Introduction and Goals
Research drives excellence in the College of Engineering by serving as a magnet to attract and retain outstanding faculty and students. Indeed, engineering research will play a transformational role in determining the well being of our planet and the prosperity of its people. The College will be proactive in significantly growing its research portfolio by supporting faculty-led efforts to create large, center-scale programs. The College’s goal of doubling its level of research in five years is aligned with the university’s objective of research expenditures exceeding $600M. One path to that objective involves the creation of large-scale interdisciplinary centers having significant extramural funding.

The funding landscape at several federal agencies prominently features calls for establishing major research centers (e.g., DOE-EFRC, NSF-ERC, STC, and CEMRI, and DOD-UARC). Many faculty members in the College aspire to create and lead such centers, but being successful in preparing winning proposals requires significant investments of time, networking, and collaboration. The College will proactively invest in engineering faculty through the Venture Fund for Interdisciplinary Research Centers of Excellence (IRCE). The Fund will catalyze a culture of interdisciplinary research and technological innovation leading to national and global prominence. The goal is to significantly enhance and grow our research enterprise by enabling new opportunities for our faculty to partner with colleagues from ISU colleges, other universities, federal agencies, and industry. The College is grateful to its donors and supporters who have provided funds to establish the Venture Fund.

The College’s clear expectation is that the multi-year venture funding will lead to the creation of a new interdisciplinary Center or Institute that will have transformational impact on campus, much like CBiRC, BEI, PSI, and others. The College anticipates funding two faculty teams to develop proposals and compete successfully in the formation of such a new, large-scale research enterprise. Each team will be granted $500,000 in venture funds over a three year period. Venture funding is not renewable.

Expectations
- Each IRCE will have a lead investigator, and consist of a core group of 5 to 10 faculty members working together in an interdisciplinary area of national importance. The team may further include colleagues from other academic institutions, national laboratories, and industry. Proposals from a team of investigators are expected because the necessary expertise resides in different universities, or in different departments within ISU. The lead PI should be a full Professor with an appointment in the College of Engineering.

- The College’s goal is to nucleate and grow collaborations and partnerships, and provide them with pursuit funding to successfully compete for significant extramural funding. As such, it is anticipated that the IRCE team will write several large-scale multi-investigator grants to different funding agencies, with corporate sponsorship commitments, over the funding period. In the steady state, the College anticipates that the IRCEs will achieve and sustain research expenditures of $5 to 7 million per year as an expected return on the venture investment.
• The research areas should be core to one or more of the College’s signature areas (biosciences, energy sciences, information and decision sciences, sustainability and green technology, and critical infrastructure). The IRCE should address research of a scope and complexity requiring the advantages of scale and interdisciplinarity that are provided by a Center or Institute structure. Faculty are expected to define an integrated, interdisciplinary research program distinguished by intellectual excellence and driven by a clear vision that could lead to fundamental advances, new discoveries, or technological developments of national impact. In addition, the areas of scholarship will likely be such that multiple agencies may support the work.

• Strong participation by companies is expected, as is the case with many successful engineering research enterprises (e.g., NSF-ERCs). The College requires industry participation and commitment as part of the IRCE.

Financials
Venture funds will be allocated at the level of $500,000 total over a three-year period. Importantly, the venture funds are provided to support the preparation of large-scale multi-investigator proposals—not for conducting the research work itself. Appropriate uses of the funds include academic year teaching release, hiring of NTER faculty and/or consultants to add value to the team, and development of strong, meaningful, and lasting connections with partner institutions, funding agencies, and industry. Funds may not be used to support summer salaries, graduate student stipends/tuition, and research-related materials, equipment, and supplies.

Process and Timeline
Proposals will be submitted through a two-step process. White papers will be due by October 15, 2010. Full proposals will be prepared and submitted by subsequent invitation only. The College will invite full proposals by November 1, 2010, which will be due by January 14, 2011. Final decisions will be announced by February 1, 2011.

The white papers should be three (single-sided) pages in length. Use one-inch margins on all sides and font size 11 or greater. The white papers must contain the following sections:

• A list of participating senior investigators (faculty level and equivalent) by full name, organizational and departmental affiliation, and major role in the proposed center

• Rationale and vision for the proposed effort. This section needs to clearly describe the scale of the proposed IRCE and highlight the innovative and transformational nature of the effort.

• Concise description of the long-term research goals and intellectual focus, and outline of the planned research activities. The need for an interactive, interdisciplinary approach involving several investigators, and the means of achieving this, should be clearly established.

• Plans for significant intellectual exchange, cooperation, and partnership with other universities, industry, national laboratories, and other organizations.

• List of funding agencies and companies that are likely to be interested in funding research in the proposed area, with supporting evidence such as the name of the program manager, funding initiative, budget line, where available. The idea is to provide convincing evidence that the funding exists that is viable to pursue.
In addition, the white papers should contain a short budget (one page) and budget justification (one page) and 2-page NSF-style CV's for each senior investigator listed above.

The white papers need to be electronically submitted as one PDF document in an email to Balaji Narasimhan (nbalaji@iastate.edu), Associate Dean for Research, College of Engineering, by COB on Friday, October 15, 2010.

Instructions for full proposal submission will be provided upon invitation.

**Review Criteria and Selection Process**

The review criteria used to down-select the white papers for full proposal invitation will include:

- Ability to articulate the creation of a well-integrated, interdisciplinary research center of excellence driven by a clear vision that could lead to fundamental advances, new discoveries, and/or technological developments that could have national impact
- Strength of the plan to secure significant new extramural funding and form a strong and lasting team
- Clear benefits of a multi-investigator, interdisciplinary approach.
- Understanding of funding agency expectations, likely competition, and formulation of win strategy
- Value added to the engineering college and university.
- Qualifications and the collaborative track record of the team of investigators.

The selection process will involve review of the white papers by the College of Engineering together with other Colleges and the Office of the Vice President for Research and Economic Development. Full proposals will be reviewed by subject matter experts from academia, government laboratories, and industry.