Proof of Concept Centers Research Notes

There are numerous commercialization and technology transfer centers based out of research University campuses, including the University of Minnesota. Many of these centers are limited in scope in that they do not assist with obtaining access to capital, do not provide business support services, and do not assist with concepts originating outside of the university system.

In the development of a Minnesota-based Proof of Concept Center focused on renewable energy, there is a natural inclination to work with existing PoCCs at the University of Minnesota, such as NRRI. Clearly there are pros and cons to working within the University system in Minnesota. Pros include:

Ready access to students, who could be deployed in startups as interns, provide marketing research, business planning and other essential services;

Business Administration departments;

Researchers and Research facilities;

IP and technology transfer offices up and running; and

Existing methodology and ability to work with startups outside of the University system.

Cons include:

Public perception of continued IP challenges stemming from private sector ideas resulting in University patents;

Perceived inability for University to work with the other state university system, MnSCU;

Lack of comprehensive business services needed to assist with commercialization, including access to capital, strategic partnership, HR and others;

Lack of transparency; and

Lack of experience in industry.

Because the cons appear intractable over the short term, this summary is focused on existing PoCC models that are housed outside of university systems. Proof of concept centers organized as independent entities from universities appear to be a relatively new phenomenon, having emerged less than twenty years prior. Three of the centers found are virtually brand-new (Global Center for Medical Innovation 2012, New England Clean Energy Council 2011, Battery Innovation Center 2013), and thus have few outputs to-date. The oldest center is Technology Ventures Corporation, which was formed in 1993. This center is the only one that does not

have a direct university affiliation, but rather is focused on technologies originating from DOE labs. Notably, every other independent entity is affiliated with at least one university, and several centers are affiliated with multiple universities.

There are over ten proof of concept centers that fit this description, including one located in Canada. We focus on ten here.

1. **Innovation Works**, Pittsburgh, affiliated with Carnegie-Mellon, University of Pittsburgh, Duquesne University, and Robert Morris University
2. **Global Center for Medical Innovation**, Atlanta, affiliated with Georgia Tech
3. **Technology Ventures Corporation**, Albuquerque, Menlo Park CA, & Idaho Falls, affiliated with DOE labs
4. **Oregon Translational Research & Development Institute**, Portland, affiliated with Portland State University
5. **New England Clean Energy Council**, Boston, affiliated with Boston University
6. **Toronto's Medical and Related Sciences Innovation Center**, Toronto
7. **Battery Innovation Center (formed by Energy Systems Network ESN)**, Crane Indiana, affiliated with Purdue, Indiana Universities, Notre Dame University, Ivy Tech Community College
8. **BioSTL**, St Louis, affiliated with Washington University, Saint Louis University, and University of Missouri system
9. **Xecutive Advisory Partners**, affiliated with Washington State University
10. **i2E**, Oklahoma City and Tulsa, affiliated with University of Oklahoma & Oklahoma State University

Entity Types: Nine of the centers are organized as nonprofits, with only one organized as a for-profit (Xecutive Advisory Partners). At least two were membership-based nonprofits (New England Clean Energy Council and Battery Innovation Center).

Focus Area: Only one of these centers has a specific focus on clean technology, the New England Clean Energy Council. Others included clean energy/technology in their listed focus areas (Innovation Works, Toronto's Medical and Related Sciences Innovation Center), while still others indicated they would help develop **any** technology (i2E, Xecutive Advisory Partners).

Funding: Most of the centers were funded through partnerships with multiple entities, including a total of six that received funding through i6 (Innovation Works, Global Center for Medical Innovation, Technology Ventures Corporation, St Louis Biogenerator, Oregon Translational Research & Development Institute, New England Clean Energy Council). One (Battery Innovation Center) was funded through county economic development bonds.

Services: Every center that had been around for more than 2 years offered a comprehensive range of development services, including funding (pre-seed and seed), business planning, sales and marketing, legal and IP, product development, and strategic partnerships. About half also offered a location for business incubation.

Interesting Tidbits: Innovation Works partners with Carnegie-Mellon and other Pittsburgh area universities for research assistance and internships.

The Global Center for Medical Innovation assists with conducting clinical trials, and has a prototyping design & development facility for the development of next-generation medical devices and technology.

The New England Clean Energy Council notably has a policy and advocacy division, which was identified as one of six key areas which have a significant impact on accelerating the region's clean energy economy, including: Innovation, Workforce Development, Education & Learning, Segment Development, Policy & Advocacy, and Research.

The Battery Innovation Center is exclusively focused on the development of new battery technology, while it was formed by Energy Systems Network, a broader coalition formed to create a clean technology cluster in Indiana.

Models: Innovation Works has an excellent model of the array of services provided on their website http://www.innovationworks.org/ . i2E is another great model for a clear understanding of services offered, and specifics regarding its affiliated Oklahoma Proof of Concept Center, and MOU with universities http://www.i2e.org/ . The New England Clean Energy Council is of particular interest because of its focus, although it was only recently established http://www.cleanenergycouncil.org/ . Energy Systems Network, that formed the Battery Innovation Center, might also be of interest as another clean technology model to explore further as the PoCC develops http://www.energysystemsnetwork.com/ .

Literature Brief

From: Technology transfer tactics
http://www.technologytransfertactics.com/content/reprints/910-proof-of-concept/

Whether they reside within a university or exist on a regional scale, POC programs should connect researchers and entrepreneurs with talent, gap funding, education, and mentoring. That's a tricky balance. Often, programs focus on funding at the expense of the other components. Although it's important to leverage gap funding, it's perhaps more vital for a POC program to establish a community of experiences, enthusiastic coaches and mentors who will

help inventors "develop their business model, communicate their ideas, and figure out what steps are necessary to prove the concept to the point where it can attract outside investment."

From: *Proof of Concept Centers: Accelerating the Commercialization of University Innovation*, Ewing Marion Kauffman Foundation, 20 pgs, Jan 2008, http://www.kauffman.org/uploadedFiles/POC_Centers_01242008.pdf

This was a study of 2 university PoCCs, UCSD Jacobs School of Engineering William J. von Leibig Center, and MIT's Deshpande Center.

The von Leibig Center uses 3 complementary approaches to bring innovations to market: seed funding, advisory services, and educational programs. The UCSD von Liebig Center provides seed funding ranging from $15,000 to $75,000 to support the commercialization of UCSD discoveries with near-term market prospects. These funds are not used for basic research, but rather to evaluate the commercial potential of existing research. Von Liebig funding allows recipients to focus on development, testing, or prototype construction, and/or conduct specific market research. This evaluation may lead to industry collaboration, licensing, the formation of a new company, or the abandonment of the technology for commercial application.

The von Liebig Center typically funds ten to twelve projects annually, which range from 35 % to 60% of the proposals submitted to the Center. …A project must include at least one Jacobs School of Engineering faculty member…

The von Liebig Center has advisors that work part-time, …support[ing] approximately ten projects each. Advisors are selected based on their backgrounds in a technical discipline, having considerable experience in start-up and early stage technology ventures, and possessing significant connections to local companies and investment sources. These connections are extremely valuable because they link the technology and researchers to important external networks. The advisors and Center staff work in partnership with representatives from the University technology transfer office, who are responsible for protecting the IP, and negotiating and executing the license agreements to the start-ups or licensees. The Center also works in coordination with external community organizations… for further coaching and guidance, and to identify entrepreneurs and investment capital that will help the nascent companies move down the commercialization pipeline. The Center makes these advisory services available to all researchers at the Jacobs School even if they do not receive funding from the Center. The Center also provides incubation space and needed meeting locations for pre-companies to operate before they secure capital and execute the license agreement.

The Deshpande Center was founded at the MIT School of Engineering in 2002 from an initial $17.5 million donation by Jaishree and Gururaj Deshpande. The Center was created with the mission to increase the impact of MIT technologies on the marketplace. The Deshpande Center achieves its mission through the Grant Program, Catalyst Program, Innovation Teams, and Events.

The Deshpande Center provides up to $250,000 to prepare MIT technology projects for commercialization. The Center holds two rounds of grant proposals each year and awards two types of grants. Ignition grants up to $50,000 for novel projects that may be used for exploratory experiments and proof of concept. Innovation Grants up to $250,000 area awarded to take an innovation into full development.

The Deshpande Center typically awards sixteen grants each year, which is approximately 18% of submitted proposals.

Unlike the von Liebig Center, the Deshpande Center uses volunteers to provide advisory services through its Catalyst Program. Approximately 50 Catalysts with technology innovation and entrepreneurial experience provide mentorship and assistance the MIT research teams to facilitate the commercialization process.

{POINTS}

Both Centers originally focused on the cultivation of innovation in the engineering schools. This concentration allowed the centers to maximize their effectiveness by limiting the areas of expertise needed by advisors. Attempting to fund proposals from multiple disciplines creates the need for a center to have advisors who are experts in multiple fields, but neglecting non-engineering disciplines does not yield the maximum impact in terms of commercialization. This also creates a challenge in determining which proposals to fund since comparing prospective technological innovations among disciplines is difficult without extensive knowledge of all the fields that could submit proposals.

Both centers benefit from locating at universities that excel in research and are located within a strong network of angel investors and venture capitalists. The strength of both centers comes from providing far more than capital. Both centers combine seed funding with advisory services and educational initiatives, and they plug innovators into outside funding and collaboration networks. This unified approach is vital to ensure the commercialization of university technology because each component is complementary.

With this in mind, the creation of a new proof of concept center must be located in a university that 1) produces innovative and marketable technology, 2) is not adverse to collaboration with

external networks and groups, and 3) has technology transfer offices that are willing to work with a center to assist in the commercialization process.

The proof of concept center also must be able to find an administrative team and advisors who are "hubs" in the local venture capital, technology, and industry networks. The localized knowledge of a center's staff may actually be more useful in accelerating the commercialization of university technology than the seed funding. It also is important that a strong social network exists in the surrounding community, including advisors, angel investors, venture capitalists, and interested firms for grantees to partner with. This component is necessary to allow proof of concept centers to invest in risky or unproven technologies with the realization that an outside supportive infrastructure is present for further development and commercialization. By providing the initial seed funding to reach proof of concept, these centers allow researchers the ability to then obtain follow-on funding."