Research Development & Grant Writing News

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by Lucy Deckard

About the co-publishers
Mike Cronan, PE (Texas 063512, inactive) has 23 years of experience developing and writing successful proposals at Texas A&M University. He was named a **Texas A&M University System** *Regents Fellow* (2001-2010) for developing and writing A&M System-wide grants funded at over $100 million by NSF and other funding agencies. He developed and directed two research development and grant writing offices, one for Texas A&M's VPR and the other for the Texas Engineering Experiment Station (15 research divisions state-wide).

Lucy Deckard (BS/MS Materials) worked in research development and grant writing at Texas A&M University and across the A&M System for nine years. She directed A&M's *New Faculty Research Initiative (2004-09)*, helping junior faculty System-wide jumpstart their research careers with federal agency funding. She served as associate director of two research development and grant writing offices. She founded **ARFS** in 2010.

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Topics of Interest URLs

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What does NSF mean by "Innovation Ecosystem"?

By Lucy Deckard, co-publisher
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The term "innovation ecosystem" is popping up everywhere in NSF solicitations. NSF's current Engineering Research Centers (ERC) solicitation states that the three key features of an ERC should be *research*, *workforce development*, and *innovation ecosystem development*. ERC applicants must provide a strategic plan for innovation ecosystem development as well as "innovation frameworks" for engagement with industry stakeholders. To understand what NSF means by this term, you need to look beyond the dictionary. As with many NSF requirements, PIs need to understand the history, motivation, and expectations behind this criterion in order to develop a strong plan to address them.

What does NSF really mean by these terms? Where did this requirement come from? What have previous awardees done to address this requirement? What is the theory behind innovation ecosystems? Below, we'll provide an overview of the answers to these questions and direct you to resources that can help you to develop a comprehensive understanding of the body of thought underlying this term.

What is an Innovation Ecosystem?

Agencies are increasingly using the term "ecosystem" to refer to the complex environment, networks, policies and culture and actors influencing a process or quality of interest; thus, we're seeing references to innovation ecosystems, regional economic ecosystems, and learning ecosystems. In a report entitled "The Role of the National Science Foundation in the Innovation Ecosystem," released in August 2010 by the NSF Directorate of Engineering, they define the process of innovation as "the introduction of new or significantly improved products (goods or services), processes, organizational methods and marketing methods in internal business practices or the market place." This process, couched in fundamentally economic terms, requires 1) creation of new inventions, 2) translation of those inventions into products or processes that can be commercialized, and 3) commercialization and marketing of those new or improved products or processes. The innovation ecosystem is the combination of policies, infrastructure, connections and actors that allows that process to happen.

The idea of an innovation ecosystem originated in economic circles to describe regions such as the Silicon Valley where geographic proximity of university researchers, start-up companies, larger industry, investors and a large highly skilled workforce created a synergistic, interconnected environment that stimulated high rates of innovation and economic growth. Innovation ecosystems depend on: 1) technological development and innovation, and 2) entrepreneurship and commercialization. In the original formulation by economists who viewed innovation ecosystems principally through the lens of entrepreneurship, a regional innovation ecosystem was composed of three groups: finance, human capital, and industrial infrastructure. However, economists did acknowledge that universities are usually centers of these regional innovation ecosystems.

NSF, other research funders, and universities have focused more on the technological development and innovation part of the equation. They view the innovation ecosystem in terms of a research economy coupled to a commercial economy, with the goal being to ensure a "virtuous cycle" in which innovations from the research economy feed into the commercial economy, which then feeds profits resulting from those innovations back into the research economy. The challenge is to promote that synergistic connection when, in practice, universities, national labs and industry are often separated by a host of policy, cultural, logistical, and economic barriers. (For a comprehensive discussion on this topic, see "What is an Innovation Ecosystem" by Deborah Jackson)

What is an Innovation Ecosystem Supposed to Do?

While NSF has always emphasized creation of new knowledge and inventions, it is increasingly focusing on moving new discoveries to the marketplace, i.e., "translational research," particularly in Center-level programs. Chapter 5 of the ERC Best Practices Manual provides a helpful discussion on the role of innovation ecosystems. In that chapter, they show how they hope an innovation ecosystem can transform the familiar "Valley of Death" that new inventions often fail to traverse into a less daunting "Challenge Basin" (see figure below).

The innovation ecosystem does this by connecting the actors (e.g., researchers, small businesses, investors, industry), infrastructure (e.g., shared facilities, legal services, multi-institutional centers), policies (e.g., IP sharing, non-disclosure agreements, memoranda of understanding), and resources (e.g., funding) needed to promote transfer of technology to the market place.

NSF's depiction of how an Innovation Ecosystem can transform the "Valley of Death" into the "Challenge Basin." (from the ERC Best Practices Manual and originally from D. Jackson, "What is an Innovation Ecosystem?")
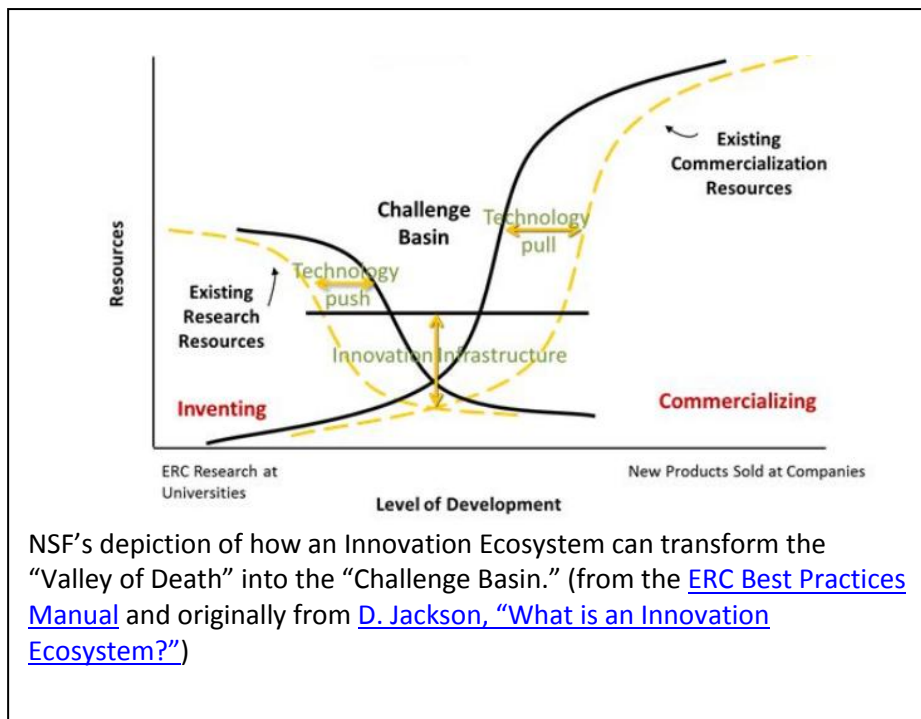
How can we develop an Innovation Ecosystem?

As one might expect from the term "ecosystem," connections and collaboration are key to establishing a strong innovation ecosystem. Key steps to building an innovation ecosystem are:

- Establish activities, processes, and infrastructure that promote interactions, communication, and collaboration among academic researchers, students, small businesses, industry, national lab researchers who are conducting work relevant to the technical focus or application of your innovation ecosystem.
- Engage organizations that can facilitate collaborations, provide infrastructure and contacts, and contribute knowledge and experience (which NSF calls "innovation facilitators"), such as university entrepreneurship programs, venture development organization, state economic development organizations, and business incubators.
- Develop policies and procedures that reduce barriers to collaboration and sharing of innovations. Chief among these is establishing intellectual property (IP) policies and procedures that incentivize research and collaboration, are not onerous in terms of time and effort, are clear and predictable, and balance the needs of the collaborating parties. Clearly, this needs be done at the institutional level and will require some time and the backing of top administrators. Section 5.3.2 of the ERC Best Practices Manual provides a thorough discussion of IP issues.

Of course, each of the above steps is a huge challenge in itself and could encompass myriad activities. When looking for information on what strategies seem to work best and mistakes to avoid, the ERC Best Practices Manual is a good place to start. Individual ERC websites are also a good place to look to find out what others are doing. Scholarly publications on innovation ecosystems, promoting collaborations among academia and industry, and commercializing new technology can also provide helpful information. Some references are provided at the end of this article.

Examples of recommendations for connecting with industry are: 1) When promoting interactions among your students and industry, try to structure your program to encourage on-going and frequent interactions rather than, for example, only annual presentations at a meeting; 2) Including industry researchers on thesis committees and arranging student internships at collaborating companies can be quite effective; and 3) A strong, involved Industry Advisory Board can not only provide guidance on how to better prepare students to work in industry, but Advisory Board members can become champions for your university and its research at their companies.

Preparing the Groundwork

Seeing the emphasis innovation ecosystems and translational research, especially in larger grants and Centers, universities and faculty teams can position themselves to compete for those grants by developing the collaborations, partnerships and policies that will be needed to establish an innovation ecosystem on which they can draw when developing projects.

- Connect with researchers in your area from other institutions, including institutions outside of academia such as national labs and research institutes.

- Find out what your institution's IP policies are and, at the institutional level, work to make them clear and conducive to partnering with business to conduct and translate research.
- Develop collaborations not only with large companies but also with small and start-up technology-oriented businesses. (SBIRs, STTRs and other grants that can help with this process are listed at the end of this article.)
- Get to know organizations in your area that are devoted to promoting economic development and innovation. A new resource that can be helpful is the Regional Innovation Accelerator Network website, which includes an interactive locator map to help you find Venture Development Organizations in your region.
- Work with education researchers to explore new approaches to encourage increased creativity and innovation in your students, and encourage connections among your students and industry collaborators.
- Offer training for technical personnel in the industry with which you hope to collaborate.

Take advantage of funding programs that can help you in these activities:

Small Business Innovation Research Grants (SBIR) – multiple agencies
Small Business Technology Transfer Grants (STTR) – multiple agencies
NSF Industry/University Cooperative Research Centers (I/UCRCs)
NSF Grant Opportunities for Academic Liaison with Industry (GOALI)
Partnerships for Innovation: Accelerating Innovation Research
I6 Challenge (EDA partnering with NSF, DOE and other agencies)
NSF Research Coordination Networks
NSF Engineering Research Centers
National Research Traineeships (NRT)

More resources:

Jackson, Deborah J., What is an Innovation Ecosystem?" National Science Foundation, Arlington, VA, 2012

Jukka Viitanen, Markku Markkula, Carlos Soler, Systemic Development of Regional Innovation Ecosystems: Modernizing the Triple Helix. Knowledge Triangle: Reinventing the Future, 2013

Auerswald, P. E., and L. M. Branscomb. 2003. Valleys of death and Darwinian seas: financing the invention to innovation transition in the United States, Journal of Technology Transfer. 28:227–239.

EERE Industrial Technologies Program, "Stage-Gate Innovation Management Guidelines: Managing Risk through structured project decision-making," Feb. 2007

Kenneth Smith, Building and Innovation Ecosystem: Process, Culture and Competencies, Industry and Higher Education, 20: 4, Aug. 2006 pp 219-224.

White House/NSF Webcast on HBCUs

By **Mike Cronan**, co-publisher
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The *NSF: White House Initiative on Historically Black Colleges and Universities (WHI-HBCU) Webcast* was first broadcast August 27 (view archived webcast here). The goal of the 90-minute webcast was to "*educate HBCUs and the surrounding community on the proposal and award process and funding opportunities available to them at the National Science Foundation*." While the target audience was HBCUs, the information itself was relevant to a much broader audience of institutions, particularly Hispanic Serving Institutions (HSI), Minority Serving Institutions (MSI), Predominately Undergraduate Institutions (PUI), and community colleges.

In addition, large research institutions may also view this webcast as a source of information related to links with minority serving institutions, particularly for large-team grants and research centers. For example, the current Engineering Research Center solicitation (Letter of Intent due September 25) requires the following configuration for domestic partners: "*The lead or at least one of the domestic partners **must be a university that serves large numbers of underrepresented minority students who are majoring in engineering fields AND are from collective groups underrepresented in engineering in the U.S.*"*

A competitive configuration on large-team grants that includes a minority institution benefits enormously from a history of research and education partnerships that were successful prior to the solicitation and ***not just quickly configured in response to the solicitation***. Given this, the webcast can be viewed as one more information touchstone for large research institutions to consider when developing partnership configurations with minority institutions in a way that benefits each.

As noted in the webinar, "NSF receives over 50,000 proposals per year and funds around 11,000 of them. When evaluating NSF proposals, reviewers will be asked to consider ***what the proposer wants to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits could accrue if the project is successful***. These apply to both the technical aspects of the proposal and the way in which the project may make a broader contribution."

Some general comments made by NSF during the webcast are important to note, not just for HBCUs but, by inference, for HSIs, MSIs, and PUIs, as well as R1 institutions interested in long-term strategic partnerships with minority serving institutions. Relevant to R1's, for example, Research Initiation Awards (RIA) provide support for STEM faculty at HBCUs to pursue research at the home institution or at an ***NSF-funded research center***, ***a research intensive institution***, or a national laboratory.   Similarly, as noted in the webcast, NSF Research Opportunity Awards (ROA) support PUI faculty research, but these awards typically ***allow faculty to work as visiting scientists at research-intensive organizations where they collaborate with other NSF-supported investigators***. These programs offer the opportunity to build long-term research partnerships important to larger efforts where institutional diversity contributes to funding competitiveness, something that is a given at NSF.

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NSF notes specifically that the agency "***does not get nearly enough applications from HBCUs***" in general, but particularly to such programs as the NSF CAREER (15-555) and Graduate Research Fellowship Program ([15-597](#)). In the latter case, NSF notes that "it is not easy to write a proposal to NSF, ***so the students who are successful often come from institutions where there is support for the student to write those applications for the fellowship***."

This is an area where R1 institutions with strong research development support services might work with smaller institutions to offer basic grant-writing support to prospective GRFP applicants as a way to establish a history of partnerships that will benefit both institutions on larger research collaborations and centers such as the ERC. For example, many R1 institutions offer GRFP workshops for students along with follow-up support on the proposal narrative, services that might be extended to potential HBCU/HIS/MSI research partners by forward-looking and strategically-driven research offices. Keep in mind as well that the GRFP is a portable award.

NSF's [EHR Core Research](#) (ECR), Fundamental Research in Science, Technology, Engineering, and Mathematics (STEM) Education, is a fairly new program and NSF noted that the agency has not "***received many proposals from HBCU faculty, so we would like to see more***." ERC promotes fundamental research in STEM education and critical research areas. It focuses on four particular areas -- STEM learning, STEM learning environment, STEM workforce development, and broadening opportunities in STEM. Here again, this is an area where R1 partnerships with HBCUs, HSIs, MSIs, and PUIs might make long-range strategic sense in terms of positioning for other NSF programs, particularly at the center level where evidence-based STEM learning activities that both draw from STEM learning theory and contribute to it are important components of a competitive project narrative.

In the broadening education research component of the ECR, NSF states, "there are several special emphasis areas that are worth noting. There is a special emphasis in the underrepresentation of women in STEM and people with disabilities, and those are very specific areas to submit proposals in the broadened participation research component of the EHR Corps." In addition, NSF notes, "there is great interest in all underrepresented groups…***the issues of first-generation students, veterans, etcetera, are welcome***. And we're looking for ***fundamental research about the barriers these students experience***, what issues they have with their STEM identity or identity in a group and what can be done to help their success. This is done at a basic education research level. So we're not talking about implementation activities. We're not talking about funding students. We're talking about conducting research."

Finally, some good advice came from NSF in response to a question on the resubmission of a declined proposal, noting that a resubmission "is considered a revision to the proposal, and what NSF will do with that proposal is ***give it essentially a <u>de novo review</u> starting from scratch***. It may have potentially a few of the reviewers that reviewed it initially, but you need to ***<u>prepare it as if it was the initial submission</u>*** and really focus on taking advantage of those reviewer comments to improve the quality of the next submission."

However, NSF notes, "it's not like your proposal goes back to the original set of reviewers with the statement of what was addressed. ***It starts from scratch as part of the review process. Often with a completely different set of reviewers***. Generally ***<u>you cannot just resubmit the same proposal</u>***. It's supposed to be a ***<u>substantial revision</u>***. Don't just fix some little things. Revise the proposal to make it a better proposal."

NSF recommends that when a proposal is declined, "really revise the proposal. When you get these initial comments back, get over the initial disappointment and the initial shock and read all of them and ***write down what's common across the reviews***. One reviewer may only find one small issue pertinent to what this particular reviewer thought you might have done. ***But if you see common across all reviewers the comment***, for example, *the research methodology was not sufficiently explained or the evaluation plan did not link to the project's goals and objectives or we don't see in this proposal where the PI discussed institutionalization and sustainability*, you want to ***sort through and identify common threads and then those are the areas you need to significantly revise in a resubmission***."

NSF's closing advice in the webcast is to stay connected to the agency by:

- Asking early; asking often
- Contacting NSF Program Officers if you have questions about a program
- Submitting proposals – don't give up after the first decline
- Being active as workshop participants and organizers
- Serving as ad hoc reviewers and panelists
- Considering service as a rotator
  http://www.nsf.gov/about/career_opps/rotators/index.jsp

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NSF ERC Webinar Report

By **Mike Cronan**, co-publisher
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The NSF held a 2-hour webinar on August 31 for teams considering responding to the NSF solicitation for *Gen-3 Engineering Research Centers* (NSF 15-589). It's worth keeping in mind that NSF webinars offer information already available from a close and <u>repeated</u> reading of the solicitation (i.e., *explication de texte*). All information required for a submission legally must be included in the solicitation; otherwise, an unfair competitive advantage could go to those who viewed the webinar over those who did not.

Nonetheless, there is a very real competitive advantage gained from viewing agency webinars apart from the nagging feeling that those who did watch got some secret "insider information" that those who didn't are privy to. In reality, the advantages accruing to those who watch the webinar are more nuanced and largely come from the wider perspective gained by hearing multiple program officers talk about the solicitation--responding to questions, offering examples, rephrasing solicitation language for clarity, etc..

For instance, the presentation slides accompanying the ERC webinar distill the solicitation into what ERC program officers see as the most important expectations for a successful ERC proposal. This focus itself tells you something, i.e., how to weight the importance of various parts of the solicitation. In this case, the ERC webinar started by addressing what is new and important in this solicitation in contrast to the prior solicitation. Slide 3 below shows the new emphasis, particularly the importance of answering the three new fundamental questions and the specific review criteria. All of this information is in the actual solicitation, but the webinar places it upfront and elaborates upon it in a longer discussion. So take it to heart and make it the core of your narrative argument.

NSF 15-589
New Features

Three Fundamental Questions
- *What is the compelling new idea and how does it relate to national needs?*
- *Why is a center necessary to tackle the idea?*
- *How will the ERC's infrastructure integrate and implement research, workforce development, and innovation ecosystem development efforts to achieve its vision?*

Specific Review Criteria
- Integrated <u>Strategic Plans</u> for Research, Workforce Development, Innovation
- <u>Leadership</u>: expertise in research, workforce development, and innovation
  - Diversity Director: experienced in activities proven to create culture of inclusion
- <u>Research</u>: impact, benchmarking, partnerships, system-at-scale
- <u>Workforce Development</u>: literature-based, inclusive, assessment
- <u>Innovation</u>: scale-able, sustainable, community
- <u>Infrastructure</u>: plan for community of inclusion

Basically, over the course of the 2-hour webinar, you get to see the ERC solicitation from the program officers' perspective and you can therefore adjust your understanding of the solicitation accordingly, particularly as it relates to how you will write your preliminary project narrative due October 23. Moreover, it is clear from the webinar that the above three

fundamental questions are truly at the heart of what will constitute a successful project narrative. Like many fundamental principles, these fundamental questions for the ERC appear deceptively simple at first reading, but on reflection become increasingly challenging.   It is worth noting, for instance, that the word "*fundamental*" is used as a descriptor for expected ERC activities by NSF some 35 times in the ERC solicitation.

The first step in writing a preliminary ERC proposal that gets invited to full will depend upon how well you frame these three questions and how well you answer them. Proposers are encouraged to use specificity and detail rather than visionary generalities largely untethered to operational details. In addition, the core strategic plan must integrate research, workforce development, and innovation ecosystems.

For example, the 9-page ERC preliminary proposal requires 5 narrative sections along with the 3-plane diagram that does not count against the page limit. They appear in the following order: **2. Vision**; **3. Strategic Plans** (for research, workforce development, and innovation ecosystem development); **4. Research**; **5. Workforce Development**; and **6. Innovation Ecosystem Development**. How you **think** about this **as a team** will need to be guided by the ERC presentation slide on the previous page. The operative word here is "***think***," followed by "***as a team***."

This is the moment to address the common failure of many preliminary proposals to both the ERC and STC programs, as well as many other large-team grant programs: siloed, fragmented proposal development activities largely conducted by email and occasionally punctuated by conference calls in a largely unplanned environment where time evaporates until a fire drill response is required to submit by the deadline.

Integrative proposals such as the ERC require an integrative plan for development and writing in which the entire leadership team is totally engaged in the overall process. Successful teams must avoid proposal development in a segmented fashion specific to an area of expertise but failing to meld into an integrative whole--the fundamental requirement for success. In fact, NSF defines the core of an ERC as being an "engineered system—*a combination of components and elements that work together to perform a useful function*." You would do well to think of the ERC narrative as "an engineered system of narrative elements that must work together to perform a useful function"—in this instance, convincing the program officers and reviewers to invite your preliminary proposal to full.

For example, while NSF expects that the ERC workforce development activities will be planned and directed by someone with literature-based experience in STEM education and training, that does not mean that the PI is not an integral part of the planning process for determining the most appropriate workforce development activities as a logical extension of the research activities. Moreover, while the solicitation references "fundamental" 35 times, it also references "diversity" 20 times. That tells you something—diversity in ERCs is very important to NSF, and program officers and reviewers will expect to see it practiced from the leadership team to the students to the staff. While that may present a challenge to some, it does not absolve an ERC team from meeting this NSF expectation, although too often this point is missed.

Therefore, it is a very good bet that a large number of preliminary proposals not invited to submit a full proposal will have been insufficiently attentive and thoughtful about how fundamental question 3 should be addressed in the narrative: *How will the ERC's infrastructure*

integrate and implement research, workforce development and innovation ecosystem development efforts to achieve its vision? Too often the research team is insufficiently involved in thinking about how their proposed research best manifests itself in well chosen activities for workforce development and innovation ecosystem development.

You must address these three fundamental questions first in section 2 (your ERC vision) and then elaborate upon them in an integrative way in section 3 (strategic plans), and offer additional detail and specificity in sections 4 (research), 5 (workforce development) and 6 (innovation ecosystem development). How well your narrative integrates research, workforce development, and innovation ecosystems will be key to your success. ***As NSF made clear in the webinar, describing these three key components of an ERC's vision in a fragmented way in your preliminary proposal will ensure you are not invited to the "ERC full proposal prom" June 16***. (The full audio and video transcript of the 2-hour webinar and presentations slides will be available online here, but had not been posted at publication of this issue of the newsletter.)

NSF Reverse Site Visits

By **Mike Cronan**, co-publisher
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Reverse site visits (RSV) are used by NSF to further review proposals of a certain size (typically multi-million dollars) and of a research and operational complexity that are meritorious for funding. This would include, for example, program areas that vary widely in scale and complexity, such as the upcoming Advances in Biological Informatics or the recently completed Expeditions in Computing. Other funding agencies use this process as well, but it is best not to conflate them as an NSF reverse site visit differs from one conducted by NIH (Site Visits, Grantee SOP).

At NSF, RSVs are one of multiple review options available to the agency, e.g., including ad hoc review and/or panel review, internal NSF review, site visit review, or reverse site review. Very large grants, such as the currently open ERC, with funding in the range of $20 million over five years, typically use the multi-day site visit review process to select the final few recipients from among the several "left standing" at the end, a multi-gate competitive process lasting well over a year. There is disagreement over whether the NSF site visit review process violates the Geneva Conventions, but by comparison, the RSV is a much more merciful and humane process. The RSV typically lasts a few hours at the agency's headquarters and consists of a **tightly choreographed** presentation by the PI, perhaps lasting 30 minutes, followed by 90 minutes or more of questioning by the review panel to the RSV team of perhaps 4 or 5.

The key distinction that needs to be made in preparing for an RSV is this: The difference between the research narrative of a successful full proposal and the staged production of a successful reverse site visit is akin to the difference between reading a play script in solitary, i.e., the research narrative, and seeing it performed on Broadway, i.e., the interactive give and take of the RSV where the review panel and the RSV team fully engage. Moreover, the reverse site visit "stage production" typically requires the dynamic integration of two key scripts—the research narrative of the successful full proposal and the review comments of all prior stages of the competition, along with any new or outstanding issues raised by the sponsor in the review process. Special consideration is typically given to unresolved issues identified earlier in the review process, particularly as they relate to exploring the capacity and hence gaining confidence in the ability of the RSV **team** to implement the vision, goals, and objectives of the proposed project.

Like the staged production of a play, the RSV requires the RSV team to hold multiple rehearsals to make sure the presentation is pitch perfect when it is made before the review panel and program officers at the agency location. **RSV rehearsals benefit enormously when done as a team**. The RSV preparation process gains efficiency and effectiveness when the RSV team meets face to face for rehearsals rather than on conference calls or WebEx or similar media. Multi-institutional partnerships, which are common for RSV types of projects, will likely require travel to a central site, typically the PIs institution, for some team members, but so be it. It is important to practice the RSV presentation as you will give it at the agency—as a team

in the same room—to establish team dynamics and to ensure that communication among team members is relaxed and appears natural.

In preparing for the RSV, the key starting point is to review all the documentation related to prior reviews, both from the full proposal and a preliminary proposal (if that was part of the process), along with any review documents generated after the full proposal review. For example, prior to an RSV invitation, there may be a continued vetting process whereby the program manager requests that candidates for an RSV respond in writing to all the concerns raised in the full proposal review, particularly the panel summary, or to other post-review agency concerns. These agency questions and concerns and your responding document then become part of the RSV preparation process.

This review of the prior review documents should include key project personnel beyond the four or five that will comprise the RSV team, as well as a few informed outside observers that will function as a mini-red team, offering observations on the RSV preparation process, particularly critiquing multiple, timed rehearsals of the PI's RSV presentation. It can be very beneficial to find an outside reviewer to join your RSV rehearsals who has gone through an RSV process at NSF themselves, or has experience preparing for RSVs, likely someone in a research development office.

Performance timing is key to the RSV process. For example, if the PI starts to run over the presentation time limit, he very likely will be cut off abruptly and the RSV will move to the next stage of the process, typically the panel asking questions of the RSV team, regardless of whether a few of the PIs PP slides remain with critical concluding information. Unlike site visit reviews, however, which can have a cast of characters reminiscent of Cecil B. DeMille's lavish movies like the *Greatest Show on Earth*, the RSV is more modest in scale and scope and production. Therefore, given the very tight time frame, the research team will have less opportunity to recover from missteps. So practice, practice, practice with the RSV team all on the same script and all presentations and anticipated responses timed in practice to ensure your key information gets presented at the RSV.

Keep in mind as well that, in addition to the RSV presentation slides that will typically be presented by the PI during the allotted time, perhaps 20 or 30 minutes, you most likely will be **allowed to have backup slides as part of the RSV**. The backup slides would not be used in the introductory presentation, but would be used during the period when the RSV panel is asking questions of the RSV team. The backup slides would be used to visually illustrate and complement your practiced responses to some of the review panel's **key anticipated questions**, many of them gleaned from questions raised by the panel review.

These backup slides need to be well organized, to use a common organizational format, and to include all anticipated challenging questions you expect the review panel to ask. Moreover, the PI will need an index of slide titles that links them to the anticipated questions so that they can be quickly presented to the review panel to complement verbal responses by RSV team members to anticipated questions. For example, you can anticipate being asked, "*Why is your research novel in the context of the current state of the field*?" A backup slide for answering this question would be of enormous value. Conversely, you may not anticipate a member of the review panel asking such a simple question as, "*Why is this project important to you personally…what motivates your involvement*?"

However, a key starting point to the RSV rehearsal process is to organize all prior review comments in a way that reorders and classifies them into clusters of like or related questions and lists them hierarchically by importance. A spreadsheet or table matrix works well for compiling a list of the questions and concerns raised by the full proposal review panel that will very likely be asked again by the RSV review panel. Once you have established a hierarchy of anticipated questions that most likely will be asked by the RSV review panel, the RSV team needs to go through an iterative process of converging on the most persuasive response to each question.

This discussion of each of the RSV team's anticipated questions should identify who on the team will take the lead in answering that question. In the case of anticipated questions, the PI typically serves in the role of "air traffic controller," redirecting a question from the RSV review panel to a predetermined member of the RSV team. In the case of unanticipated or unrehearsed questions, the PI will decide who best should answer.

It's often easy to determine who should answer each question by fitting the question to a team member's research domain. However, in other cases, an anticipated question may best be answered by a person **outside of the RSV team** due to agency constraints on the RSV team size. In that case, a process has to be worked out to determine who among those attending the RSV will field that question. Here a backup slide developed by the person not attending the RSV will be of great value to the person who will answer the anticipated question.

When it comes to anticipating questions that the RSV panel review members will ask, you may have initial review and panel comments in response to your full proposal that come from a number of different reviewers, perhaps four or five. A first organizational step in compiling a list of anticipated questions that will be asked at the RSV is to aggregate all like reviewer comments from all prior reviews into common clusters. This can be done by going line by line through all the proposal reviews and copying and pasting like reviewer comments into a spreadsheet or Word document organized by heading categories or classifications under which all the multiple reviewer comments logically fall.

For example, all of the prior individual reviews may contain many comments of a similar nature that fall into a common domain, perhaps related to the novelty of the research, its significance, or its capacity to transform the field. You would then create a heading like "*Likely Core/Fundamental RSV Questions*." Once done, you can start the process of distilling multiple related reviewer comments into a more condensed version of the reviewer critique that is then organized for answers that respond fully to this particular category of reviewer concerns.

Another common question that can be anticipated at a RSV and defined as a cluster category might be: "*Why is the team configured as it is*?" This is a "synergy" question, basically, in answer to which a review panel will want to know why the team is a team, how did the team come about, what is the history of collaboration among the team's members, how each team member contributes to the overall research goal, how the PI will manage interdependencies among research strands, how synergy will be produced, etc.

Other categories of reviewer comments may fall into such categories as wanting to see more operational specifics related to implementing the research vision, or questions probing whether the proposed research is really novel to the field, or sufficiently fundamental in terms of the criteria for the specific program, or how the management plan will ensure research synergy across multiple disciplines and institutions, or how broader impacts activities will be

operationally distributed across the research partnership, etc. Almost certainly you can count on the RSV panel to ask the "*unit of change*" question, i.e., *what will be different in the field after five years of funding your research? What does success look like? What are your metrics and milestones for success*, etc.

The key here is to identify all similar review comments, all likely written somewhat differently by each reviewer, and compile them in a distilled way that makes sense both for the reviewers and the reviewed. You may well have a long list of reviewer questions you anticipate being asked at the RSV. It will be important in the PI's overview presentation, in the backup slides used as examples during review panel questions, and in responses by members of the RSV team to find a common organizational template for formatting and presenting information. How well you organize complex materials will greatly impact how accessible that information is to the RSV panel and how memorable it is to the panel after your complete your RSV. It is important to find ways to avoid cognitively overloading your reviewers.

For instance, one or two backup slides may be required to answer RSV panel questions on each of three or four or five research strands or thrusts in your proposal, as well as other core activities, including broader impacts, diversity, workforce, innovation and the like. However, the slides used to address these research strands or other questions, either in the PI's presentation or in the backup slides, will benefit from a common organizational formation, at least by category. For instance, in talking about a research strand, it is common to address (1) **technical challenges** and (2) **technical approaches**. These organizing topics should then be used for all the slides addressing the research strands. This will occur if the RSV process is conducted as a team. But if the process is siloed, you will likely end up with a mishmash of information confusing both to RSV panel reviewers and to other team members as well.

Bottom line, a successful RSV rests on your capacity to anticipate nearly all of the questions you will be asked by the RSV panel review and your willingness to rehearse and practice as a team the most compelling and convincing responses to these questions within the boundaries set for the RSV. Most of the questions will be given to you in one form or the other in the prior review documents, and other questions will arise as you go through multiple rehearsal meetings preparing for the site visit. If you are asked a difficult, unanticipated question "out of left field," your trump card is your history of team dynamics. If you have a history of research as a team, if you have rehearsed as a team for the RSV, and if it is clear from your team dynamics that you are truly a team with a shared passion for the project, you will be able to field any question asked by the RSV review panel.

U.S. Department of Interior

By **Mike Cronan**, co-publisher

If you track funding daily on Grants.gov, either by visiting the website or using the RSS feeds or email alerts offered by Grants.gov, you will likely notice that the U.S. Department of Interior (DOI) is by far disproportionately represented in the number of funding opportunities open at any given time—often exceeding 250--compared to other federal agencies. For example, in a one week period this September, they listed 40 grant opportunities posted to Grants.gov by DOI bureaus and offices, including 5 for U.S. Geological Survey, 27 for the National Park Service, 3 for Fish and Wildlife Service, and 5 at the Bureau of Land Management. Other DOI bureaus and agencies include Bureau of Indian Affairs, Bureau of Indian Education, Bureau of Ocean Energy Management, Bureau of Reclamation, Bureau of Safety and Environmental Enforcement, and Office of Surface Mining, Reclamation, & Enforcement.

When it comes to research of interest to university faculty, the core focus of DOI is on lands, water, wildlife, and energy. In some ways, it is not all that dissimilar to NOAA. When you compare their strategic plans, NOAA's is focused on oceans and the DOI's on lands, but they share similar goals related to sustainability, water, energy, ecosystems, climate change, environment, resilient communities, etc.

However, there are several caveats to keep in mind when looking for funding at the DOI. For example, DOI grants tend to be small, often in the $10,000 to $150,000 range; regionally specific in focus, often directed to a very small geographic or biological scale; very applied or contracts; and sometimes published with a "*Notice of Intent to Award*" proviso that DOI intends to award the grant to a specific researcher at a specific university. In the latter case, to DOI's credit, a "*Notice of Intent to Award*" offers a direct warning that a grant is "wired" from the get go. Other agencies may know a grant is "wired," but post the notice as if it were a truly open competition, perhaps using only a "short fuse" due date to tip off more savvy applicants that submitting would be a waste of time.

 The DOI "*Notice of Intent to Award*" proviso should not necessarily discourage researchers. It indicates the possibility that once you have DOI funding in a certain narrowly defined geographic and research topic area, you may develop a long-term funding relationship with the agency for the same project year after year.

Moreover, it is worth noting that there are funding opportunities at DOI for those in disciplines other than the physical, biological, statistical, geographical, and environmental sciences. Many small grant opportunities, for example from the National Park Service, relate to humanities and social science-based interpretive and cultural activities specific to a park or an historic site.

For those considering funding opportunities at DOI, it would be helpful to look at the Strategic Plan For Fiscal Years (2014--2018) to determine whether your interests are a fit for the DOI's highly mission-driven objectives. For example, the DOI interest in "*Ensuring Healthy Watersheds and Sustainable, Secure Water Supplies*" is an area of likely interest for faculty from multiple disciplines who may find their interests reflected in the DOI focus on "The importance of water as the foundation for healthy communities and healthy economies and the challenges

resulting from climate change, drought conditions, and increasing demand.. ..Work with states in managing water resources, raising awareness and support for *sustainable water usage, maintaining critical infrastructure, promoting efficiency and conservation, supporting healthy rivers and streams, and restoring key ecosystems*."

Similarly, in the DOI focus area of *Building a Landscape-Level Understanding of Our Resources* to "Harness existing and emerging technologies and elevate understanding of resources on a landscape-level by advancing knowledge in the fields of *ecosystem services and resilience, energy and mineral resource assessments, hazard response and mitigation, water security, sacred sites, climate change adaptation, and environmental health*... Applied and basic scientific research and the development of science products to inform decision making by DOI's bureaus and offices and local, state, national, and international communities...The DOI's science agency, the U.S. Geological Survey, generates essential scientific information and data that is used as the basis for decision making, including earth observation satellite imagery and stream gage and seismic data."

Just keep in mind that DOI is a very mission-focused agency with targeted funding opportunities. As with any mission-focused agency, it is important to approach the agency and talk to program officers with the intent of better understanding the following;

- What types of research does the agency fund?
- How well do your research interests/expertise map to and impact the agency's research mission priorities?
- How are research domains at the agency organized?
- How does the agency announce funding opportunities?
- What are the agency guidelines for submitting proposals?
- How will your proposal be reviewed?
- What is the role of the program officer in the review process?
- Who is your audience?
- How do you best address that audience?
- What is a fundable idea within the context of the agency's research mission priorities?

Research Development & Grant Writing News

Research Grant Writing Web Resources
(Back to Page 1)

Reminder: NIH Regional Seminar in San Diego, October 14-16, 2015
Don't miss out on these great opportunities at this year's final NIH Regional Seminar on Program Funding & Grants Administration:

- About 45 NIH grants, review, policy and program officials are excited to meet you and share their expertise on the application process, peer review, and award management.
- A redesigned track for new investigators provides step-by-step guidance on navigating NIH programs to advance your career.
- 15 minute meetings to chat 1:1 with NIH & HHS faculty during the Meet the Experts sessions (meet with one expert or as many as you can fit into your schedule!)
- Over 45 different session topics offered during the two-day seminar.
- OMB Uniform Guidance and what it means for NIH & you – straight from NIH policy officials.
- Two sessions on peer review – one for investigators, and one for research administrators!
- Trainee discount of $50 continues throughout registration.
- Optional pre-seminar Workshop on Human Research Protections (HHS OHRP & NIH) offers a 5.75 *AMA PRA Category 1 Credit™* – ideal for early-stage investigators and trial coordinators involved in human subjects research.
- Optional pre-seminar workshops on electronic Research Administration are still available. Hurry, as these workshops are filling quickly!
- Interaction with over 600 attendees from around the world.
- The opportunity to attend a seminar on the west coast for the first time in years!
- And so much more…you have to see it to believe it! Check out the agenda today!

Informational Webinar on NSF 15-598, Natural Hazards Engineering Research Infrastructure (NHERI)
An introduction to solicitation NSF 15-598, Natural Hazards Engineering Research Infrastructure (NHERI): Network Coordination Office, Computational Modeling and Simulation Center, and Post-Disaster, Rapid Response Research Facility
Alternate date (only if October 2, 2015 requires rescheduling): October 8, 2015, 1:00 – 3:00 pm EST

This informational webinar will provide an overview presentation and answers to questions on the National Science Foundation (NSF) program solicitation Natural Hazards Engineering Research Infrastructure (NHERI) (NSF 15-598).
NHERI will be a distributed, multi-user, national facility to provide the natural hazards engineering community with access to research infrastructure (earthquake and wind engineering experimental facilities, cyberinfrastructure, computational modeling and simulation tools, and research data), coupled with education and community outreach activities. NHERI will enable research and educational advances that can contribute knowledge

and innovation for the nation's civil infrastructure and communities to prevent natural hazard events from becoming societal disasters. This webinar will address the three components of NHERI competed in NSF 15-598: Network Coordination Office, Computational Modeling and Simulation Center, and Post-Disaster, Rapid Response Research Facility.

Questions should be submitted via email in advance of the webinar to Joy M. Pauschke at jpauschk@nsf.gov by September 28, 2015.

Registration is required for this webinar; interested participants must register via WebEx. The registration deadline is Wednesday, **September 30, 2015**.

September 18 Symposium on Enhancing the Effectiveness of Team Science: Register for this event | Agenda You are invited to attend the symposium on *Enhancing the Effectiveness of Team Science* in person or online.
The past half-century has witnessed a dramatic increase in the scale and complexity of scientific research. The growing scale of science has been accompanied by a shift toward collaborative research, referred to as 'team science." Scientific research is increasingly conducted by small teams and larger groups rather than individual investigators, but the challenges of collaboration can slow these teams' progress in achieving their scientific goals. How does a team-based approach work, and how can universities and research institutions support teams?

Enhancing the Effectiveness of Team Science synthesizes and integrates the available research to provide guidance on assembling the science team; leadership, education and professional development for science teams and groups. It also examines institutional and organizational structures and policies to support science teams and identifies areas where further research is needed to help science teams and groups achieve their scientific and translational goals. This report offers major public policy recommendations for science research agencies and policymakers, as well as recommendations for individual scientists, disciplinary associations, and research universities. The report will be of interest to university research administrators, team science leaders, science faculty, and graduate and postdoctoral students.

Educational Grant Writing Web Resources

You are invited to participate in the following webinar on MSPnet.
MSPnet Academy: Infusing Computational Thinking into Science Education
Presenters: Irene Lee, Maureen Psaila-Dombrowski, Paige Prescott
Sep 21, 2015 at 2:00 PM (Eastern)
Description: The Santa Fe Institute has been developing programs and curricula that infuse computational thinking into Science education for the past 12 years. In this webinar we will describe how the study of Complex Adaptive Systems through computer modeling and simulation fits into existing science frameworks and classes, share information about our program and curricula, and describe the professional development needed to prepare Science teachers to address the computational thinking practices presented in the NRC framework and NGSS. Capacity is limited and access is first-come, first served. Please RSVP to confirm your attendance. Early admission (10 minutes prior to the scheduled starting time) will be granted to those who respond "yes".
To RSVP, go to http://hub.mspnet.org/wr.cfm/454/202819/D8SBEHAc40Zv86aCYBGE.

Perceptions and Resilience in Underrepresented Students' Pathways to College
This study demonstrates the effort and engagement underrepresented students expend in the effort to become college-ready, and the risk for burnout as a result of both academic and nonacademic hardships during their high school years. School regard may mitigate these effects. Mere expectations for college appear insufficient in the current access-for-all climate. Rather, it is important that students perceive value and esteem for their potential from school faculty and peers, sustaining their ambitions through the obstacles they encounter in high school and expect in college.

The Condition of College & Career Readiness 2014: African American Students
African American students are less likely to meet key benchmarks for college readiness than any other group of underserved students, even when they successfully complete the high school coursework intended to prepare them for college, says this new report by ACT and UNCF.

The Condition of College & Career Readiness 2014: Students from Low-Income Families
Nearly all ACT-tested students from low-income families in the United States aspire to go to college--at an even higher rate than students overall--but many lack the academic preparation to reach their goals, says this report by ACT and the National Council for Community and Education Partnerships.

Why Rural Matters 2013-14: The Condition of Rural Education in the 50 States

Why Rural Matters 2013-14 is the seventh in a series of biennial reports analyzing the contexts and conditions of rural education in each of the 50 states and calling attention to the need for policymakers to address rural education issues in their respective states**.**

The Supply And Demand For Rural Teachers
University of Virginia's Daniel Player describes the current state of rural teacher labor markets, contrasting them with urban, suburban, and town settings. He also looks at how labor markets differ across rural settings and within Idaho's rural schools. Player uses nationally representative survey data collected over 15 years to compare and contrast these teacher labor markets on several key indicators.

Research Development & Grant Writing News

Agency Research News

Dear Colleague Letter: Supporting Research Advances in Smart and Connected Communities
The National Science Foundation's (NSF) Directorates for Computer and Information Science and Engineering (CISE), Education and Human Resources (EHR), Engineering (ENG), Geosciences (GEO), and Social, Behavioral and Economic Sciences (SBE) wish to notify the community of their intention to support, foster, and accelerate fundamental research that addresses challenges in enabling Smart and Connected Communities (S&CC).

Advances in the effective integration of networked information systems, sensing and communication devices, data sources, decision making, and physical infrastructure are transforming society, allowing cities and communities to surmount deeply interlocking physical, social, behavioral, economic, and infrastructural challenges. These novel sociotechnical approaches enable increased understanding of how to intelligently and effectively design, adapt, and manage Smart and Connected Communities. Through this Dear Colleague Letter (DCL), NSF aims to accelerate fundamental understanding and stimulate basic research on frameworks that integrate and operate on data from multiple sources and at multiple temporal and spatial scales, new sociotechnical systems that are interconnected and interdependent, and new technologies for innovative applications and services to enable more livable, workable, sustainable, and connected communities. Beyond supporting isolated efforts deemed as "islands of successes," NSF seeks to develop the scientific and engineering foundation and underlying environment that enables and spurs innovations of technologies and systems that can be integrated into the overall S&CC vision.

A successful Smart and Connected Communities solution demands demonstration of marked improvement (quantifiable evidence) of the stakeholder experience – whether in personal quality of life, community and environmental health, social well-being, educational achievement, or overall economic growth and stability. Toward developing successful S&CC solutions, researchers must engage industry and non-profit partners, state and local government officials, technology developers, and end users throughout the process – from conceptualization to implementation. Since S&CC involve K-16 education institutions and informal education resources such as media and museums, research projects that explore linkages to these institutions are encouraged. In other words, researchers should pursue the "living lab" approach where research and development is staged with pilot deployments within communities. This approach leads to quantifiable improvements that demonstrate feasibility of concepts as well as provide evidence for broad adoption.

The interactions and interdependence of systems in different domains (e.g., energy, transportation, environment, and public health) are becoming increasingly important in today's connected communities. Overcoming challenges to Smart and Connected Communities therefore requires a systems approach to understand how a system's constituent parts are interrelated and function over time within the context of the larger, evolving system, which in turn necessitates integration of advances and results in multiple research and application domains. Successful applications of these complex systems will require the development, testing, and deployment of models of education and training that rest upon research about

how people learn, and how transdisciplinary and trans-community teams form and succeed. Furthermore, the role of humans as users and as part of the system is central in S&CC, and proposals must include social, behavioral, and economic components or integrate social, behavioral, and economic perspectives.

With this DCL, NSF invites supplements to existing CISE, EHR, ENG, GEO, and SBE grants, or new EArly-concept Grants for Exploratory Research (EAGER) proposals submitted to the CISE, EHR, ENG, GEO, and/or SBE directorates. Supplemental proposals must enhance existing projects by incorporating or exploring the concepts described in this DCL, while demonstrating how the proposed work is related to the active project. Any proposal must describe how the research and activities fit within the Smart and Connected Communities vision. These descriptions must include the practical challenges being addressed, i.e., the proposed work should advance science, be motivated by a real-world challenge, and lead to a solution that can be adopted by a community or municipality. EAGER proposals must pursue "high-risk, high-reward" research and activities, in the sense that they involve radically different approaches, apply new expertise, or engage novel disciplinary or interdisciplinary perspectives. They must address concepts described in this DCL by demonstrating how the high-risk, high-reward research and activities fit within the S&CC vision.

Dear Colleague Letter: Prediction of and Resilience against Extreme EVENTS (PREEVENTS)
PREEVENTS is one of the successors to the Hazards SEES program, and one element of the FY16 Risk and Resilience activity at NSF. PREEVENTS is designed to (1) enhance understanding of the fundamental processes underlying natural hazards and extreme events on various spatial and temporal scales, as well as the variability inherent in such hazards and events; (2) improve models of natural hazards, extreme events, and their impacts on natural, social, and economic systems; and (3) enable development of new tools to enhance societal preparedness and resilience against such impacts. PREEVENTS will focus on natural hazards and extreme events, not those that are deliberate or accidental. PREEVENTS will include opportunities for disciplinary and multidisciplinary projects at multiple scales, particularly in areas ripe for significant near- or medium-term advances.

Through this letter, GEO welcomes proposals for research projects and/or focused workshops that would advance the goals of PREEVENTS. Research projects may involve any PREEVENTS-relevant scientific area supported by existing GEO programs. GEO envisions PREEVENTS workshops as fostering community development in disciplinary and/or cross-disciplinary areas that are not yet well established. PREEVENTS proposals may be submitted to any appropriate existing GEO program(s), subject to the limitations for the particular program(s).

DE-FOA-0001379 Photovoltaics Research and Development (PVRD) Notice of Intent (NOI)
The Office of Energy Efficiency and Renewable Energy (EERE) intends to issue, on behalf of the Solar Energy Technologies Office, a Funding Opportunity Announcement (FOA) entitled "Photovoltaics Research and Development (PVRD). EERE plans to issue the FOA on or about September 8th, 2015 via the EERE Exchange website (https://eere-exchange.energy.gov/). All of the information contained in this Notice is subject to change. EERE will not respond to questions concerning this Notice. Once the FOA has been released, EERE will provide an avenue

for potential Applicants to submit questions. This is a Notice of Intent (NOI) only. EERE may issue a FOA as described herein, may issue a FOA that is significantly different than the FOA described herein, or EERE may not issue a FOA at all.

DE-FOA-0001394 Request for Information: Building Envelope Infiltration Diagnostic Technologies

The U.S. buildings sector accounted for approximately 41% of United States primary energy consumption in 2010. Of this energy used by U.S. residential and commercial buildings, approximately 10% can be attributed to losses through the building envelope due to air infiltration. The purpose of this RFI is to collect information that will be used by BTO for strategic planning of the broader windows and opaque envelope technologies R&D portfolio. Specifically, BTO is seeking information from the public on diagnostic technologies that can be used to identify infiltration through the envelope, including in and around fenestration, of residential and commercial buildings. In particular, BTO is interested in the current state-of-the-art in infiltration diagnostic technologies, forthcoming research and development (R&D) advances that could reduce cost or improve performance, and the potential market implications of improved infiltration diagnostics. Responses to this RFI will impact the development of the BENEFIT 2016 FOA. This is solely a Request for Information and not a Funding Opportunity Announcement (FOA). EERE is not accepting applications and will not respond to questions.

DE-FOA-0001389 Solutions to Improve the Energy Efficiency of U.S. Small and Medium Commercial Buildings

The Office of Energy Efficiency and Renewable Energy (EERE) intends to issue, on behalf of the Buildings Technology Office, a Funding Opportunity Announcement (FOA) number DE-FOA-0001385 entitled "Solutions to Improve the Energy Efficiency of U.S. Small and Medium Commercial Buildings". Through this FOA, DOE seeks to fund the scale-up of promising solutions to the market barriers that hinder the growth of energy efficiency in the commercial building sector. The objective of this funding is to build a path for market-ready solutions to be used at scale across the U.S. to improve building energy efficiency. In order for the Building Technologies Office Commercial Building Integration Program to meet DOE's national energy efficiency goals for commercial buildings (20% improvement by 2020; 50% by 2030), the program has invested in the development of resources, tools, and solutions designed to help overcome these barriers to energy efficiency. DOE's Commercial Building Integration Program is interested in funding proposals that deploy these resources and solutions, through successful existing programs or innovative new ones, to increase program effectiveness and increase energy savings in commercial buildings. The full Notice of Intent DE-FOA-0001389 is posted in the FOA Documents section of this NOI. NO APPLICATIONS WILL BE ACCEPTED THROUGH THIS NOTICE. Please do not submit questions or respond to this Notice of Intent. Prospective applicants to the FOA should begin developing partnerships, formulating ideas, and gathering data in anticipation of the issuance of this FOA. DOE plans to issue the FOA in or around the last calendar quarter in 2015. The applicant must first register and create an account on the EERE eXCHANGE website. A User Guide for EERE eXCHANGE can be found on the EERE website https://eere-exchange.energy.gov/Manuals.aspx after logging in to the system.

Dear Colleague Letter: Special Guidelines for Submitting Collaborative Proposals under the NSF/ENG/ECCS - U.S.-Israel BSF International Opportunity

The Division of Electrical, Communications and Cyber Systems (ECCS) in the Directorate for Engineering (ENG) of the National Science Foundation and the United States-Israel Binational Science Foundation are pleased to announce a U.S.-Israel collaborative research opportunity. The goal is to help reduce some of the current barriers to working internationally. NSF/ENG/ECCS and BSF will address these issues by allowing U.S. and Israeli researchers to submit a single collaborative proposal that will undergo a single review process.

Frequently Asked Questions (FAQs) for Research in the Formation of Engineers (RFE)

Dear Colleague Letter: Special Guidelines for Submitting Collaborative Proposals under the US NSF/BIO/MCB - US-Israel BSF International Opportunity

The US National Science Foundation (NSF) and the US-Israel Binational Science Foundation (BSF) have signed a Memorandum of Understanding (MOU) on Research Cooperation. The MOU provides an overarching framework to encourage collaboration between US and Israeli research communities and sets out the principles by which jointly supported activities might be developed. The MOU provides for an international collaboration arrangement whereby US researchers may receive funding from the NSF and Israeli researchers may receive funding from the BSF. The Division of Molecular and Cellular Biosciences (MCB) the Directorate for Biological Sciences (BIO) of the National Science Foundation and the US-Israel Binational Science Foundation are pleased to announce a US-Israel collaborative research opportunity. The goal is to help reduce some of the current barriers to working internationally. NSF/BIO/MCB and BSF will address these issues by allowing US and Israeli researchers to submit a single collaborative proposal that will undergo a single review process.

Dear Colleague Letter - Support for Engaging Students and the Public in Polar Research

The Geosciences and Education and Human Resources Directorates are partnering to advance and develop understanding of learning environments that build upon the rich interdisciplinary resources emerging from polar investments. To that end, the Division of Polar Programs (PLR), the Division of Undergraduate Education (DUE) and the Division of Research on Learning (DRL) encourage proposals that will leverage the extensive National Science Foundation (NSF) investment in polar sciences and infrastructure, and STEM education research and development, to promote an informed citizenry and the next generation of polar scientists. In order to advance polar science educational opportunities, PLR, DUE and DRL will accept and review proposals for research and development projects that facilitate the use of data from polar regions in (1) undergraduate education or (2) informal science education. Proposals in response to this Dear Colleague Letter must be submitted to either the Improving Undergraduate Science Education: Education and Human Resources (IUSE: EHR) deadline of November 3, 2015, or the Advancing Informal STEM Learning (AISL) deadline of November 4, 2015.

Dear Colleague Letter: NSF/AST Response to the NRC Report "Optimizing the U.S. Ground-Based Optical and Infrared Astronomy System"

This Dear Colleague Letter summarizes the initial AST response to the recent NRC report, hereafter referred to as the "OIR System Report." In this Letter, following some general comments about the role of the National Optical Astronomy Observatory, AST responses to the NRC recommendations are presented in the order in which the recommendations appeared in the Executive Summary of the Report. Comments on some of the conclusions in the Report also are included with the most appropriate recommendation.

Agency Reports, Workshops & Research Roadmaps

Interior Department Releases National Seed Strategy for Landscape Scale Rehabilitation and Restoration

As part of a comprehensive, science-based strategy to address the threat of wildfires that are damaging landscapes across the West, the Department of the Interior today announced the release of a **National Seed Strategy** for rehabilitation and restoration to help foster resilient and healthy landscapes. The Strategy, developed in partnership with the Plant Conservation Alliance and the U.S. Department of Agriculture, is meant to guide ecological restoration across major landscapes, especially for those lands damaged by rangeland fires, invasive species, severe storms and drought. The Strategy is in place to put emphasis on the importance of planting appropriate seeds to help grow plant life and pollinator habitat, which are critical natural defenses against climate change."Having the right seed in the right place at the right time makes a major difference in the health of our landscapes," said U.S. Secretary of the Interior Sally Jewell. "This is a collaborative effort to ensure that we're taking a landscape level approach to supporting lands that are more resilient to drought, intense fires and invasive species."

In 2012, more than two million acres of sagebrush habitat burned in four western states. Now, worsening landscape scale disturbances, like wildfires and drought, have exacerbated land managers' need for mechanisms that build a natural defense against a changing climate. In the East, Hurricane Sandy caused widespread damage to native plant habitats that stabilize soils, filter water and absorb storm surges. A chronic shortage of native seed for restoration purposes left those landscapes vulnerable to hostile species and erosion, while undermining their ability to build up resilience, support wildlife and economic activity. The National Seed Strategy outlines coordinated and focused research, as well as improvements in seed production and restoration technology to increase the availability of genetically appropriate, locally adapted seed. The research findings identified in the Strategy will inform the development of new management tools to aid in restoration planning and implementation.

Envisioning the Future of Health Professional Education: Workshop Summary

Envisioning the Future of Health Professional Education discusses opportunities for new platforms of communication and learning, continuous education of the health workforce, opportunities for team-based care and other types of collaborations, and social accountability of the health professions. This study explores the implications that shifts in health, policy, and the health care industry could have on HPE and workforce learning, identifies learning platforms that could facilitate effective knowledge transfer with improved quality and efficiency, and discusses opportunities for building a global health workforce that understands the role of culture and health literacy in perceptions and approaches to health and disease.

[Healthy, Resilient, and Sustainable Communities After Disasters: Strategies, Opportunities, and Planning for Recovery](#)

In the devastation that follows a major disaster, there is a need for multiple sectors to unite and devote new resources to support the rebuilding of infrastructure, the provision of health and social services, the restoration of care delivery systems, and other critical recovery needs. In some cases, billions of dollars from public, private and charitable sources are invested to help communities recover. National rhetoric often characterizes these efforts as a "return to normal." But for many American communities, pre-disaster conditions are far from optimal. Large segments of the U.S. population suffer from preventable health problems, experience inequitable access to services, and rely on overburdened health systems. A return to pre-event conditions in such cases may be short-sighted given the high costs - both economic and social - of poor health. Instead, it is important to understand that the disaster recovery process offers a series of unique and valuable opportunities to improve on the status quo. Capitalizing on these opportunities can advance the long-term health, resilience, and sustainability of communities - thereby better preparing them for future challenges.

New Funding Opportunities

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Content Order
New Funding Posted Since August 15 Newsletter
URL Links to New & Open Funding Solicitations
Solicitations Remaining Open from Prior Issues of the Newsletter
Open Solicitations and BAAs

[User Note: URL links are active on date of publication, but if a URL link breaks or changes a Google search on the key words will typically take you to a working link. Also, entering a grant title and/or solicitation number in the Grants.gov search box will typically work as well.]

New Funding Solicitations Posted Since August 15 Newsletter

Funding opportunity for US-Russia university partnerships: all academic fields
Eurasia Foundation's US-Russia University Partnership Program (UPP) invites accredited higher education institutions from Russia and the United States to participate in its Autumn/Winter funding competitions for new bilateral partnerships. The two-stage funding competition offers "Contact" funding of up to $2,500 for initial project development and "Linkage" funding of up to $41,000 for the implementation of new partnership projects in any academic field. Proposals must include at least one Russian and one US institution. **Applications for Contact funding are due on October 1, 2015 and for Linkage funding are due on January 22, 2016**. In order to access the application materials, higher education institutions must first register with the UPP database (http://usrussiaupp.org/en/disclaimer). For more information about funding opportunities and eligibility requirements, please visit the UPP website at http://usrussiaupp.org/en/partnership-funding or contact UPP staff at upp@eurasia.org.
In order to receive the latest news and updates regarding the UPP initiative, please follow us on Facebook (https://www.facebook.com/usrussiaupp) and Twitter (https://twitter.com/USRussiaUPP).

ARL Research Associateship Program (RAP)
The purpose of this United States ARL RAP PAA is to solicit offers from interested Applicants to establish a program to provide scientists, engineers and postsecondary students of unusual promise and ability opportunities to engage in research on problems, largely of their own choice, that are compatible with the interests of the Government and will potentially contribute to the general efforts of ARL. The RAP will further science and technology through fundamental research, with this research having potentially both civilian and military applications. Under the RAP, scientists, engineers and postsecondary students are sought and selected as Fellows. Selected Fellows will perform fundamental research, applying their knowledge and talents to research areas that are of interest to them and potentially to ARL. A selected Fellow may or

may not be an employee of the Recipient1 (i.e., the individual could be a self-employed Fellow), but a selected Fellow will not be an employee of ARL, the Army or the Federal Government. A selected Fellow will not perform any service directly for the benefit or use by ARL, but rather will perform scholarly fundamental research at ARL which should embody original ideas of the individual. To facilitate Fellow selection, the Recipient will execute a competitive application process that involves an individual writing and submitting a research proposal for evaluation under the RAP. ARL will also participate in this application process by providing a written evaluation of the research proposal. It is important that a research proposal be consistent with, and complements, ARL facilities and interests, supporting or stimulating ARL basic and applied research programs. **Due October 1.**

Air Force Fiscal Year 2016 Young Investigator Research Program
AFOSR's Young Investigator Research Program (YIP) supports scientists and engineers who have received Ph.D. or equivalent degrees no earlier than 01 January 2010 and showed exceptional ability and promise for conducting basic research. The objective of this program is to foster creative basic research in science and engineering, enhance early career development of outstanding young investigators, and increase opportunities for the young investigators to recognize the Air Force mission and the related challenges in science and engineering. AFOSR is seeking unclassified proposals addressing the research areas of interest for the Air Force Research Laboratory. The basic research areas of current interest are available on-line in the current AFOSR BAA (BAA-AFRL-AFOSR-2015-0001): http://www.grants.gov/web/grants/view-opportunity.html?oppId=276388 For detailed information regarding technical goals, potential applicants are advised to refer to the announcement cited above and may contact AFOSR program managers listed therein to explore mutual interests before submitting proposals. **Due October 9.**

FOA-AFRL-RQKP-2015-0001 Fuels And Combustion Technologies For Aerospace Propulsion II
The purpose of this program is to investigate and evaluate advanced fuels and fuel technologies, fuel system component development, advanced combustor and augmentor designs, advanced fuel properties measurements, fuel system component development and safety and combustion emissions along with their integration into advanced aerospace applications and advanced technologies to prevent and mitigate fuel biodeterioration. Research will be performed to characterize and develop advanced fuels- and combustion-related technologies for use at all operating conditions in current and advanced weapons systems. Experiments will be performed to characterize and develop these technologies and to demonstrate the applicability of these technologies to advanced weapons systems. Experiments will involve analyzing and characterizing fuels and fuel components to explore and understand fuel chemistry, exposing fuel to a broad range of temperatures and pressures in test rigs of various sizes and complexities, demonstrating developed fuel technologies on these rigs, and evaluating fuels and fuel additives in combustion systems to study their impact on gaseous and particulate emissions. Studies of innovative catalysts for improved combustion performance and endothermic fuel applications shall also be performed. **Due Oct. 20.**

Research Development & Grant Writing News

Training and Technical Assistance to Improve Water Quality and Enable Small Public Water Systems to Provide Safe Drinking Water
The U.S. Environmental Protection Agency (EPA) is soliciting applications from eligible applicants as described in Section III.A to provide training and technical assistance for small public water systems to help such systems achieve and maintain compliance with the Safe Drinking Water Act (SDWA), and to provide training and technical assistance for small publicly-owned wastewater systems, communities served by onsite/decentralized wastewater systems, and private well owners to improve water quality under the Clean Water Act (CWA). Training and technical assistance activities provided to these systems, communities and private well owners should be made available nationally in rural and urban communities and to personnel of tribally-owned and operated systems. These goals support the following objectives of EPA's Strategic Plan for Fiscal Year (FY) 2014 – 2018: Goal 2: Protecting America's Waters, Objective 2.1: Protect Human Health, and Objective 2.2: Protect and Restore Watersheds and Aquatic Ecosystems. (The EPA Strategic Plan is available at http://www2.epa.gov/planandbudget/strategicplan .) **Due October 26.**

EPA-OW-OWM-15-01 FY 2015 Training Workshop Support Activities for NPDES Program
The U.S. Environmental Protection Agency (EPA) is soliciting proposals from eligible applicants to plan, prepare, and provide technical support for delivery of national training workshops to build the capacity of permitting authorities to implement the National Pollutant Discharge Elimination System (NPDES) program. The two training workshop support activities identified in this announcement are: Activity I, plan, prepare, and provide technical support for National Stormwater and Pretreatment Workshops; and Activity II, plan, prepare, and provide technical support for National NPDES and Nutrient Workshops. Funds awarded under this announcement for either of the two training workshop support activities may be used to promote participation and to support travel expenses of non-federal personnel to attend the workshops. **Due Oct. 31.**

The Department of Defense (DoD) Research and Education Program for Historically Black Colleges and Universities and Minority-Serving Institutions (HBCU/MI) Equipment/Instrumentation Fiscal Year 2016
The Department of Defense (DoD) announces the availability of the FY 2016 Broad Agency Announcement (BAA) for Historically Black Colleges and Universities and Minority Institutions (HBCU/MI). The Research and Education Program is designed to enhance the research capabilities of HBCUs and MIs and strengthen their science, technology, engineering, and/or mathematics (STEM) education programs. The purpose of funding under this Broad Agency Announcement (BAA) is to (1) support the acquisition of equipment/instrumentation to augment existing research capabilities or to develop new capabilities in research areas of interest to DoD, and (2) attract students to pursue studies leading to STEM careers. Although funding provided under this BAA cannot be used for student support, in order to further DoD's objective of attracting students to pursue studies leading to STEM careers, applicants must address the impact of the requested equipment/instruments on student participation in research. **Due November 13.**

DE-FOA-0001320: Bioenergy Technologies Incubator 2

The overall strategic goal of the Bioenergy Technologies Office (BETO) is to develop commercially viable bioenergy and bioproducts to enable sustainable, nationwide production of biofuels that are compatible with today's transportation infrastructure, can reduce GHG (greenhouse gas) emissions relative to petroleum-derived fuels, and can displace a share of petroleum-derived fuels to reduce U.S. dependence on foreign oil and encourage the creation of a new domestic bioenergy industry. BETO has targeted a performance goal of validating, at pilot scale, at least one technology pathway for hydrocarbon biofuel at a mature modeled cost of $3/GGE (gasoline gallon equivalent) with GHG emissions reduction of 50% or more compared to petroleum-derived fuel by 2017, and validating two additional pathways by 2022. These high level strategic and performance goals are expanded in further detail in BETO's multi-year program plan (MYPP). BETO most recently updated its MYPP in March 2015 . The MYPP identifies many technical barriers that must be overcome through research, development and deployment in order for BETO to meet these overall strategic and performance goals. BETO has issued several Funding Opportunity Announcements (FOAs) to address the technical barriers delineated in the MYPP, and has done so in a way to focus its resources in a limited number of pathways/approaches to ensure that the program initiatives are supported at a critical mass (both in terms of dollars and time) for maximum impact and for the highest probability of success. BETO has communicated its project portfolio in public via the 2013 Peer Review and 2015 Peer Review. However, BETO recognizes that there may be very novel and potentially disruptive ideas that do not necessarily satisfy the requirement of specific FOAs yet still meet BETO's goals and mission. The Bioenergy Incubator Program is intended to identify these potentially impactful ideas that are not meaningfully addressed in BETO's strategic plan or project portfolio. It is NOT intended to fund projects that are incremental improvements to current products or processes or for established work in BETO's strategic plan or current portfolio. **BETO is issuing this Incubator 2 FOA to support innovative technologies and solutions that could help meet existing goals but are not currently represented in a significant way in the BETO's MYPP and current project portfolio.** To apply to this FOA, Applicants must register with and submit application materials through EERE Exchange at https://eere-Exchange.energy.gov , EERE's online application portal. Frequently asked questions for this FOA and the EERE Application process can be found at https://eere-exchange.energy.gov/FAQ.aspx . The eXCHANGE system is designed to enforce hard deadlines for Concept Paper and Full Application submissions. The APPLY and SUBMIT buttons automatically disable at the defined submission deadlines. The intention of this design is to consistently enforce a standard deadline for all applicants. **White paper due November 13**.

Fiscal Year 2016 Office of Naval Research Young Investigator Program (YIP)
The Office of Naval Research (ONR) is interested in receiving proposals for its Young Investigator Program (YIP). ONR's Young Investigator Program (YIP) seeks to identify and support academic scientists and engineers who are in their first or second full-time tenure-track or tenure-track-equivalent academic appointment, have begun their first appointment on or after 01 Nov 2010, and who show exceptional promise for doing creative research. The objectives of this program are to attract outstanding faculty members of Institutions of Higher Education (hereafter also called "universities") to the Department of the Navy's research

program, to support their research, and to encourage their teaching and research careers. **Due Dec. 1.**

NIJ FY 16 Graduate Research Fellowship in Science, Technology, Engineering, and Mathematics

The Graduate Research Fellowship in Science, Technology, Engineering, and Mathematics (GRF-STEM) provides awards to accredited academic institutions to support graduate research leading to doctoral degrees in areas that are relevant to ensuring public safety, preventing and controlling crime, and ensuring the fair and impartial administration of criminal justice in the United States. **Due December 15.**

NIJ Graduate Research Fellowship Program in the Social and Behavioral Sciences

The Graduate Research Fellowship Program in Social and Behavioral Sciences provides awards to accredited academic institutions to support graduate research leading to doctoral degrees in areas that are relevant to ensuring public safety, preventing and controlling crime, and ensuring the fair and impartial administration of criminal justice in the United States. NIJ is investing in doctoral education by supporting universities that sponsor students who demonstrate the potential to successfully complete doctoral degree programs in disciplines relevant to the mission of NIJ and who are in the final stages of graduate study. **Due December 15.**

N00014-15-R-SN16 Stand-Off and Remote Improvised Explosive Device Detection and Neutralization

Office of Naval Research along with many government agencies have invested in research and development of various concepts of detecting explosive threats (mines, IEDs, and Home-Made Explosives) and their related components (metallic and non-metallic) at stand-off distances. While improvement in sensitivity and selectivity of explosive detection sensors have increased, challenges still remain to acquire relevant information rapidly enough to maintain an operational tempo while maintaining a safe stand-off distance in expeditionary operation (vehicle or other small platform operation). Most of the current optical and Radio Frequency (RF) solutions suffer poor collection efficiency due to severe scattering from the targets, hence, not capable of providing sufficient coverage. Ideal solutions should include determination of all types of explosives, provide sufficient coverage rate enabling detection, classification, and identification all the explosive threats from a moving platform. In order to address these challenges, this announcement is seeking innovative research topics that can address the following research areas. **Due December 17.**

NIJ FY 16 Research and Development in Forensic Science for Criminal Justice Purposes

NIJ is seeking proposals for basic or applied research and development projects that will: (1) increase the body of knowledge to guide and inform forensic science policy and practice, or (2) result in the production of useful materials, devices, systems, or methods that have the potential for forensic application. The intent of this program is to direct the findings of basic scientific research, research and development in broader scientific fields applicable to forensic science, and ongoing forensic science research toward the development of highly

discriminating, accurate, reliable, cost-effective, and rapid methods for the identification, analysis, and interpretation of physical evidence for criminal justice purposes. **Due January 31.**

URL Links to New & Open Funding Solicitations
Links verified: Saturday, October 04, 2014

- **HHS Grants Forecast**
- **American Cancer Society Index of Grants**
- **SAMHSA FY 2014 Grant Announcements and Awards**
- **DARPA Microsystems Technology Office Solicitations**
- **Open Solicitations from IARPA (Intelligence Advanced Research Projects Activity)**
- **Bureau of Educational and Cultural Affairs, Open Solicitations, DOS**
- **ARPA-E Funding Opportunity Exchange**
- **DOE Funding Opportunity Exchange**
- **NIAID Funding Opportunities List**
- **NPS Broad Agency Announcements (BAAs)**
- **NIJ Current Funding Opportunities**
- **NIJ Forthcoming Funding Opportunities**
- **Engineering Information Foundation Grant Program**
- **Comprehensive List of Collaborative Funding Mechanisms**, NORDP
- **ARL Funding Opportunities — Open Broad Agency Announcements (BAA)**
- **HHS Grants Forecast**
- **American Psychological Association, Scholarships, Grants and Awards**
- **EPA 2014 Science To Achieve Results (STAR) Research Grants**
- **NASA Open Solicitations**
- **Defense Sciences Office Solicitations**
- **The Mathematics Education Trust**
- **EPA Open Funding Opportunities**
- **CDMRP FY 2014 Funding Announcements**
- **Office of Minority Health**
- **Department of Justice Open Solicitations**
- **DOE/EERE Funding Opportunity Exchange**
- **New Funding Opportunities at NIEHS (NIH)**
- **National Human Genome Research Institute Funding Opportunities**
- **Army Research Laboratory Open Broad Agency Announcements (BAA)**
- **SBIR Gateway to Funding**
- **Water Research Funding**
- **Fellowship and Grant Opportunities for Faculty Humanities and Social Sciences**
- **DARPA Current Solicitations**
- **Office of Naval Research Currently Active BAAs**
- **HRSA Health Professions Open Opportunities**
- **NIH Funding Opportunities Relevant to NIAID**

- [**National Institute of Justice Current Funding Opportunities**](#)
- [**Funding Opportunities by the Department of Education Discretionary Grant Programs**](#)
- [**EPA's Office of Air and Radiation (OAR) Open Solicitations**](#)
- [**NETL Open Solicitations**](#)
- [**DoED List of Currently Open Grant Competitions**](#)
- [**Foundation Center RFP Weekly Funding Bulletin**](#)

Solicitations Remaining Open from Prior Issues of the Newsletter

Ideas Lab: Measuring "Big G" Challenge

This solicitation describes an Ideas Lab on "Measuring Big G" Ideas Labs are intensive meetings focused on finding innovative solutions to grand challenge problems. The ultimate aim of this Ideas Lab organized by the Physics Division of the Mathematical and Physical Sciences Directorate at the National Science Foundation (NSF), in collaboration with experts in the field, is to facilitate the development of new experiments designed to measure Newton's gravitational constant G with relative uncertainties approaching or surpassing one part in 100,000. The aspiration is that mixing researchers from diverse scientific backgrounds will engender fresh thinking and innovative approaches that will provide a fertile ground for new ideas on how to measure G that can be used to validate and extend current calculations.US researchers may submit preliminary proposals for participation in the Ideas Lab only via FastLane. The goal is to develop multidisciplinary ideas that eventually will be submitted as full proposals. **Preliminary due September 21; full January 14.**

Gen-3 Engineering Research Centers (ERC) Partnerships in Transformational Research, Education, and Technology

The goal of the ERC Program is to integrate engineering research and education with technological innovation to transform national prosperity, health, and security. ERCs create an innovative, inclusive culture in engineering to cultivate new ideas and pursue engineering discovery that achieves a significant science, technology, and societal outcome within the 10-year timeframe of NSF support. For information on individual ERCs and their achievements, go to: http://www.ERC-assoc.org . **Those who submit proposals in response to this solicitation will need to address the following questions**:

1.What is the compelling new idea and how does it relate to national needs?
2.Why is a center necessary to tackle the idea?
3.How will the ERC's infrastructure integrate and implement research, workforce development and innovation ecosystem development efforts to achieve its vision? **LOI September 25; preliminary October 23; full June 16.**

Natural Hazards Engineering Research Infrastructure (NHERI) Network Coordination Office, Computational Modeling and Simulation Center, and Post-Disaster, Rapid Response Research Facility

The planned outcome of this solicitation is to establish the final three awards for the NSF-supported Natural Hazards Engineering Research Infrastructure (NHERI) - Network Coordination

Office (NCO), Computational Modeling and Simulation Center (SimCenter), and Post-Disaster, Rapid Response Research (RAPID) Facility. The NCO, SimCenter, and RAPID Facility components for NHERI were originally competed under program solicitation NSF 14-605, Natural Hazards Engineering Research Infrastructure (NHERI) 2015-2019, but no awards for these components were made under that solicitation. Because the NCO, SimCenter, and RAPID Facility are integral awards for an integrated NHERI facility, this solicitation includes information about all four components of NHERI listed in NSF 14-605: NCO, Cyberinfrastructure (CI), SimCenter, and Experimental Facility (EF). The RAPID Facility is considered part of the EF cohort. Under this solicitation, proposals will only be accepted for the NCO, SimCenter, and RAPID Facility. All other proposals will be returned without review. **LOI October 16; full November 4**.

Research in the Formation of Engineers (RFE)
The NSF Engineering (ENG) Directorate has launched a multi-year initiative, the Professional Formation of Engineers, to create and support an innovative and inclusive engineering profession for the 21st Century. Professional Formation of Engineers (PFE) refers to the formal and informal processes and value systems by which people become engineers. It also includes the ethical responsibility of practicing engineers to sustain and grow the profession in order to improve quality of life for all peoples. The engineering profession must be responsive to national priorities, grand challenges, and dynamic workforce needs; it must be equally open and accessible to all. **Due October 29.**

Improving Undergraduate STEM Education: Education and Human Resources (IUSE: EHR)
The Improving Undergraduate STEM Education (IUSE: EHR) program invites proposals that address immediate challenges and opportunities that are facing undergraduate STEM education, as well as those that anticipate new structures (e.g. organizational changes, new methods for certification or credentialing, course re-conception, cyberlearning, etc.) and new functions of the undergraduate learning and teaching enterprise. The IUSE: EHR program recognizes and respects the variety of discipline-specific challenges and opportunities facing STEM faculty as they strive to incorporate results from educational research into classroom practice and work with education research colleagues and social science learning scholars to advance our understanding of effective teaching and learning. Toward these ends the program features two tracks: (1) Engaged Student Learning and (2) Institutional and Community Transformation. Two tiers of projects exist within each track: (i) Exploration and Design and (ii) Development and Implementation. **Multiple due dates beginning November 3.**

Advancing Informal STEM Learning (AISL)
The Advancing Informal STEM Learning (AISL) program seeks to advance new approaches to and evidence-based understanding of the design and development of STEM learning opportunities for the public in informal environments; provide multiple pathways for broadening access to and engagement in STEM learning experiences; and advance innovative research on and assessment of STEM learning in informal environments. The AISL program supports seven types of projects: (1) Collaborative Planning, (2) Exploratory Pathways, (3) Research in Service to Practice, (4) Innovations in Development, (5) Broad Implementation, (6) Conferences, and (7) Informal STEM Learning Resource Center (FY 2016 only). **Due Nov. 4.**

Integrated Earth Systems (IES)

Integrated Earth Systems (IES) is a program in the Division of Earth Sciences (EAR) that focuses on the continental, terrestrial and deep Earth subsystems of the whole Earth system. The overall goal of the program is to provide opportunity for collaborative, multidisciplinary research into the operation, dynamics and complexity of Earth systems at a budgetary scale between that of a typical project in the EAR Division's disciplinary programs and larger scale initiatives at the Directorate or Foundation level. Specifically, IES will provide research opportunities for the study of Earth systems that operate across components of the Earth encompassing the core of the Earth to the top of the critical zone with a specific focus on subsystems that include all or part of the continental, terrestrial and deep Earth subsystems at all temporal and spatial scales (NROES, 2012). IES will provide opportunities to focus on Earth systems connected to topics which include (but are not limited to) the continents; the terrestrial, surficial Earth systems including physical, chemical and biotic dimensions; linkages among tectonics, climate, landscape change, topography and geochemical cycles including core and mantle processes. **Due November 16**.

Early Career Research Program Department of Energy - Office of Science

The Office of Science of the Department of Energy hereby invites grant applications for support under the Early Career Research Program in the following program areas: Advanced Scientific Computing Research (ASCR); Biological and Environmental Research (BER); Basic Energy Sciences (BES), Fusion Energy Sciences (FES); High Energy Physics (HEP), and Nuclear Physics (NP). The purpose of this program is to support the development of individual research programs of outstanding scientists early in their careers and to stimulate research careers in the areas supported by the DOE Office of Science. **Due Nov. 19.**

Interdisciplinary Behavioral and Social Science Research

The Interdisciplinary Behavioral and Social Science Research (IBSS) competition promotes the conduct of interdisciplinary research by teams of investigators in the social and behavioral sciences. Emphasis is placed on support for research that involves researchers from multiple SBE disciplinary fields and that integrates scientific theoretical approaches and methodologies from multiple SBE disciplinary fields. Emphasis also is placed on the significance of expected intellectual contributions that are likely to yield generalizable insights and information that will enhance theoretical perspectives and advance basic knowledge and capabilities across multiple SBE disciplinary fields. Although the IBSS competition will consider any proposal that addresses a topic for which the proposal makes a compelling case that the research will enhance broader theoretical understanding across multiple social and behavioral science fields, social and behavioral science researchers are especially encouraged to submit proposals for research on one of the following three broadly defined topics: Population Change; Sources and Consequences of Disparities; and Technology, New Media, and Social Networks. **Due Dec. 1.**

GCC-GRANT-SEP-15-001 Spill Impact Component Planning Grants Gulf Coast Ecosystem Restoration Council

This announcement provides guidance to the Gulf Coast States – defined as any of the States of Alabama, Florida, Louisiana, Mississippi, and Texas – or the Gulf Coast States' administrative

agents and the Gulf Consortium of Florida counties to apply for grants to fund planning activities to develop individual State Expenditure Plans (SEP) under the Spill Impact Component of the Resources and Ecosystem Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act of 2012 (RESTORE Act). The eligible entities may apply to the Council for a grant to use the minimum allocation available under the Spill Impact Component of the RESTORE Act for planning purposes. The submission process for this announcement is organized into two phases: (1) the submission of a planning SEP by a Gulf Coast State; and (2) the administrative application process, which includes the submission of all administrative grant application materials by the eligible entities. All planning activities proposed under this announcement are limited to the development of a comprehensive SEP, including conceptual design and feasibility studies related to specific projects. This announcement does not include engineering and environmental studies related to specific projects. It also does not include any pre-award costs incurred prior to August 22, 2014. **December 31, 2015**

Open Solicitations and BAAs

DARPA-BAA-14-48 Strategic Technologies
DARPA is seeking innovative ideas and disruptive technologies that offer the potential for significant capability improvement across the Strategic Technology Office focus areas. This includes technology development related to Battle Management, Command and Control (BMC2), Communications and Networks, Electronic Warfare, Intelligence, Surveillance, and Reconnaissance (ISR), Position, Navigation, and Timing (PNT), Maritime, and Foundational Strategic Technologies and Systems. **BAA Closing Date: September 17, 2015**

ONRBAA15-001 Long Range BAA for Navy and Marine Corps Science and Technology
The Office of Naval Research (ONR) is interested in receiving proposals for Long-Range Science and Technology (S&T) Projects which offer potential for advancement and improvement of Navy and Marine Corps operations. Readers should note that this is an announcement to declare ONR's broad role in competitive funding of meritorious research across a spectrum of science and engineering disciplines. A brief description of the ONR Program Codes and the science and technology thrusts that ONR is pursuing is provided below. Additional information can be found at the ONR website at http://www.onr.navy.mil/Science-Technology/Departments.aspx . Potential Offerors are urged to check the program areas that they are interested in throughout the year for updates to thrust areas and research priorities on the ONR website at http://www.onr.navy.mil. Prior to preparing proposals, potential offerors are strongly encouraged to contact the ONR point of contact (POC). To identify the POC, follow the link for the appropriate code or division listed below and then click on the link to the thrust or topic area. Each thrust or topic area will provide a POC or e-mail address. **BAA Closing Date: September 30, 2015**

DHS-2014-OHA-BIOWATCH BioWatch Program: 2014-2015

The BioWatch Program is a cornerstone of the Department of Homeland Security's (DHS) comprehensive strategy for countering biological terrorism. The BioWatch Program is an early warning system that is designed to detect the intentional release of select aerosolized biological agents. The BioWatch Program's mission is to provide and maintain a continuous bio-terrorism air monitoring system in metropolitan areas and coordinate with state and local public health communities to prepare for and respond to a bioterrorist event. This mission is accomplished by serving as an early warning system which enhances the security of jurisdictions by providing the needed time to execute their comprehensive concept of operations plans to counter biological terrorism. The Biowatch Program is a critical part of an ongoing national effort to build and sustain preparedness which helps the United States to maintain momentum through targeted jurisdictional planning that highlights preventative actions necessary to allow for a proper and timely response and begin the process to recovery from a biological agent release. The BioWatch Evaluation Program (BWEP) will be conducted under the BioWatch Quality Assurance Program effective April 1, 2013. This program will consist of independent external audits (Quality Assurance) by Signature Science and internal audits (Quality Control) by BioWatch Systems Program Office field personnel. This approach will initially be conducted with a focus on adherence to the BioWatch Field Operations Standard Operating Procedure (SOP), Version 1.3 and will eventually evolve to encompass the Field Operations Quality Assurance Program Plan (QAPP). In order to ensure a robust QA / QC program the jurisdictions may be subject to a QA external audit and a QC internal audit during the same cooperative agreement cycle (year). **Closes September 30, 2015.**

DE-FOA-0001204 FY 2015 Continuation of Solicitation for the Office of Science
The Office of Science of the Department of Energy hereby announces its continuing interest in receiving grant applications for support of work in the following program areas: Advanced Scientific Computing Research, Basic Energy Sciences, Biological and Environmental Research, Fusion Energy Sciences, High Energy Physics, and Nuclear Physics. On September 3, 1992, DOE published in the Federal Register the Office of Energy Research Financial Assistance Program (now called the Office of Science Financial Assistance Program), 10 CFR 605, as a Final Rule, which contained a solicitation for this program. Information about submission of applications, eligibility, limitations, evaluation and selection processes and other policies and procedures are specified in 10 CFR 605. This Funding Opportunity Announcement (FOA), DE-FOA-0001204, is our annual, broad, open solicitation that covers all of the research areas in the Office of Science and is open throughout the Fiscal Year. This FOA will remain open until September 30, 2015, 11:59 PM Eastern Time, or until it is succeeded by another issuance, whichever occurs first. This annual FOA DE-FOA-0001204 succeeds FOA DE-FOA-0000995, which was published October 1, 2013. **Open to September 30, 2015.**

Nuclear Energy University Programs - Fellowship and Scholarship
This program supports education and training for future nuclear scientists, engineers and policy-makers who are attending U.S. universities and colleges in nuclear-related graduate, undergraduate and two-year study programs. These are zero-dollar awards that will be funded as students apply through the Department of Energy, Office of Nuclear Energy. **Open until November 30, 2015.**

FY2011 – 2016 Basic Research for Combating Weapons of Mass Destruction (C-WMD) Broad Agency Announcement (BAA)

This BAA is focused on soliciting basic research projects that support the DTRA mission to safeguard America and its allies from WMD (e.g*., chemical, biological, radiological, nuclear, and high-yield explosives*) by providing capabilities to reduce, eliminate, and counter the threat and mitigate its effects.

DARPA-BAA-15-27 Innovative Systems for Military Missions

The Tactical Technology Office of the Defense Advanced Research Projects Agency is soliciting executive summaries, white papers and proposals for advanced research and development of innovative systems for military missions. This solicitation seeks system and subsystem level technologies that enable revolutionary improvements to the efficiency and effectiveness of the military. Novel concepts are sought in the following focus areas: Ground Systems, Maritime Systems, Air Systems, and Space Systems. Refer to the URL stated below for complete details of the BAA. **Open to April 29, 2016.**

APS-OAA-15-000048 U.S. Agency for International Development (Higher Education Partnerships for Innovation and Impact (HEPII) Annual Program Statement (APS)

The United States Agency for International Development (USAID) is seeking concept papers from qualified U.S. and non-U.S. higher education institutions (HEIs) to work with USAID to advance strategic priorities and objectives and achieve sustainable development outcomes, results, and impact. This Annual Program Statement (APS) has the flexibility to award Cooperative Agreements, Grants, Fixed Amount Awards, and leader with Associate Awards. This APS is not supported by specific funding, and any funding for any USAID-HEI partnership proposed under this APS would have to be requested from the specific USAID Mission, Bureau, or Independent Office with which the prospective applicant seeks to collaborate and to which the Concept Paper will be submitted. USAID seeks to optimize its relationship with HEIs by identifying and promoting successful partnerships and collaboration models, and increasing USAID's access to higher education technical resources. The purpose of this APS is to promote opportunities for leveraging HEI capabilities across USAID's portfolio and its program cycle, and strengthen developing country HEI capabilities to respond to and solve critical development challenges. **Original Closing Date for Applications: Jun 29, 2016**

DARPA-BAA-15-39 DSO Office-wide BAA Department of Defense

The mission of the Defense Advanced Research Projects Agency (DARPA) Defense Sciences Office (DSO) is to identify and pursue high-risk, high-payoff research initiatives across a broad spectrum of science and engineering disciplines and to transform these initiatives into important, radically new, game-changing technologies for U.S. national security. In support of this mission, this DSO Office-wide BAA invites proposers to submit innovative basic or applied research concepts in one or more of the following technical areas: Physical Systems; Mathematics, Modeling and Design; and Human-Machine Systems. Each of these areas is described below and includes a list of example research topics. For each technical area addressed, proposed research should investigate innovative approaches that

enable revolutionary advances. DSO is explicitly not interested in approaches or technologies that primarily result in evolutionary improvements to the existing state of practice. **Open to July 2, 2016.**

Open Solicitations from IARPA (Intelligence Advanced Research Projects Activity)
Army Research Laboratory Broad Agency Announcement for Basic and Applied Scientific Research
This Broad Agency Announcement (BAA), which sets forth research areas of interest to the **Army Research Laboratory** (ARL) Directorates and Army Research Office (ARO), is issued under the paragraph 6.102(d)(2) of the Federal Acquisition Regulation (FAR), which provides for the competitive selection of basic research proposals. Proposals submitted in response to this BAA and selected for award are considered to be the result of full and open competition and in full compliance with the provision of Public Law 98-369, "The Competition in Contracting Act of 1984" and subsequent amendments. **Open June 1, 2012 to March 31, 2017**.

W911NF-12-R-0012 Army Research Office Broad Agency Announcement for Basic and Applied Scientific Research
The purpose of this Broad Agency Announcement (BAA) is to solicit research proposals in the engineering, physical, life, and information sciences for submission to the Army Research Office (ARO) for consideration for possible funding. For ease of reference, this BAA is an extraction of the ARO sections of the Army Research Laboratory BAA. (www.arl.army.mil/www/default.cfm?page=8). **Open to May 31, 2017**

ARL Core Broad Agency Announcement for Basic and Applied Scientific Research for Fiscal Years 2012 through 2017

University Small Grants Broad Agency Announcement
This is a five-year, open-ended Broad Agency Announcement (BAA) to solicit research proposals for the United States Air Force Research Laboratory (AFRL) Directed Energy (RD) Directorate. This BAA is a university grant vehicle that can provide small grants of $100k or less to students/professors in a timely manner for the purpose of engaging U.S./U.S. territories' colleges and universities in directed energy-related basic, applied, and advanced research projects that are of interest to the Department of Defense. **Open to April 1, 2017.**

HM0210-14-BAA-0001 National Geospatial-Intelligence Agency Academic Research Program
NGA welcomes all innovative ideas for path-breaking research that may advance the GEOINT mission. The NGA mission is to provide timely, relevant, and accurate geospatial intelligence (GEOINT) in support of national security objectives. GEOINT is the exploitation and analysis of imagery and geospatial information to describe, assess, and visually depict physical features and geographically referenced activities on the Earth. GEOINT consists of imagery, imagery intelligence, and geospatial information. NGA offers a variety of critical GEOINT products in support of U.S. national security objectives and Federal disaster relief, including aeronautical, geodesy, hydrographic, imagery, geospatial and topographical information. The NGA Academic Research Program (NARP) is focused on innovative, far-reaching basic and applied research in

science, technology, engineering and mathematics having the potential to advance the GEOINT mission. The objective of the NARP is to support innovative, high-payoff research that provides the basis for revolutionary progress in areas of science and technology affecting the needs and mission of NGA. This research also supports the National System for Geospatial Intelligence (NSG), which is the combination of technology, systems and organizations that gather, produce, distribute and consume geospatial data and information. This research is aimed at advancing GEOINT capabilities by improving analytical methods, enhancing and expanding systems capabilities, and leveraging resources for common NSG goals. The NARP also seeks to improve education in scientific, mathematics, and engineering skills necessary to advance GEOINT capabilities. It is NGA's intent to solicit fundamental research under this BAA. Fundamental research means basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from Industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary or national security reason. (National Security Decision Directive (NSDD) 189, National Policy on the Transfer of Scientific, Technical, and Engineering Information). NGA seeks proposals from eligible U.S. institutions for path-breaking GEOINT research in areas of potential interest to NGA, the DoD, and the Intelligence Community (IC). **Open to September 30, 2017.**

AFRL Research Collaboration Program
The objective of the AFRL Research Collaboration program is to enable collaborative research partnerships between AFRL and Academia and Industry in areas including but not limited to Materials and Manufacturing and Aerospace Sensors that engage a diverse pool of domestic businesses that employ scientists and engineers in technical areas required to develop critical war-fighting technologies for the nation's air, space and cyberspace forces through specific AFRL Core Technical Competencies (CTCs). **Open until December 20, 2017.**

United States Army Research Institute for the Behavioral and Social Sciences Broad Agency Announcement for Basic, Applied, and Advanced Scientific Research (FY13-18)
Announcement for Basic, Applied, and Advanced Scientific Research. This Broad Agency Announcement (BAA), which sets forth research areas of interest to the United States Army Research Institute for the Behavioral and Social Sciences, is issued under the provisions of paragraph 6.102(d)(2) of the Federal Acquisition Regulation (FAR), which provides for the competitive selection of proposals. Proposals submitted in response to this BAA and selected for award are considered to be the result of full and open competition and in full compliance with the provisions of Public Law 98-369 (The Competition in Contracting Act of 1984)and subsequent amendments. The US Army Research Institute for the Behavioral and Social Sciences is the Army's lead agency for the conduct of research, development, and analyses for the improvement of Army readiness and performance via research advances and applications of the behavioral and social sciences that address personnel, organization, training, and leader development issues. Programs funded under this BAA include basic research, applied research, and advanced technology development that can improve human performance and Army readiness. The funding opportunity is divided into two sections- (1) Basic Research and (2) Applied Research and Advanced Technology Development. The four major topic areas of

research interest include the following: (1) Training; (2) Leader Development; (3) Team and Inter-Organizational Performance in Complex Environments; and (4) Solider/Personnel Issues. Funding of research and development (R&D) within ARI areas of interest will be determined by funding constraints and priorities set during each budget cycle. **Open to February 5, 2018.**

BAA-HPW-RHX-2014-0001 Human-Centered Intelligence, Surveillance Air Force Research Lab
This effort is an open-ended BAA soliciting innovative research concepts for the overall mission of the Human-Centered Intelligence, Surveillance, & Reconnaissance (ISR) Division (711 HPW/RHX). It is intended to generate research concepts not already defined and planned by RHX as part of its core S&T portfolio. The core RHX mission is to develop human-centered S&T that (1) enables the Air Force to better identify, locate and track humans within the ISR environment and (2) enhance the performance of ISR analysts. To accomplish this mission, the RHX core S&T portfolio is structured into three major research areas: (1) Human Signatures - develop technologies to sense and exploit human bio-signatures at the molecular and macro (anthropometric) level, (2) Human Trust and Interaction – develop technologies to improve human-to-human interactions as well as human-to-machine interactions, and (3) Human Analyst Augmentation – develop technologies to enhance ISR analyst performance and to test the efficacy of newly developed ISR technologies within a simulated operational environment. The RHX mission also includes research carried over from the Airman Biosciences and Performance Program. While not directly linked to the core S&T strategic plan, there exists a unique capability resident within RHX to address critical Air Force operational and sustainment needs resulting from chemical and biological hazards. Research areas include contamination detection, hazard assessment and management, individual and collective protection, and restoration and reconstitution of operational capability. **Open to Feb. 12, 2018.**

Air Force BAA - Innovative Techniques and Tools for the Automated Processing and Exploitation (APEX) Center
The AFRL/RIEA branch performs Research and Development (R&D) across a broad area of Air Force Command, Control, Communications, Computers/Cyber, and Intelligence (C4I). All applicable "INTs" are investigated with emphasis on Ground Moving Target Indication (GMTI), Electronic Intelligence (ELINT), Signals Intelligence (SIGINT), Image Intelligence (IMINT), Non Traditional Intelligence, Surveillance and Reconnaissance (NTISR), and Measurement and Signature Intelligence (MASINT). The APEX Center is used to perform analysis for seedling efforts, provide baseline tool development for major programs, and to provide realistic operational systems/networks/databases for integration efforts. The APEX Center resources will be used by the Government to perform the necessary research, development, experimentation, demonstration, and conduct objective evaluations in support of emerging capabilities within the Processing and Exploitation (PEX) area. Software tools, data sets, metrics (Measures of Performance/Measures of Effectiveness), and analysis are needed for the Government to perform the vetting, maturing, and analysis of efforts related to PEX, e.g. Automatic Tracking, Activity Based Intelligence, Entity, Event & Relationship (EER) Extraction, Association & Resolution (A&R), Analysis & Visualization (A&V), Social Network Analysis, Network Analytics, Pattern Discovery, Scalable Algorithms, and Novelty Detection. The AFRL APEX Center is the AFRL/RI gateway into the cross-directorate PCPAD-X (Planning & Direction,

Collection, Processing & Exploitation, Analysis & Production, and Dissemination eXperimentation) initiative. **Open to FY 2018**.

[BAA-RQKD-2014-0001 Open Innovation and Collaboration Department of Defense Air Force -- Research Lab](#)

Open innovation is a methodology to capitalize on diverse, often non-traditional talents and insights, wherever they reside, to solve problems. Commercial industry has proven open innovation to be an effective and efficient mechanism to overcome seemingly impossible technology and/or new product barriers. AFRL has actively and successfully participated in collaborative open innovation efforts. While these experiences have demonstrated the power of open innovation in the research world, existing mechanisms do not allow AFRL to rapidly enter into contractual relationships to further refine or develop solutions that were identified. This BAA will capitalize on commercial industry experience in open innovation and the benefits already achieved by AFRL using this approach. This BAA will provide AFRL an acquisition tool with the flexibility to rapidly solicit proposals through Calls for Proposals and make awards to deliver innovative technical solutions to meet present and future compelling Air Force needs as ever-changing operational issues become known. The requirements, terms and specific deliverables of each Call for Proposals will vary depending on the nature of the challenge being addressed. It is anticipated that Call(s) for Proposals will address challenges in (or the intersection between) such as the following technology areas: Materials: - Exploiting material properties to meet unique needs - Material analysis, concept / prototype development, and scale up Manufacturing Processes that enable affordable design, production and sustainment operations Aerospace systems: - Vehicle design, control, and coordinated autonomous and/or manned operations - Power and propulsion to enable next generation systems Human Effectiveness: - Methods and techniques to enhance human performance and resiliency in challenging environments - Man – Machine teaming and coordinated activities Sensors and Sensing Systems: - Sensor and sensing system concept development, design, integration and prototyping - Data integration and exploitation. **Open to July 12, 2019.**

[HDTRA1-14-24-FRCWMD-BAA Fundamental Research to Counter Weapons of Mass Destruction](#)

** Fundamental Research BAA posted on 20 March 2015.** Potential applicants are strongly encouraged to review the BAA in its entirety. **Please note that ALL general correspondence for this BAA must be sent to HDTRA1-FRCWMD-A@dtra.mil. Thrust Area-specific correspondence must be sent to the applicable Thrust Area e-mail address listed in Section 7: Agency Contacts.** **Open to Sept. 30, 2019.**

[BAA-RQKH-2015-0001 Methods and Technologies for Personalized Learning, Modeling and Assessment Air Force -- Research Lab](#)

The Air Force Research Laboratories and 711th Human Performance Wing are soliciting white papers (and later technical and cost proposals) on the following research effort. This is an open ended BAA. The closing date for submission of White Papers is 17 Nov 2019. This program deals with science and technology development, experimentation, and demonstration in the areas of improving and personalizing individual, team, and larger group instructional training methods

for airmen. The approaches relate to competency definition and requirements analysis, training and rehearsal strategies, and models and environments that support learning and proficiency achievement and sustainment during non-practice of under novel contexts. This effort focuses on measuring, diagnosing, and modeling airman expertise and performance, rapid development of models of airman cognition and specifying and validating, both empirically and practically, new classes of synthetic, computer-generated agents and teammates. An Industry Day was held in November 2014. Presentation materials from the Industry Day and Q&A's are attached. If you would like a list of Industry Day attendees, send an email request to helen.williams@us.af.mil **Open until November 17, 2019.**

Academic Research Funding Strategies, LLC (Page 1)
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- **Training for Faculty** - Workshops, seminars and webinars on how to find and compete for research funding from NSF, NIH, DoE and other government agencies as well as foundations. Proposal development retreats for new faculty.

- **Large proposals** - Assistance in planning and developing institutional and center-level proposals (e.g., NSF ERC, STC, NRT, ADVANCE, IUSE, Dept of Ed GAANN, DoD MURI, etc.)

- **Assistance for new and junior faculty** - help in identifying funding opportunities and developing competitive research proposals, particularly to NSF CAREER, DoD Young Investigator and other junior investigator programs

- **Facilities and Instrumentation** - Assistance in identifying and competing for grants to fund facilities and instrumentation

- **Training for Staff** - Professional Development for research office and sponsored projects staff

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