

## **Enhancing Rural Development Technology Assessment and Adoption through Land Grant Partnerships**

### **Statement of Issues and Justification**

The Land Grant system has traditionally served as the agent of change in rural America. Land Grant technology changed how America farmed, releasing millions of people into other occupations (Lobao and Myer, 2001). Increasing farm size and corporatization of our food system yielded huge efficiencies. The fact that far fewer people now farm has changed the way Land Grants must approach delivery of new technologies appropriate to rural communities. At one end of the continuum, we have large enterprises capable of conducting their own research and development, or of simply paying the Land Grants to execute research programs on their behalf. At the other end of the continuum, rural America has family farms and other enterprises that are disconnected from commodity agriculture, and could benefit from Land Grant technology to enhance their productivity in *niche markets*.

Niche markets are in many ways the future growth markets for rural America. A good example of this is organic agriculture, which started as a fringe movement and has now made its way onto the shelves of most major food retailers. Rural niche enterprises could be agricultural, but also work in a vast array of other sectors, and can be a way for rural areas to compete. In some cases, niche markets can be quite large. For example, a manufacturer of stadium-sized plasma screens in North Dakota dominates a niche, and is a major contributor to the local economy.

In the early days of the Land Grant system, an improvement in cropping techniques or a better variety could be moved from the lab to the field station, and from the field station, via Extension, to early adopter family farms. Early adopter farms would then demonstrate to their neighbors. With niche markets, more often than not, none of the middle parts of the system exist, creating a need develop new ways to move technology more directly from laboratory to end user.

The challenge is in “making the market” between the niche enterprise and the creators of applicable technologies. In market economics terminology, the market is thin, with few buyers or sellers of a particular improvement or process expertise. The array of rural niche enterprises is matched by an equally complex set of highly specialized disciplines emerging on the Land Grant campuses. Enterprises are unaware of the technologies that might be available. University Intellectual Property managers hunt for entrepreneurs or engage in sometimes quixotic programs attempting to teach faculty how to become businesspeople. Also missing from the information system are feedback loops to inform researchers about emerging technical needs. Faculty incentives may also play a major role (Kenny and Patton, forthcoming).

### **Related, Current, and Previous Work**

The literature on technology transfer is voluminous (see Bozeman, 2000 for a review), with academic journals dedicated to the topic. In the North Central Region, several Land Grants have established statewide entrepreneurial systems. Some of these, such as Michigan State

University's Product Center for Agriculture and Natural Resources, focus on value-added activities for food-related businesses. The Product Center Recently celebrated over 1,000 jobs created or retained since its inception in 2004. Others (University of Missouri, University of Wisconsin, and the University of Nebraska) serve as host for the state's Small Business Development Center Network. In other states, the model is less formalized, with networks of Extension field staff bringing their clients into contact with value-added faculty on an ad hoc basis. States within the region have tailored their approaches to the highest needs/opportunities within their boundaries, and also been able to grow through the efforts of nationally recognized faculty leaders. Some examples of this on the entrepreneurship support side include:

- Iowa State University – Agricultural Marketing Resource Center
- Michigan State University – Innovation Counselor Training
- North Dakota State University – Quentin Burdick Center for Cooperatives
- University Nebraska – Lincoln – The Food Processing Center

A more integrated approach to supporting entrepreneurs might result in more rapid expansion of rural enterprises at lower cost to participating institutions. A more integrated approach also may bring benefits in terms of more standardized databases about rural entrepreneurs. Standardized databases can benefit social scientists interested in research about fostering community systems to support entrepreneurs, but can also bring more direct benefits in terms of reducing search times to find businesses interested in licensing of university technology. "Push" information sharing techniques through appropriate database matching might help businesses discover a cost-saving technology even if they are not actively seeking it.

Preliminary work (in process under this year's funding) showed some cases of successful inter-regional technology partnerships. For example, an examination of the federally-funded Small Business Technology Transfer Research program revealed that cross-state partnerships between businesses and universities, while by no means dominant, are common. Across the 12 North Central states, within-state partnerships in the program ranged from 100% to 55% of the awards (in monetary terms). Minnesota and Michigan enjoyed the strongest bilateral cross-state partnerships in the region, with 17% of the Michigan funding associated with Minnesota companies. Overall, Ohio engaged the most states in cross-state collaborations, both in terms of university-company and company-university partnerships (Kilkenny, 2011).

Another example comes from Canada, where a private sector firm is providing support for a web-based database (<http://www.flintbox.com>) designed to help match entrepreneurs and university-based or other technology. Some NC universities have begun using Flintbox to help market their intellectual property. A competing system (<http://www.ibridgenetwork.org>) supported by the Kauffman Foundation is also in use by selected NC universities, but IP officer feedback about the Kauffman system is less favorable.

## **Objectives**

Our objective is to look for ways that loose networks of Land Grants can more effectively partner across state lines. We believe this is a unique approach that will benefit the Land Grants but also possibly provide models for private sector technology sharing. Loose networks are not

unknown in the private sector—MasterCard being the classic example. Kanter (1994) provides a wealth of less well-known examples of the effectiveness of collaboration in the private sector. The objectives of the project include studies to better understand:

- Different operational modes of University IP offices, especially in terms of database systems. (A parallel effort being led by Arlen Leholm to organize North Central Land Grant IP offices into a working group will help facilitate this aspect of the program.)
- How Land Grant universities interface with entrepreneurs (what is similar across systems, how existing differences can complement each other, scope and terms for sharing of expertise)
- How different types of niche operators might access university IP systems (case study approach).
- Scope for shared training/support programs among Land Grants offering business support services through Extension field staff on a cost recovery model.

The methods employed will be similar to value chain studies or industrial organization studies familiar in business or marketing. Particular attention will be paid to opportunities for standardized revenue sharing agreements, so that appropriate feedback loops can reinforce participation in cross-state collaboration.

The emerging collaboration technologies associated with the internet (e.g. Linked-In, Facebook) have started to make it easier to share information across space through loose networks (Tapscott and Williams, 2008). We will continue to assess the effectiveness of flintbox and ibridge, and possibly expose new participants to best practices when using these tools. This new mode of communication will be explored as a potential avenue for making connections across the technology creation/use space. Elements of popular internet auction sites might be incorporated into existing land grant supported systems such as Market Maker, so as to make them more useful for research. Other strategies might include bidding for short term technical assistance, and anonymous feedback about customer service. Alternative, the system might be organized to focus on developing stronger social networks among providers of social science expertise. Creating an optimal system requires study and experimentation.

## **Outputs**

The product at the end of year two will be case studies of mechanisms for enhancing rural business development collaboration in the North Central region. Joint products will be academic papers and bulletins on the topics listed above. The project will work in close collaboration with the organization of IP managers being formed by NCRA, but will focus on how to enhance networking with and through enterprises across state lines. We will seek additional funding to supplement the work.

In years three through five, the expectation is that pilot mechanisms will be formulated and evaluated.

## **Literature Cited**

Bozeman, Barry. 2000. Technology transfer and public policy: a review of research and theory. *Research Policy*. 29: 627-655.

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Tapscott, Don, and Anthony D. Williams. 2008. *Wikinomics: How Mass Collaboration Changes Everything*. New York: Penguin Group.

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**Business Plan**

This request is for NCRCRD's standard NCRA off-the top allocation of \$25,000. This will be matched by NCRCRD board-approved \$38,986 from core NCRCRD USDA funding<sup>i</sup>. In addition, the Center's regular \$24,000 allocation from CES Directors will be applied to this project. The funds will be allocated as follows:

Visiting scholar, 4 months:	
Salary	40,000
Fringe	0
Contract feasibility/demonstration project (open competition)	37,986
Operating (travel, databases, project meeting)	10,000
<b>Total:</b>	<b>87,986</b>

**Sources:**

\$38,986 NCRCRD base budget (from USDA line item)

\$25,000 North Central AES Directors (standard annual allocation—this request)

\$24,000 North Central CES Directors (standard annual allocation)

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<sup>i</sup> Subject to passage of congressional budget.