

From: Rockwood, Heidi [mailto:rockwood@uillinois.edu] On Behalf Of Schook, Lawrence B.
Sent: Thursday, October 20, 2011 5:01 PM
To: amtech
Subject: AMTech Comments

Please see attached for the University of Illinois response.

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Lawrence B. Schook
Vice President for Research
Edward William and Jane Marr Gutsell Professor

October 20, 2011

To: Dr. Patrick D. Gallagher,
Undersecretary of Commerce for Standards and Technology and Director of NIST
Via: AMTechRFC@nist.gov

University of Illinois Response to the NIST Request for Information on Advanced Manufacturing Technology Consortia Program

The University of Illinois supports the aims of the proposed Advanced Manufacturing Technology Consortia, and we are pleased to respond to the NIST Request for Information. New technologies will drive the constantly shifting future of manufacturing, and developing that needed innovation will require government, academia, and industry to collaborate in innovative new ways. Below, we provide suggestions for the structure of the collaboration.

1. Leadership

As currently envisioned, the consortia will be industry led. While we fully support the formation of strong alliances with industry and we believe that industry participation is critical to the success of the program, we have concerns about this proposed governance structure. We urge you to explore a shared leadership model, involving academic institutions, non-profits, and governmental organizations as well as industry representation in the organizational structure of the consortia. This will help to minimize potential conflicts of interest and will ensure that the needs of small- and medium-sized manufacturers are not subsumed by those of large manufacturers.

The application of novel research is increasingly driven from academic technology transfer initiatives, as large industry looks to academia and small business, including “spin-out” companies, to fill its product portfolios and identify new tools for efficiency. However, the capital constraints of many small businesses limit their contributions and timeliness. Moreover, as large corporations face budget and personnel constraints, we may see industry make further R&D cuts to enhance profitability and focus on near-term needs. These factors underscore the importance for academic institutions to play a leadership role in the early commercialization of enabling manufacturing technologies.

2. Lessons from Public/Private Partnerships

There are already many roadmaps for this kind of organization. At the University of Illinois, we are in the midst of a 10-year, \$500 million partnership with the energy company BP and the University of California, Berkeley. A key factor in the success of this program is its governance structure. The project is governed by an Executive Committee made up of representatives from the academic institutions and BP, and the resulting structure ensures we can maintain the integrity of the scientific research while being responsive to BP business needs and efficiently transferring intellectual property.

Smaller scale public/private partnerships are exemplified in our University of Illinois Research Park, which engages with new commercial enterprises, e.g., start-ups, in addition to larger corporations. The proximity of these partnerships to university research faculty and students has been a critical commercial success factor. We propose that regular, informal interaction among the members of the consortia will enable new ideas to be 'accidentally' uncovered as well as active problem-solving. Additionally, we would encourage opportunities for cross-pollination of individuals among members of each consortium, e.g., graduate research experiences within corporations, entrepreneurial externships, corporate sabbaticals, etc.

3. Areas of Focus

We believe it is critical for each consortium to engage cohesive, productive working groups that can envision broad application of novel research. Accordingly, we encourage the consortia to consider supporting the following disciplines which may be broadly applied to solve longer term industrial needs: Precision Engineering, Nanomanufacturing, Advanced CNC Machine-tool Design, Flexible/Sustainable Manufacturing Systems, Novel Manufacturing (particularly in Additive Manufacturing/3-D Printing), Virtual Reality Applications in Manufacturing, Predictive Analytics (e.g., for optimizing parts procurement and anticipating machine failure) and Digital Modeling (using advanced parallel computing).

An emphasis on applied research and broad applicability further supports our belief that academia must play a key leadership role in the consortia. Academic institutions are generally more suited to longer term research pursuits. Insight and direction from industry and government may then inform the commercial application of such research.

4. Intellectual Property

We expect that the Consortia will lead to a number of technologies at varying stages of development, so a robust plan for bringing all technologies to market will be critical. Of note, commercial scale-up of research-based technologies is typically an impediment to technology transfer and ultimate commercialization. Attention to this obstacle at early stages of development is warranted. It will be important to

facilitate access to appropriate facilities and equipment for assessing the scalability of technologies, while at the same time managing concerns about IP ownership and transferability during such testing periods.

We would be pleased to answer any additional follow-up questions. Feel free to contact me should you wish to discuss these issues further.

Sincerely,

A handwritten signature in black ink, appearing to read 'L. B. Schook', with a stylized, flowing script.

Lawrence B. Schook
Vice President for Research