

CONNECT/Global CONNECT Response to

Office of Science and Technology Policy/National Economic Council

COMMERCIALIZATION OF UNIVERSITY RESEARCH

Request for Information

INTRODUCTORY COMMENTS

We in San Diego, California, one of the most innovative and productive new economy regions in the United States, are very enthusiastic about the expanded federal focus on the commercialization of university research as a way to stimulate global competitiveness, wealth creation and high-wage job creation. Based on the phenomenal success of the San Diego region over the last thirty years, we want to underscore how important it is for the various federal agency programs focused on innovation to be aligned. There needs to be simultaneous and aligned investment in:

- Basic research as well as industry-university partnerships and translational research initiatives.
- Activities or organizations which facilitate the commercialization process by linking entrepreneurs, investors and business know-how with inventors, as well as increased investments in small business loans and seed capital funds which can be bundled at the regional level with matching funds from the private sector.
- Economic development investments, especially within the Department of Commerce, which award loans and investments in facilities and infrastructure as well as incentives which favor startups and small companies.
- A focus on developing the talent needed by entrepreneurial, new technology companies that are creating new clusters, such as alternative energy, as well as the new skills needed by traditionally trained workers, such as welders who have to work in nuclear power plants or engineers designing buildings to LEED certified standards. This means investments through the Department of Labor and the Department of Education, in university and community college curricula and faculty development, as well as refocusing many of the programs currently housed within the Workforce Investment Boards across the United States.

I. SPECIFIC RECOMMENDATIONS

Based on extensive research within the San Diego region, as well as comparative work on other regions, the most promising practices and models with regard to fostering commercialization and diffusion of university research have the following characteristics:

- Funding for basic research activities which represent the seed-corn for technology-based companies.
- Federal and State funded research programs which require industry-matching funds contribute to the growth of applied and translational research, for example the California Institutes for Science and Innovation.
- Incentives to create consortia of industry partners in high priority investigative areas, i.e., wireless health, which can qualify for federal matching funds, stimulate applied and translational research.
- Support for bridging or intermediary activities (such as the Deshpande Center at MIT, the von Liebig Center at UCSD, the CONNECT Program in San Diego, the Council for Entrepreneurial Development in The Research Triangle Park) greatly accelerate the movement of good ideas into proof of concept business plans and bona fide companies which are able to secure capital and create jobs. All of these models involve a significant component of locally based, private sector investment and, therefore, assure high levels of private sector involvement. The outcomes of these programs, which rely heavily on experienced entrepreneurs, are stronger than primarily government-funded programs such as the Ben Franklin Partnership in Pennsylvania, which tend to rely on staff advising and have performance metrics that appropriately reflect the expectations of public funds versus the expectations of private sector market performance.
- The University of Washington, the University of California, San Diego and an increasing number of such institutions, through the creative use of low power broadcasting mechanisms, web casting and YouTube, have demonstrated ways in which research activities and important findings can be disseminated rapidly and efficiently to corporations and schools as well as the general public. The reach of these media is demonstrated by the 750,000 downloads in a single month of "Treating the Invisible Wounds of War," a University of California, San Francisco program which offers guidance to mental health professionals and families dealing with military veterans returning from Iraq and Afghanistan.
- Organizations with strong university involvement, such as IC2 in Austin, Texas, BioCrossroads in Indiana, and CONNECT and BIOCOM in San Diego, engage on an ongoing basis with policy questions at the local, state and regional levels that shape the economic development horizons of technology-based

companies. They represent very good models of how research institutions can influence economic development. There need to be incentives to create more collaboratives such as these which actively engage the research creating institutions with the policy making and economic development institutions in regions.

II. COMMERCIALIZATION

- Given the demonstrated success of intermediary organizations such as CONNECT, there needs to be federal funding which is matched by private funding at the regional level to stimulate the creation of such intermediary organizations and collaborative platforms that can contribute to frequent interaction between the creators of knowledge and those who know how to translate knowledge into products, viable businesses and good jobs.
- There needs to be expansion of SBIR and SBA funding to fuel promising new enterprises at the regional level.
- The creation of seed capital/innovation funds, such as many states are advocating, which use government funds to attract private sector investment and management, is critical. These can result in pools of capital at the regional level, available to promising technologies and business start-ups that are evaluated and tracked by experienced business people in the region.
- The availability of funds for education and training locally that is aligned with the sector development and cluster growth occurring in the specific region would be highly desirable. Funds to support entrepreneurial, global business skills, in engineering and science fields that articulate with regional R&D strengths and new company formation; technical education in arenas where skilled and technical workers will be needed such as health IT, renewable energy, etc. also are needed.

III. METRICS FOR SUCCESS

- Successful regions have a high level of basic research, patenting and licensing, but they also have a highly-aligned ecosystem that is supported by strong, integrated and boundary-spanning intermediary organizations such as CONNECT in San Diego. There need to be metrics which capture the extent to which regions are using their federal resources to build collaborative as opposed to competitive mechanisms to support sustainable innovation systems.
- Successful regions in the innovation space have been demonstrated to rely significantly on private capital investments in important initiatives and not just federal funds. Metrics need to capture the extent of private sector investment in such things as memberships, underwriting and sponsorships of innovation related activities.

- Successful innovation regions have been demonstrated to provide programs and activities which engage experienced entrepreneurs in education, training and mentoring activities. There need to be metrics which capture these forms of volunteer involvement.
- Successful innovation regions, as the Torrey Pines Mesa in San Diego dramatically illustrates, have a developmental history of increasing private sector investments in research enterprises in the form of endowed chairs, support for graduate students and post-doctoral students, buildings and facilities needed for the research enterprise and, in some cases, endowments to establish new schools or centers of excellence. These activities enhance a region's continuing ability to attract significant federal dollars for research training and economic growth and should be one of the metrics of regional progress in building a sustainable innovation infrastructure.
- Successful innovative regions are building the workforce that is needed by the research, commercialization and new business start-ups simultaneous with funding basic research and developmental work. Metrics should reflect curricular changes through such things as the development of new degrees, certificates and credentials; the provision of lifelong learning within S&T sectors, as well as Workforce Investment Board activities focused on skills and competencies needed in new economy companies, not just within the lower-skilled and service industries in the region.
- Metrics of business transformation are needed and could include such things as increases in external investment in local firms and enterprises; the rate of growth of new start-up companies, and the continued growth and sustainable competitiveness of existing companies, for example, CONNECT's 25 years of collaborative activity has resulted in over 2,000 start-up companies and the creation of approximately 200 technology companies annually in the San Diego region <http://www.connect.org/programs/connect-track/>.
- Workforce metrics of transformation, over time, should include increases in overall educational attainment rates in the region; growth in employment overall and growth in average wage rates; and growth in high-wage jobs. Metrics of successful innovation regions should also track the extent to which locally educated and trained workers, through high schools, community colleges, and, particularly at the university level, can secure employment within the region upon graduation.
- An additional metric that is reflective of the overall growth in prosperity of a region is the growth in philanthropic organizations, such as family foundations, community foundations and corporate foundations, most of which tend to make investments in cultural and social services in their region.

CONCLUSION

The innovation economy leadership in San Diego has a track record of collaborative activity, aligning strategies across multiple functional arenas and of gathering metrics on regional performance that in many ways could be a model for the nation. Were individuals within OSTP or the National Economic Council to be interested in having access to the kinds of organizational models, specific programs and metrics being utilized we would be happy to provide them.

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For more information on CONNECT, see <http://www.connect.org>

For more information on Global CONNECT metrics research, see
<http://globalconnect.ucsd.edu/research/nsfscisiphome.cfm>