generation of teaching-related revenue and research expenditures.

Expand the sponsored research pipeline

- Work with deans and OAA to recruit and retain more research-active faculty.
- Revive cluster hire approach to take advantage of possible mergers of units.
Better support proposal preparation, proposal matching, and course buyouts.

Focus RSP support on programs with greatest funding opportunities.

Encourage expanding the number of productive fixed term faculty, like in RRI, but gradually reduce administrative subsidies like low overhead rates.

Add more jointly appointed, research-active faculty with OHSU.

Support a student research symposium with Graduate Studies Office (OGS).

With OGS, provide a career guidance program for post-doctoral researchers.

Eliminate post-doc retirement “taxes” that never benefit post-docs or mentors.

Strengthen partnerships work and, where possible, link it to research

Create sustainable, scalable funding model for Strategic Partnerships office that includes overhead from selected economic development grants and inclusion of some direct staffing costs in budgets of low-overhead grants.

Hold regular PSU-Intel summits to highlight and advance collaborations.

Create seed fund and joint fund-raising to promote OHSU-PSU collaborations.

Explore partnering with Kaiser Permanente Health Research and Providence Cancer Center.

Strengthen PSU ties to the three Signature Research Centers (BEST, OTRADI, ONAMI).

Grow Port of Portland and Technology Association of Oregon partnerships.

Build on the success of the entrepreneurship and innovation agenda

Evaluate the addition of another business incubator closer to PSU campus.

Explore options for removing the permanent “deficit” of the PSBA in order to unleash the fundraising potential of their staff.

Link, more intentionally, the PSBA, Oregon Bioscience Incubator in South Waterfront, and the Regional Accelerator and Innovation Network in Eugene and Corvallis, and sell the concept of a statewide network of incubation facilities.

Enhance recognition for research and strategic partnering

Produce quarterly newsletter reporting on research metrics, selected research programs, strategic partnerships, publications, grants, patents, and licenses.

Make RSP website the hub for information about exciting PSU research.

Create research awards analogous to teaching awards presented by the Provost each year.

Work with University Communications to increase recognition of research-active faculty.
• Expand communication from PSU President and Provost about importance of research.

Activities in support of research to be led by other offices

President’s Office

• Talk more of centrality of the research mission in meetings with faculty, staff and students.

• In union negotiations, give additional credence to research-relevant policy issues, like eliminating excessive post-doc retirement benefit costs.

Office of Academic Affairs

• Hold deans accountable for research performance of their departments.

• Where possible reallocate faculty lines to departments/disciplines that can generate both teaching-related and sponsored project funding.

• Modify faculty appointment contracts to remove constraints on departmental teaching assignments, especially for University Studies faculty members.

• Strengthen the post-tenure review process to encourage senior faculty to maintain active research programs.

• Revive cross-college cluster hire strategy to foster multidisciplinary proposals to solve “grand challenges” with relevance to Portland and Northwest.

• Include more research planning in School of Public Health discussions with OHSU.

Office of Information Technology

• Help RSP implement a streamlined electronic research administrative system.

Finance and Administration

• Work with the Capital Advisory Committee to develop a comprehensive plan for new research space beyond the SRTC and CLSB. This could include a second CLSB; School of Public Health building (possibly at University Place); joint Multnomah County – PSU Social Science Building, (with Urban Renewal funds); expanded SRTC into Science Building 1; Environmental Science Center with Environmental Engineering, School of Environment, ISS, USGS- Portland, CH2M HILL, and other partners.

University Advancement

• Develop fund-raising strategy for entrepreneurship programs.

• Make research topics and investigators more explicitly the focus for cultivating major donors, with more involvement by RSP staff.

• Make filling the UVDF potential a higher priority.

• Recruit a strong Foundation expert to replace Hans VanDerSchaaf. University Libraries

• See if librarians can help faculty identify online funding opportunity information.