

STRATEGIC INVESTMENTS SUMMIT

2018 MEETING SUMMARY





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- We support disciplinary technical researchers by disseminating best research management practices.

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Strategic Investments Summit: 2018 Meeting Summary

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American Society for Engineering Education

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STRATEGIC INVESTMENTS SUMMIT

2018 MEETING SUMMARY

SEPTEMBER 2020

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ASEE would like to acknowledge the many individuals who contributed to the success of the 2018 Strategic Investments Summit.

The summit attendees, a list of which can be found in Appendix B, provided the substance on which this publication is built.

The summit planning committee—Ann Gates, professor and computer science department chair at the University of Texas at El Paso; C. Fred Higgs, professor of mechanical engineering and vice provost for academic affairs at Rice University; Marcus Huggans, senior director for external affairs at the National GEM Consortium; Peter Romine, head of electrical engineering at Navajo Technical University; and G. Dale Wesson, vice president for research and economic development at Virginia State University—provided guidance and collaborated with ASEE staff to organize the summit.

The following ASEE staff members also made contributions: Damon Tull, then director of business development, served as project director, playing a central leadership role in the summit. Strategic projects manager Geraldine Gooding helped guide and manage the project, with logistical support from Ray Phillips, manager of logistics and special projects. Mark Matthews, then editorial director, drafted this meeting summary. Senior program manager Alexandra Sharpe and senior project manager Eric Wallace provided critical input and revisions. Rocio C. Chavela Guerra, director of education and career development, served as managing editor. Toni Rigolosi, graphic designer, designed the cover and layout.



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EXECUTIVE SUMMARY

On September 27–28, 2018, with support from the National Science Foundation (NSF), the American Society for Engineering Education (ASEE) gathered thought leaders and key stakeholders from 41 institutions for a Strategic Investments Summit to identify and address some of the constraints impeding sponsored research at institutions that under-participate in U.S. government-funded scientific research.

The summit laid the foundation for a set of administrative support, tools, and knowledge required for small and medium-size colleges and universities to build research capacity and success. A National Center for Sponsored Research, tentatively named the Strategic Opportunity Acquisition Resource Center Enterprise (SOARCE), would provide numerous services covering the lifecycle of a research project. SOARCE would carry out tasks divided into four “walls”: (1) institutional support of research; (2) grant and contract administration; (3) scholarly work; and (4) institutional faculty support. The anticipated resource needs for each wall were metaphorically called “building blocks” or “components.”

During plenary and panel presentations, research administrators and faculty imparted practical knowledge on how to build institutional strength in research and make the most of existing capacity. Speakers outlined funding opportunities available through government grants and contracts as well as through collaboration with industry. In the summit’s wall-specific breakout sessions, participants identified and prioritized the essential components that would enable such a network to maximize institutional support of research. Overall, the five components with the highest prioritization scores were: rewards and incentives, proposal development training, institutional resources, professional development, and research lab team establishment.

Key observations and recommendations, broken down by wall, included: administrators need to actively help faculty compete for external funds (Wall 1); award oversight and compliance should be cradle-to-grave processes (Wall 2); institutions should engage in public outreach to increase the visibility of their research (Wall 3); and, when building a research culture, institutions should plan to make trade-offs, find creative ways to do more with less, and establish clear priorities (Wall 4).

At the summit, ASEE was encouraged to move forward with the national center concept, providing at least anecdotal evidence of demand for the service. ASEE is currently exploring funding opportunities to systematically characterize and assess the need for a national center and develop a pilot. If funded, the national center pilot would be introduced in stages. Further investigation and development of the national center concept would be valuable to the community of institutions that offer important contributions to the nation’s scientific research enterprise but have limited resources.



BACKGROUND

Emerging Research Institutions

Small and medium-size colleges and universities educate a significant proportion of Americans and provide a vital pathway into the middle class for millions of low-income and minority students (Espinosa et al., 2018). A 2009 National Research Council report on what are referred to as Emerging Research Institutions (ERIs) reported that these institutions enroll over 30 percent of the U.S. postsecondary student population. About 75 percent of all U.S. undergraduates are currently enrolled at institutions outside the research realm, the report stated, adding that these ERIs “encompass the bulk of the minority student population in the United States—a population that is large and growing” (p. viii). Many of these schools face financial pressures: shrinking government support for higher education, rising costs, and projected flat enrollment over the next decade. At the same time, these institutions can’t escape the competition for rankings—essential for attracting promising students—which depend in part on securing a high-caliber faculty. Scholars seeking to teach at these institutions often wish to continue the research and publication activities they started in graduate school but are impeded by high teaching loads when they join as faculty. Additionally, non-degree programs that provide alternative credentials recognized by industry serve as competitors for ERIs.

Institutional Capacity to Pursue Funded Research

A new generation of leaders sees a solution in joining the ranks of research institutions. In their doing so, not only could these ERIs claim a share of government and industry grants and contracts that now flow to large universities, but they could also provide the facilities and infrastructure needed to attract and maintain a strong faculty. Such a shift was encouraged in a 2019 National Academies of Science, Engineering, and Medicine (NASEM) report on Minority Serving Institutions (MSIs)—the report called for “bold, innovative steps to enhance and enrich the education, student development, training, and research capabilities of MSIs” (p. 7). Increased research capacity could stimulate lab-to-market entrepreneurship among faculty researchers and also complement these colleges’ roles as teaching institutions; undergraduate involvement in research has been shown to increase student performance and retention in STEM. As the NASEM (2019) report noted, “increasing numbers of MSIs are pioneering creative ways to extend such opportunities to more students at their institutions through course-based research experiences and external partnerships with research-intensive colleges and universities, government agencies, and private companies” (p. 7). Indeed, opportunities exist that small and medium-size institutions ought to be pursuing.

However, many small- and medium-size colleges and universities are unable to benefit from these opportunities, lacking the history, capital, and infrastructure of better-endowed institutions. For Historically Black Colleges and Universities (HBCUs) in particular, the situation appears to be getting worse. A 2019 National Center for Science and Engineering Statistics (NCSES) report stated that, in fiscal year 2017, total science and engineering support to HBCUs “declined for the third year in a row, to \$308 million, down 17 percent from FY 2016, and support to HBCUs for R&D declined 9 percent” (p. 1).

To identify and address some of the constraints impeding sponsored research at institutions that under-participate in U.S. government-funded scientific research, the American Society for Engineering Education (ASEE), with support from the National Science Foundation (NSF), organized and hosted the 2018 Strategic Investments Summit.

THE 2018 STRATEGIC INVESTMENTS SUMMIT

About the Summit

On September 27–28, 2018, with support from NSF, ASEE hosted the 2018 Strategic Investments Summit, convening 51 faculty and administrators from 41 institutions to address the constraints that under-participating institutions face in pursuing external funding. The goals of the 2018 Strategic Investments Summit were to:

1. Engage thought leaders and key stakeholders from under-participating institutions to exchange ideas and experiences and to generate new knowledge that informs the broader community about research opportunities for under-participating institutions
2. Build a community of like-minded institutions
3. Identify and untangle the roadblocks impeding the pursuit and performance of federally funded or sponsored research as a source of funding and growth at under-participating institutions
4. Provide institutional representatives the opportunity to assess their strengths and develop a high-level strategic plan to host sponsored research programs
5. Inspire institutional investment in sponsored research and prioritize potential investment at under-participating institutions

A five-member planning committee collaborated with ASEE staff to organize the summit. To identify potential attendees, summit organizers examined data on schools that had completed the NSF Higher Education Research and Development (HERD) survey, the government's primary source of information on R&D expenditures at U.S. colleges and universities. From standard-form responses, they identified 152 colleges with less than \$17 million in annual research expenditures. From this group, the committee invited 36 participants and received 31 acceptances, roughly half from MSIs and half from Predominantly White Institutions (PWIs) that were historically teaching colleges with aspirations to build research strength.

The summit laid the groundwork for a virtual set of administrative support, tools, and knowledge to help small and medium-size colleges and universities build research capacity and success. A National Center for Sponsored Research, tentatively named the Strategic Opportunity Acquisition Resource Center Enterprise (SOARCE), would provide an à la carte menu of services covering the lifecycle of a research project. Before the start of the summit, planning committee members divided the tasks that SOARCE would be designed to carry out into four categories, or “walls”: (1) institutional support of research, (2) grant and contract administration, (3) scholarly work, and (4) institutional faculty support. The planning committee listed the anticipated resource needs for each wall, calling them “building blocks” or “components.”

Ranking the Building Blocks of a National Sponsored Research Center

During the summit, speakers representing higher education and government described a variety of opportunities to obtain research funding and collaborators, supporting a key activity of the summit: ranking the necessary “building blocks” of a national sponsored research center. Representatives from nine institutions assembled in wall-specific breakout rooms, each with a facilitator and reporter, to discuss the necessary components of each of the four walls and then rank them in importance.

During the wall-specific breakout sessions, participants were given a blank prioritization tool sheet to score and prioritize all the components—or “building blocks”—for a given wall from the perspective of their own institution. The tool used the pairwise comparison technique of prioritizing and ranking multiple options relative to each other. The priority rankings were summed up in terms of their respective hits, or match-up wins (i.e., a count of how many total times each block was chosen over the other blocks in the paired comparisons). Scores for each component were then aggregated for each of the four walls. The top 10 highest-ranking components for each wall are listed in descending order in Figure 1. Overall, the five components with the highest aggregated ranking scores were: rewards and incentives (Wall 4), proposal development training (Wall 3), institutional resources (Wall 1), professional development (Wall 4), and research lab team establishment (Wall 3).

Figure 1. The Four Walls of a National Center for Sponsored Research and their Components

Components within each wall are listed in descending order according to participants' prioritization rankings.

<p style="text-align: center;">Wall 1: Institutional Support of Research</p> <ol style="list-style-type: none"> 1. Institutional resources (leadership and financial management) 2. Proposal development (assistance in identifying sources of funding and proposal writing) 3. Space and infrastructure (laboratories and equipment; dedicated space for new faculty) 4. Faculty incentives for research (promotion and tenure) 5. Interdisciplinary research 6. Faculty and research development (assisting faculty in finding appropriate projects) 7. Innovation and entrepreneurship (encouraging faculty to think about commercializing their inventions and discoveries) 8. Management of submissions (reports to funding agencies) 9. Data management (compiling and sharing of information among research partners) 10. Virtual expanded capacity (hardware and software) 	<p style="text-align: center;">Wall 2: Grant and Contract Administration</p> <ol style="list-style-type: none"> 1. Compliance with federal and state laws, agency rules, university rules and procedures 2. Training for staff and faculty 3. Communication between principal investigators and the institutional business office 4. Fiscal oversight 5. Effective tracking of expenditures & reporting 6. Timely and accurate fiscal year close-out 7. Administrative support 8. Reconciliation and audit support 9. Inter-communication between research support units 10. Policies and procedures
<p style="text-align: center;">Wall 3: Scholarly Work</p> <ol style="list-style-type: none"> 1. Proposal development training (workshops on writing white papers; goals and objectives; research questions; intellectual merit and broader impact; project management plan; evaluation plans and logic model) 2. Research lab team establishment (including student selection and student development) 3. Collaboration with domain experts (evaluators and social science/education researchers) 4. Technical writing and publications 5. Development of a strategic and integrated research and education plan (motivation, problems to be addressed, research questions, methods, and timeline) 6. Partnerships and collaborations 7. Financial resources 8. Innovation, entrepreneurship, patents and intellectual property protection 9. Career planning and mapping 10. Tech transfer (licensing of discoveries and inventions, startups) 	<p style="text-align: center;">Wall 4: Institutional Faculty Support</p> <ol style="list-style-type: none"> 1. Rewards/incentives 2. Professional development 3. Mentoring 4. Proposal review 5. Student pipeline support 6. Facilities/space 7. Institutional commitment 8. Start-up package 9. Recognition 10. Administrative support

SUMMIT FINDINGS

The summit's plenary and breakout sessions generated a variety of observations and recommendations to guide the creation of a national sponsored resource center that will help under-participating institutions pursue sponsored research opportunities.

Wall 1: Institutional Support of Research

Administrators should proactively help faculty compete for external research funds. Clark Atlanta University's Research and Sponsored Programs Office vets and prospects for opportunities, offers grant writing and compliance training, and provides a cloud-based management information system for PIs. DeLisa Wilson, associate vice president of research and sponsored programs at Clark Atlanta University, "help[s] with developing proposals in a very aggressive way. We like to pull our teams in and have kick-off meetings, and really attack an RFP with our research administrators at the table, because they know best how to attack an RFP."

Promote your institution's research for greater competitiveness. It is not enough to do remarkable scientific research—institutions must be seen doing remarkable scientific research by stakeholders at funding agencies, all levels of government, industry, and the media if they want to continue doing research. Cajetan Akujuobi, former vice president for research at Prairie View A&M University and founder of the SECURE Center of Excellence (Systems to Enhance Cybersecurity for Universal Research Environment), recognized the addition of a marketing and communications staffer to Prairie View's Office of Research as crucial to dissemination, noting, "I realized that there were so many things being done, but the outside world didn't know about it."

Faculty should seek seed funding from their institution to develop research capacity. Akujuobi described Texas A&M and Prairie View A&M's Chancellor's Research Initiative (CRI), which provides seed money to carry out new ideas. Using these funds, Prairie View A&M researchers developed a radiation project that initially focused on electronics in space but now studies radiation effects in humans. Other centers at Prairie View A&M conduct research on smart grids and food security.

Save time and money by automating research-related administrative processes. Roberto Osegueda, vice president for research at the University of Texas at El Paso, described how his institution has a database of faculty expertise that is connected with a database of research opportunities. This system helps researchers focus their efforts on opportunities that are a solid fit for their skills and experience.

Wall 2: Grant and Contract Administration

Award oversight and compliance should be a cradle-to-grave process.

The cost of non-compliance should not be underestimated. As Robert Clark, chief compliance officer at Clark Atlanta University, put it: "What we are really trying to do is establish a culture at our institution where there is ownership for compliance [and where] adherence to all of the different terms and conditions and policies and procedures and regulations is the responsibility of each person involved in the enterprise." His university has mandatory compliance training for the president, vice president, provost, and every PI, chair, and dean. Clark Atlanta learned the hard way that it needed to improve compliance when an Inspector General's investigation found lapses in the administration of a Department of Energy grant and referred the matter to the Department of Justice. The university negotiated a \$5 million fine and established mandatory compliance training. "What Clark Atlanta has right now has actually been recognized as a best practice for compliance in higher education," Clark said.

Visiting Innovative Scholar Research Program for Institutions Orienting to National Needs (VISION)

Discussions took place on how institutions and funding agencies can address high faculty teaching loads at small and mid-size schools without detrimentally impacting students. One concrete idea that emerged was the Visiting Innovative Scholar Research Program for Institutions Orienting to National Needs (VISION), which would recruit, match, mentor, train, and place early and mid-career science and engineering Ph.D.'s at small and medium-size colleges to accelerate research and innovation. With this program, small and medium-size schools could secure funding to support scholars, with two-year appointments, who would either perform research or teach. These roles would be spelled out in a three-year research plan approved by the school's leadership.

Wall 3: Scholarly Work

Share resources with other institutions for mutual benefit.

Karl V. Steiner, vice president for research at the University of Maryland, Baltimore County, warned summit attendees that research money can disappear fast and that crafting a successful proposal for a federal agency is a lengthy, complex process requiring a team. “Everything will take longer than you planned. Everything will cost more than you thought,” cautioned Steiner, and, while science and innovation will get you to the table, “you need to bring a full proposal in.” Steiner was one of several speakers at the summit who underscored the importance of NSF’s Established Program to Stimulate Competitive Research (EPSCoR) as a foundation for collaborations between smaller schools and premier public institutions. He also recommended a Howard Hughes Medical Institute (HHMI) guide entitled *Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty*.

Take advantage of NSF resources available to institutions seeking to increase their research competitiveness. Tasha Innis, associate provost for research at Spelman College, recommended that researchers attend NSF grant-writing workshops, tune in to webinars, and attend professional society meetings, where NSF program directors often give presentations, as well as making visits to program directors at NSF headquarters.

Increase your research visibility with public outreach. Enrique Barrera, professor of materials science and nanoengineering at Rice University, offered guidance on how young faculty members can build careers through public outreach. Barrera’s own reputation has been helped by activities like a magic show on materials science that he performs for K-12 and incoming college students and working with Great Minds in STEM. He also received a Distinguished Teacher Award from ASM International, a professional society for materials scientists. “Those things show up in our proposals in certain ways. It enables people who have evaluated our proposals to see we’re not a risk.” Conducting public outreach is a way for researchers to demonstrate to NSF that they take the foundation’s broadening participation mandates seriously, and that they have the potential to be good communicators of NSF-funded work.

Make university-wide research capacity-building investments for future payoff. Stephanie Luster-Teasley, professor and chair of the chemical engineering department at North Carolina A&T State University, spoke from 15 years’ experience on her institution’s transition from being a teaching institution to a research institution. “The infrastructure was there to help us,” she said. The Division of Research “will not write the proposal for you, but they help guide you, help you find solicitations that match your research objectives and your research expertise.” Luster-Teasley got help from intellectual property experts on securing patents for some of her technology. “A lot of times, faculty are so busy with the teaching, research, and service that jumping into entrepreneurship and commercialization requires the additional resources that the university can provide.” With support from an NSF grant, North Carolina A&T holds technical writing workshops, invites in journal editors, and forms writing groups where faculty members learn skills and strategies for increasing their research and writing productivity. Luster-Teasley noted, “We’ve seen almost a tripling of the number of publications that are coming out of our faculty over the last five years.”

Wall 4: Institutional Faculty Support

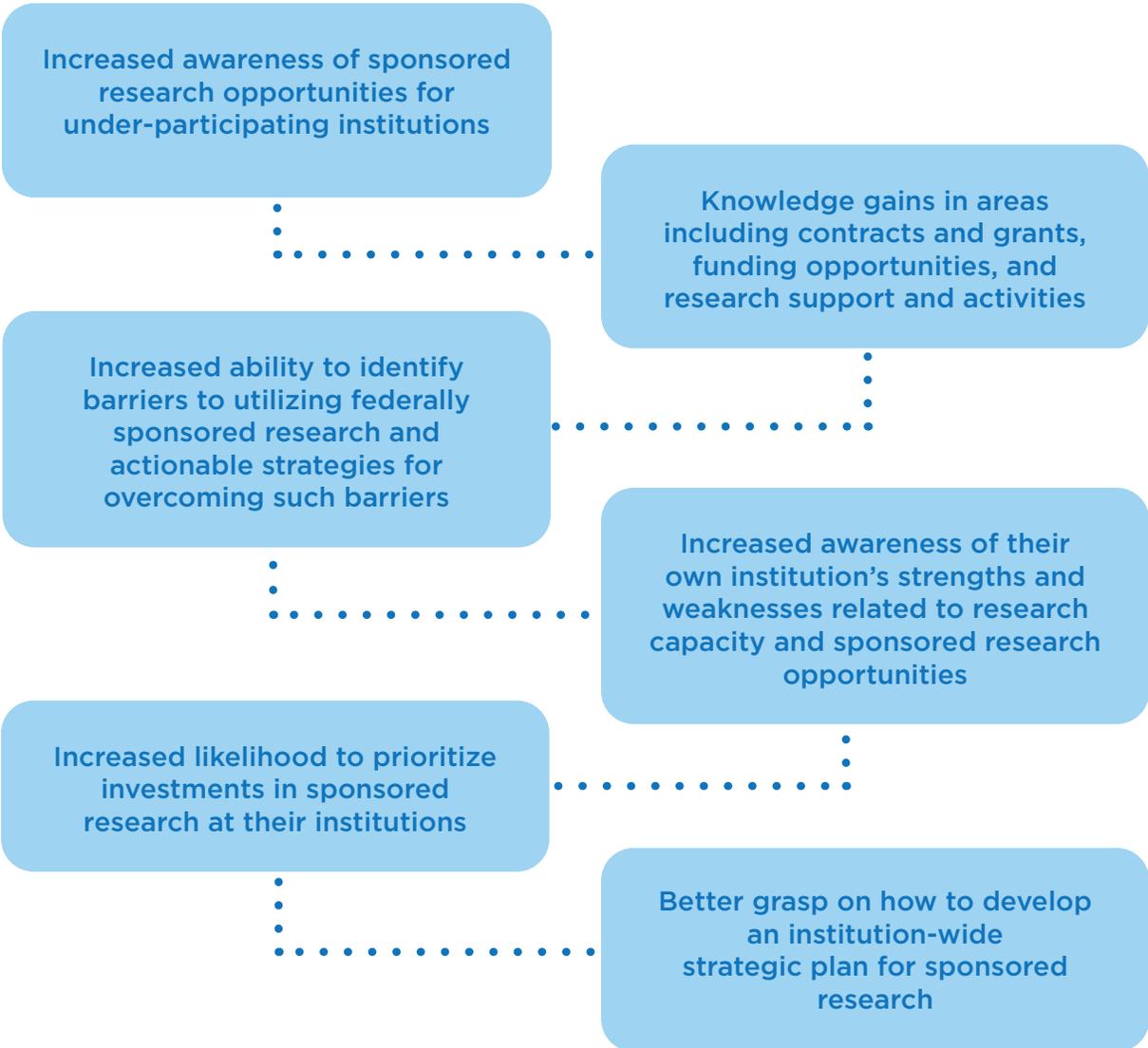
When building a research culture, plan to make trade-offs, find creative ways to do more with less, and establish clear priorities. Javier Kypuros, engineering dean at the University of Texas at Tyler, stressed the need to “grow and develop talent within. Foster growth of junior faculty. Help kick-start or reinvigorate disenfranchised faculty.” One hurdle faced by Kypuros and Joseph Rencis, engineering dean at California State Polytechnic University, was the need to do without Ph.D. students. Faculty members had to be creative about using undergraduates, whom Kypuros found like hands-on lab work and are good at running experiments.

Make non-trivial investments in reducing teaching loads and creating financial incentives for faculty to raise external funds. CalPoly engineering dean Rencis takes advantage of a university policy that allows him to reduce new faculty members’ course loads to nine credits for their first two years. “The problem is [that] after the first two years there are some opportunities, but not a lot.” Dean Maj Mirmirani at Embry-Riddle Aeronautical University calls his school the “poster child” for many issues raised in higher education over the past decade. After deciding to become a research institution in 2010, amid apprehension across the university, it now has seven Ph.D. programs. To get where you want to be, “it is so important to be selective and niche-oriented.” The school made a commitment to reward research by giving 10 percent of recovered overhead back to faculty. Embry-Riddle also has a Researcher of the Year award that has a monetary prize, as well as a Millionaire’s Club honoring faculty who have reached \$1 million in research expenditures. “We also give handsome and above-average annual raise[s] and some occasional midyear ad hoc” pay boosts. Of the shift to a research emphasis, Mirmirani commented, “If the process is slow, you’re not going to be successful. It has to be a quantum leap... Deep change or a slow death.”

Learn the value hierarchy of scholarly activities in order to take advantage of investments made on your behalf. Young faculty need to grasp that a journal paper is more important than a conference paper and an external grant proposal has more value for tenure and promotion purposes than an internal proposal. CalPoly dean Joseph Rencis has found that pedagogical research is a good opportunity for faculty who spend most of their time and energy in the classroom. Rencis also emphasized the importance of mentoring students in research “so that they can actually go out, be co-authors on papers but also do presentations and posters, and actually get awards for these things.”

Post-Summit Evaluation Survey Highlights

As a result of their participation in the summit, survey respondents* reported:



*The survey was completed by 32 summit attendees (55% response rate).

FUTURE DIRECTIONS

Vision for a National Center for Sponsored Research

As proposed during the summit, the national sponsored research center, tentatively named Strategic Opportunity Acquisition Resource Center Enterprise (SOARCE), would be an online hub that helps small and medium-size colleges and universities build research capacity and success, seeking to increase the number of schools with sustainable research capacity, allowing them to conduct sponsored research, stimulate innovation, attract research-oriented faculty, increase their numbers of graduate students, and expand undergraduate research. The center's components would relate to the four walls: institutional support of research (Wall 1); grant and contract administration (Wall 2); scholarly work (Wall 3); and institutional faculty support (Wall 4). What the center would look like in practice will be determined in follow-up activities.

The center would provide an à la carte menu of services covering the life cycle of a research project, starting with identification of opportunities and potential collaborators, proposal development, and grant-writing help. Grant administration services would include: centralized contract management services; sponsored-program management support (e.g., grant management, data collection and reporting, services for assessment and evaluation, program accounting and audits, and proposal writing); contract management training for in-house staff candidates; and access to the visiting faculty fellows and adjunct faculty from industry to balance institutional teaching and research objectives. The center would also assist with technology transfer by advising institutions on which innovations have the potential for rapid scaling and positive impact, as well as assisting with the technology transfer governing documents.

While the center's success would be measured by the number of institutions that make use of its services and the success rate of center-assisted proposals, the center's ultimate goal is for its member schools to develop a sufficient track record of research to continue on their own without center assistance. Eligible institutions include small and mid-size colleges and universities that under-participate in government-funded research. Institutions applying to join the center would provide a statement of institutional capacity for, and commitment to, sponsored research. In addition, applicants would be expected to offer a plan to build and institutionalize their own grant-management practices so that they can graduate from the center incubator.

Closing Thoughts

The 2018 Strategic Investments Summit provided a solid foundation for a national sponsored research center to help small and medium-size colleges and universities build research capacity and success. At the summit, ASEE was encouraged to move forward with the national center concept, providing at least anecdotal evidence of demand for the service. Summit attendees reiterated that several small and medium-size institutions do not have key elements of infrastructure or the network of beneficial relationships to successfully pursue sponsorship of scientific research. ASEE believes there is significant demand among under-participating institutions for a service to help build that infrastructure, but further research is needed.

ASEE is currently exploring funding opportunities to systematically characterize and assess the need for a national center and develop a pilot. If funded, the national center pilot would be introduced in stages, potentially starting with some of the components identified for Wall 3 (e.g., proposal development training and establishment of research teams). Further investigation and development of the national center concept would be valuable to the community of institutions that have limited resources but offer important contributions to the nation's scientific research enterprise.

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APPENDIX A: SUMMIT AGENDA

Wednesday, September 26, 2018

6:00 PM – 8:00 PM	<p>Welcome Reception</p> <p>Speaker Orientation Meeting</p>
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Thursday, September 27, 2018

7:30 AM – 8:15 AM	<p>Breakfast Refreshments and Registration</p>
8:15 AM – 9:00 AM	<p>Welcome, Overview, and Introductions</p> <p>Damon L. Tull, Director, Business Development, <i>ASEE</i> Don L. Millard, Acting Division Director, Engineering Education and Centers, <i>NSF</i> Earnestine Psalmonds Easter, Program Director, Division of Graduate Education, <i>NSF</i></p>
9:00 AM – 10:00 AM	<p>Wall 1: Institutional Support of Research</p> <p>Cajetan M. Akujuobi, Founding PI and Co-Executive Director, SECURE Center of Excellence, <i>Prairie View A&M University</i> Roberto Osegueda, VP Research and Sponsored Projects, <i>UTEP</i> DeLisa Wilson, Associate Vice Chancellor Research, <i>Clark Atlanta University</i></p> <p>MODERATOR: Ann Q. Gates, Director, NSF Cyber-ShARE Center, Chair, Electrical Engineering and Computer Science, <i>University of Texas-El Paso (UTEP)</i></p>
10:00 AM – 11:00 AM	<p>Wall 2: Grant and Contract Administration</p> <p>Robert Clark, Jr., CIA, CCEP, CBM, Chief Compliance Officer, <i>Clark Atlanta University</i> Elbert Malone, Associate Provost for Sponsored Programs and Research, <i>South Carolina State University</i></p> <p>MODERATOR: G. Dale Wesson, Vice President, Research and Economic Development, <i>Virginia State University</i></p>
11:00 AM – 11:15 AM	<p>Break</p>

Thursday, September 27, 2018

11:15 AM - 12:30 PM	Breakout Session
12:30 PM - 1:30 PM	<p>Working Lunch — Strategic Investments Panel</p> <p>Daryush ILA, Vice Chancellor for Research and Technology Transfer, <i>Fayetteville State University</i> Tony Stanco, JD, LL.M., Executive Director, <i>National Council on Entrepreneurship and Technology Transfer</i> Mark Burns, Executive Director, MCubed, <i>University of Michigan-Ann Arbor</i> David Busigo, Director, <i>Small Business Programs Office, DARPA</i></p> <p>MODERATOR: Damon L. Tull, Director, Business Development, <i>ASEE</i></p>
1:30 PM - 2:30 PM	<p>Wall 3: Scholarly Work</p> <p>Enrique Barrera, Professor, Materials Science and Nanoengineering, <i>Rice University</i> Tasha R. Inniss, Associate Provost for Research, <i>Spelman College</i> Stephanie Luster-Teasley, Professor and Chair, <i>North Carolina A&T State University</i></p> <p>MODERATOR: Karl V. Steiner, Vice President for Research, <i>University of Maryland Baltimore County</i></p>
2:30 PM - 3:45 PM	Breakout Session
3:45 PM - 4:00 PM	Break
4:00 PM - 4:30 PM	Recap
5:30 PM - 7:00 PM	Networking Reception

Friday, September 28, 2018

8:00 AM – 8:45 AM	Breakfast and Group Connections
8:45 AM – 9:00 AM	Review of Previous Day and Charge for Day 2
9:00 AM – 9:45 AM	Morning Plenary Keynote Victor McCrary , Chair, National Skilled Technical Workforce, <i>National Science Board</i>
9:45 AM – 11:00 AM	Wall 4: Institutional Faculty Support Joseph Rencis , Dean, College of Engineering, <i>California State Polytechnic University, Pomona</i> Javier A. Kypuros , Dean, College of Engineering, <i>University of Texas at Tyler</i> Maj Mirmirani , Dean, College of Engineering, <i>Embry-Riddle Aeronautical University</i> MODERATOR: C. Fred Higgs , Vice Provost for Academic Affairs, <i>Rice University</i>
11:00 AM – 11:15 AM	Break
11:15 AM – 12:30 PM	Breakout Session
12:30 PM – 1:30 PM	Working Lunch — Remarks Darryll J. Pines , Dean, <i>Clark School of Engineering, University of Maryland</i> Damon L. Tull , Director, Business Development, <i>ASEE</i>
1:30 PM – 2:00 PM	Business Model Discussion G. Dale Wesson , Vice President, Research and Economic Development, <i>Virginia State University</i>
2:00 PM – 2:30 PM	Closing Remarks and Next Steps Norman L. Fortenberry , Executive Director, <i>ASEE</i> Damon L. Tull , Director, Business Development, <i>ASEE</i>

APPENDIX B: SUMMIT ATTENDEES

Cajetan Akujuobi, *Prairie View A&M University*
Enrique Barrera, *Rice University*
Carl Bonner, *Norfolk State University*
Mark Burns, *University of Michigan*
David Busigo, Jr., *DARPA*
Robert Clark, *Clark Atlanta University*
Gregory Dillon, *Youngstown State University*
Nicholas Eugene, *Coppin State University*
Franklin Fondjo Fotou, *Langston University*
Ann Gates, *The University of Texas at El Paso*
Chan Ham, *Kennesaw State University*
Jacqueline Henderson, *Bradley University*
C. Fred Higgs, *Rice University*
Mildred Huff-Ofosu, *Morgan State University*
Marcus Huggans, *The National GEM Consortium*
Dorota Huizinga, *California State University, San Bernardino*
Daryush ILA, *Fayetteville State University*
Tasha Inniss, *Spelman College*
Alton Johnson, *Central State University*
Kimberly Jones, *Howard University*
Erick Kindred, *Virginia State University*
Demitris Kouris, *South Dakota School of Mines and Technology*
Javier A. Kypuros, *The University of Texas at Tyler*
Stephanie Luster-Teasley, *North Carolina A&T State University*
Elbert R. Malone, *South Carolina State University*
Godwin E. Mbamalu, *Benedict College*
Victor McCrary, *National Science Board*
Dangale Meda, *Xavier University of Louisiana*
Maj Mirmirani, *Embry-Riddle Aeronautical University, Daytona Beach*
Vahid Motevalli, *Tennessee Technological University*
Riadh Munjy, *California State University, Fresno*
Otsebele Nare, *Hampton University*
Hai Nguyen, *US Department of Defense AAAS Fellow*
Mildred Ofosu, *Morgan State University*
Roberto Osegueda, *University of Texas at El Paso*
Darryll J. Pines, *University of Maryland*

Joseph J. Rencis, *California State Polytechnic University, Pomona*
Mark Riley, *University of Nebraska, Lincoln*
Peter Romine, *Navajo Technical University*
Devdas Shetty, *University of District of Columbia*
Tony Stanco, *National Council on Entrepreneurship*
Karl V. Steiner, *University of Maryland, Baltimore County*
Beena Sukumaran, *Rowan University*
Dale Wesson, *Virginia State University*
Lawrence Whitman, *University of Arkansas at Little Rock*
Julia Williams, *Rose-Hulman Institute of Technology*
Stephen Williams, *Milwaukee School of Engineering*
DeLisa A. Wilson, *Clark Atlanta University*
Stacy Wilson, *Western Kentucky University*
Asad Yousuf, *Savannah State University*
Manoochehr Zoghi, *Purdue University Fort Wayne*

National Science Foundation Staff

Jennifer Beierlein, *ENG/EEC—AAAS Fellow*
Junhong Chen, *ENG/EEC*
Earnestine Easter, *EHR/DGE*
Don Millard, *ENG/EEC*
Eileen Oni, *ENG/EEC—AAAS Fellow*
Bryan Silver, *ENG/EEC—Einstein Fellow*
Paige Smith, *ENG/EEC*
Mateo Munoz, *NSF/OIA—AAAS Fellow*

American Society for Engineering Education Staff

Norman Fortenberry, *Executive Director*
Ashok Agrawal, *Managing Director, Professional Services*
Damon Tull, *Director, Business Development*
Geraldine Gooding, *Manager, Strategic Projects*
Ray Phillips, *Assistant Program Manager, Education and Career Development*



