EDJ
THE IEDC
Economic Development Journal
734 15th Street, NW Suite 900 • Washington, DC 20005
Volume 6 / Number 1 / Winter 2007

Building Innovative Communities

By Mark Kapfer, CEcD, and Beth Taylor

CONNECTING RESEARCH TO LOCAL COMMUNITY RESOURCES

The need to compete in the new economy requires business and industry to have connectivity to research institutions where new products, services, and processes are being developed. However, these institutions are often located far away and the business community does not have the time or the patience to sort through the maze often associated with them. **In eastern Iowa, a community college working through a National Science Foundation grant, developed a model to identify business needs and create a system for existing industry as well as budding entrepreneurs to access the research that may be helpful in bringing new products and jobs to the community.**

building innovative COMMUNITIES

By Mark Kapfer, CEcD, and Beth Taylor

INTRODUCTION

One of America's greatest strategic and economic strengths is its capacity to innovate. Closely related to that is our entrepreneurial spirit and abilities to collaborate. Today, more than ever, accessing research occurring at universities and other centers of excellence is important to local economic development efforts. The research often can be commercialized by local entrepreneurs and perhaps most importantly, can provide new profit centers of products, services, and processes to existing industry. However, many times local economic development organizations are separated from these research centers by geographic distance and a lack of understanding how to access the research in a format that is acceptable to the business community.

Acting on these ideas, Eastern Iowa Community College District (EICCD) began a journey in 2003 that led to the creation of an innovative community that embraced groundbreaking ways to grow businesses and economic development through technology creation and commercialization. As a result, a $600,000 investment by the National Science Foundation generated over $6.3 million in new technology development, product/process development and improvement, increased product sales, and the creation of new jobs.

The NewVentures Center in Davenport, Iowa, a $4 million accelerator for technology driven companies.

BEGINNINGS

In late 2002, a three-year grant was awarded to Eastern Iowa Community College District by the Partnerships for Innovation program (PFI - http://ulysses.qrc.com/pfi-public/start.cfm) of the National Science Foundation. The PFI program promotes innovation by bringing together colleges and universities, state and local governments, private sector firms, and nonprofit organizations. These organizations form partnerships that support innovation in their communities by developing the people, tools, and infrastructure needed to connect new scientific discoveries to practical uses. The goals of the PFI program are as follows:

- Stimulate the transformation of knowledge created by the national research and education enterprise into innovations that create new wealth; build strong local, regional, and national economies; and improve the national well-being.

CONNECTING RESEARCH TO LOCAL COMMUNITY RESOURCES

The need to compete in the new economy requires business and industry to have connectivity to research institutions where new products, services, and processes are being developed. However, these institutions are often located far away and the business community does not have the time or the patience to sort through the maze often associated with them. In eastern Iowa, a community college working through a National Science Foundation grant developed a model to identify business needs and create a system for existing industry as well as budding entrepreneurs to access the research that may be helpful in bringing new products and jobs to the community.

Mark Kapfer, CEcD, is executive director of economic development, Eastern Iowa Community College District, Davenport, IA (www.eicc.edu)

Beth Anne Taylor is principal consultant of Taylor Technology Consultants, LLC (www.taylortc.com)

This material is based upon work supported by the National Science Foundation under Grant No. 0227837. Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

- Broaden the participation of all types of academic institutions and all citizens in NSF activities to more fully meet the broad workforce needs of the national innovation enterprise.
- Catalyze or enhance enabling infrastructure necessary to foster and sustain innovation in the long-term.

Entitled the NewVentures AgTech Initiative (called the AgTech project from here on), the project's goal was creating linkages between eastern Iowa/western Illinois entrepreneurs, business communities, and regional innovative institutions. The purpose of these linkages was to transfer the new technologies created at these research centers into the marketplace, using the ingenuity and business know-how of the people and companies in the eastern Iowa/western Illinois region. Goals of the project included:

- Facilitating the collection of research at universities to match area businesses,
- Establishing screening panels to determine market potential,
- Translate and summarize emerging research into a format that was able to be understood by businesses,
- Produce and distribute a research digest,
- Create a website with links to research for more information,
- Educate potential entrepreneurs on the full range of business support available to them,
- Develop a training curriculum on growing innovation-based businesses, and
- Present workshops on the project so it can be replicated.

FOCUSING ON EXISTING REGIONAL TECHNOLOGY STRENGTHS

Fortunately for the AgTech project, an economic development study for the state of Iowa had been completed not long before the project began. This study asserted that, in order to optimize economic development, Iowa should concentrate on supporting and growing three of its strongest and unique assets: significant infrastructure and expertise in the biotechnology/value added agriculture, information solutions, and advanced manufacturing sectors.

As the project progressed, it became apparent that Iowa has two other particularly unique advantages with regards to value added agriculture. These are its significant early progress in the area of building plants that produce renewable fuels and its head start on the development of biomaterials and bioproducts that have the potential to displace petroleum-based materials and products. As staff researched intellectual property at nearby universities and national labs, they concentrated on finding technologies in all of these sectors.

Inside the NewVentures Center.

PARTNERING ORGANIZATIONS

The success of this project is due in large part to the regional partners who supported Eastern Iowa Community College District's effort. To begin with, the director of the AgTech project, who is also executive director of economic development for EICCD, has substantial knowledge of businesses and ongoing commerce in the target region and was able to bring project staff up to speed with that knowledge. He was able to identify the first potentially vital stakeholders that would be important to the project's success and who therefore should be contacted first about it. Examples of these critical contacts included the industrial liaison for Iowa State University, the director of University of Iowa's Research Foundation, a local value added ag expert, and

As the project progressed, it became apparent that Iowa has two other particularly unique advantages with regards to value added agriculture. These are its significant early progress in the area of building plants that produce renewable fuels and its head start on the development of biomaterials and bioproducts that have the potential to displace petroleum-based materials and products. As staff researched intellectual property at nearby universities and national labs, they concentrated on finding technologies in all of these sectors.

a company executive with expertise in biorenewable product development.

DavenportOne, the local chamber of commerce, downtown partnership and economic development organization (www. DavenportOne.com), was a key player in starting and sustaining the project. DavenportOne helped project staff get connected and acquainted with regional companies. It also provided office space while the project's future home, a regional business accelerator entitled The NewVentures Center, was being constructed in downtown Davenport, Iowa. Funding for the $4 million NewVentures Center, which came from local, state and federal sources, was organized through the efforts of the DavenportOne Foundation.

Another important partner was The NewVentures Initiative, a privately funded non-profit organization featuring a new and dynamic start-up acceleration process for technology-driven companies in eastern Iowa and western Illinois. Conceived and initiated through DavenportOne Foundation, The NewVentures Initiative began operating in July 2003, its mission being to prepare entrepreneurs and business start-ups for commercial success with new technologies and to ready clients for the investment community. NewVentures analyzes clients' business needs, identifies potential investors right for their business, and positions their company for increased probability of funding.

From 2003 to 2006, the staffs of the AgTech project and The NewVentures Initiative partnered with and encouraged high-tech entrepreneurs and start-up companies. To do this, The AgTech staff concentrated on creating linkages between technologies and businesses/entrepreneurs, while The NewVentures Initiative focused on technology commercialization and preparing clients to present their business models to the investment community. The end goal was the start-up and growth of new high-tech companies that would remain and thrive in eastern Iowa and western Illinois.

Other organizations such as Iowa State University, University of Iowa, the National Center for Agricultural Utilization and Research (NCAUR), and University of Illinois were helpful and responsive by assisting in accessing their faculty and staff members who were working in certain research activities of interest, providing speakers for technology screening panels, and inviting project staff and businesses to visit their facilities for special activities.

GETTING TO KNOW LOCAL COMPANIES AND ORGANIZATIONS

In order to begin building an innovative community, AgTech and NewVentures staff attended and/or spoke at local trade and professional meetings, economic development professionals' conferences, and Rotary and other civic groups where a variety of professional people gathered. A wide variety of people needed to be told about the two projects and their respective goals of technology transfer through the AgTech project and technology commercialization through The NewVentures Initiative. AgTech staff also called and visited with local entrepreneurs and businesses, since it was necessary to learn about their interests in order to search for and evaluate technologies that would help them achieve their goals.

Companies with innovative cultures, which were interested in gaining competitive advantage through innovation, responded and got involved. The same was true of local entrepreneurs, inventors, farmers, investors, bankers, legislators, reporters, and economic development professionals.

Dr. Karim Abdel-Malek speaking at a technology screening panel meeting about the Virtual Soldier research project at the University of Iowa Center for Computer Aided Design.

ORGANIZING AN INNOVATIVE COMMUNITY

Telecommunications and the internet are marvelous tools for networking. Interested parties provided their contact information, including their email addresses, in order to stay apprised of events organized through the AgTech project. The resulting email distribution list was used to distribute an eNewsletter, Linkages, and inform members about upcoming technology screening panels, seminars, and other news of interest.

WHAT DO COMMUNITY MEMBERS WANT? – NETWORKING

Project staff learned as much as possible about what community members wanted, what their needs and interests were. Staff began learning this by distributing an initial survey to contacts, asking them what their goals and needs were. Regional company representatives and entrepreneurs responded favorably to the project and its technology transfer goals. When asked questions that bordered on competitive intelligence about their companies – requests for descriptions of their operations, technology needs, hopes for future products, and the challenges they face – company contacts were remarkably forthcoming.

Often another word for needs, issues or problems is unmet market demand. Based on their growing knowledge of the developing community, project staff worked to link members with other people or companies that would be motivated to work with them to fill a need or solve a problem. Where appropriate, staff set up individual meetings between potential collaborators. Before or after seminars and technology screening panels were good times to schedule these individual meetings. This helped attendees accomplish two things at once and feel that they had spent their time profitably.

When word spread that AgTech events helped attendees learn about strategically important emerging technologies and make productive and valuable contacts, other locals were motivated to attend these events to get the same benefits.

RESEARCHING EMERGING TECHNOLOGIES AND TRENDS

Project staff researched several sources for promising emerging technologies. They began by studying intellectual property (IP) developed at institutions that were comparatively nearby, i.e. Iowa State University, University of Iowa, and the National Center for Agricultural Utilization and Research (NCAUR). It has become common practice for universities, national laboratories, and other research centers to list their IP on their web sites. This greatly simplified the staff's technology investigations, and their fields of research gradually expanded to other inventive organizations.

The following list provides an example of technology sources that project staff studied:

- MIT Technology Review (magazine) (www.techreview.com)
- Wired (magazine) (www.wired.com)
- Scientific American (magazine) (www.sciam.com)
- The Economist – quarterly technology issue (magazine) (www.economist.com/science)
- NASA Tech Briefs Insider (e-newsletter) (www.techbriefs.com)
- MyNSF – formerly the NSF Custom News Service (e-newsletter) (www.nsf.gov/mynsf)
- BioSmart Brief (e-newsletter) (www.biosmart.ch/head.htm)
- ISU Tech Transfer (e-newsletter from Iowa State University Research Foundation) (www.techtransfer.iastate.edu)
- Renewable Energy Access (e-newsletter) (www.renewableenergyaccess.com)
- yet2.com Technology Marketplace Report (e-newsletter)
- Nanotechweb.org News Alert (e-newsletter)

This is not a definitive list, nor was it necessary to research all of these each month. It was useful initially to get familiar with these and other technology news sources and decide which are the most useful based on the community's needs and goals.

Staff looked for technologies in all stages of development, from university bench-top stage to new technologies that were commercially available. In general, at least based on the experiences of this project, established companies of all sizes often are skittish of licensing early stage technologies. This is because company management personnel are aware of the risks involved with commercializing inventions at this stage. The market demand for the invention may be poorly understood and defined. In addition, business decision makers are usually aware of the significant amount of resources in time, money, and dedicated staff that will be necessary to bring some of these early stage inventions to market.

Company decision makers and technical professionals seemed more often interested in attending meetings where the discussion centered on technologies that were on the market or were due to enter it soon. For example, two of the better-attended technology screening panels highlighted (1) a soon to be introduced new wireless internet standard, WiMax, and (2) emerging uses for radio-frequency identification (RFID).

Clinton County Bioenergy, LLC, one of the new start-up biotech companies in eastern Iowa.

However, this rule about more interest in fully commercialized technology does not always hold. A fair amount of industry interest was expressed in a presentation entitled "Knowledge Acquisition from Distributed, Heterogeneous Data Sources," a comparatively early stage, Iowa State University-generated technology.

In order to encourage entrepreneurs, inventors, executives, and other decision makers about the merits of early stage and/or discontinuous, disruptive technologies, it is a good idea to mention Henry Ford's old maxim, "If I had listened to customers (only), I'd have given them a faster horse." In other words, be prepared to look out for, perhaps even create, the next major technology innovation.

ORGANIZING TARGETED EVENTS

Based on gathered knowledge about emerging technologies and the interests of innovative community members, project staff organized technology screening panels and seminars, both of which informed the community about emerging, commercially important technologies or imparted critical business skills to entrepreneurs.

Monthly technology screening panels featured a speaker with expertise in a particular field or technology. Speakers were sought from Iowa Regent universities and also from the National Center for Agricultural Utilization Research (NCAUR). High tech entrepreneurs were also approached about describing their new technology and/or business. Meeting subjects rotated among targeted areas of concentration. In the AgTech project case, these were biotech/value added agriculture, information solutions, and advanced manufacturing.

A wide variety of people attended: executives, company technical professionals, entrepreneurs, inventors, consultants, commercial bankers, media representatives, farmers, legislators, academics, and others. Panelists were encouraged to inform organizers ahead of time about whether they would attend the meeting. This made it possible for staff to fill out tent cards with attendees' names and company names, on both sides of the tent. This helped those attending to scope out who else was at the meeting. The meeting facilitator asked attendees to introduce themselves and their companies or interests at the start of each meeting.

Organizers noticed that the attendees changed from meeting to meeting, since not every subject was of universal interest. However, community members forwarded meeting announcements to colleagues that they thought would benefit by attending and learning about that particular technology. Commercial bankers often attended and brought their clients.

Before each meeting, staff researched the technology subject, usually online, and prepared summaries of technology descriptions, or case studies where the technology was used effectively, and emailed those summaries to panelists a few days before each meeting so that they could review the subject beforehand if they wished. Descriptions of technologies at various stages of development were included, from early, university-originated bench top inventions to commercially available products. Although companies were often wary of early stage innovations, providing their technology managers with information about such inventions was educational for them, helped them to see where technology trends are going, what their Regent universities were inventing. The information could also plant a seed where these companies might decide in the future to license and commercialize an invention.

An additional intent in sending out technology descriptions was to give people a chance to discuss their merits at each meeting. Experience showed, however, that attendees usually got into productive discussions with speakers and each other at the end of the presentation, and the technology summaries weren't mentioned. However, the summaries provided information that community members could file and read at their leisure.

These panels served a variety of other purposes. Community members got the opportunity to study featured technologies. They could respond by acquiring the invention, collaborating with the inventor, exploiting the information to gain a competitive advantage for their companies, or prepare for the changes the technology might bring to their markets. At each meeting, staff asked attendees for ideas about future meetings, providing them with forms to fill out with their suggestions.

Based on gathered knowledge about emerging technologies and the interests of innovative community members, project staff organized technology screening panels and seminars, both of which informed the community about emerging, commercially important technologies or imparted critical business skills to entrepreneurs.

Seminars were organized to help technology-minded entrepreneurs and company principals gain the business skills necessary to guide their invention and company through the startup process. In the case of the AgTech project, assistance in developing these seminars was given by the NewVentures Initiative business professionals and the director of the regional Small Business Development Center. NewVentures Initiative staff and the SBDC director also acted as instructors in some of these seminars.

Seminar subjects included venture financing, market research, intellectual property strategies, and resources available to aid in the commercialization of new technologies. In a survey of local entrepreneurs, they expressed interest in seminars where managers of successful technology-based companies told about how they achieved their success – in other words, people wanted to hear war stories. Seminar instructors were usually found among regionally successful entrepreneurs, business consultants or university staff members.

These seminars also gave community members a chance to meet new people and network. Networking events are rare where a variety of regional people gather to learn about strategically important, emerging innovations. Without these kinds of events, the status quo is a stovepipe mentality, where entrepreneurs, company employees, consultants, and other professionals in a region seldom learn what their neighbors are doing.

As a rule, technology screening panelists were not competitors with each other, since they were from different backgrounds and/or types of companies. Because of the variety of people at these meetings, during discus-

sions, panelists learned from each other's disparate knowledge, skills, and experience. One of the most fruitful results of this type of gathering was to introduce people with comparatively different skills, but who, after meeting and talking, discovered that through their combined efforts, they could collaborate to improve or invent new processes or products, achieving successes that they could not have gained without each other.

DEVELOPING RELATIONSHIPS WITH INNOVATIVE ORGANIZATIONS

It was a productive exercise for organizers to develop relationships with universities and other innovative organizations. These institutions nearly always have directors of external relations or industrial liaisons who will work with staff to provide speakers for technology screening panels and seminars.

Academic institutions are often tasked with doing extension work in their communities. Giving them specific outlets for this purpose, like technology screening panels and seminars, motivated them to get involved with this effort. Moreover, research institutions will often admit that they are comfortable with technology creation and transfer, but they lack skills with regards to technology commercialization. The expertise of the community college, working its relationships with businesses and industries in the area, helped to bring this vital commercialization linkage. Through its networking capability, the community college informed private industry about potentially valuable intellectual property so that it may be able to gain technology licensees and/or commercialization partners in the process.

Individual researchers are often motivated to speak at panels and seminars because they want people to know about the results of their often quite unique work. Academics want opportunities to tell private industry about their discoveries, because they need private industry involvement in order to pull their inventions along the path to commercialization. The type of assistance researchers seek includes market research, feedback about desired performance characteristics of new technologies, technology commercialization investment, knowledge of commercial markets, and feedback about the technology needs in private industry.

Project staff, working with the other community college staff, were able to link businesses with academics that fit each company's business sector. For example, staff linked a biocomposite development company with a chemistry professor who has invented a class of bioplastics. Currently they are working together to develop composites with higher percentages of biorenewable materials in their formulations. The end goal here is the creation of bio-based products that will reduce the United States' dependency on petroleum-based products.

RESEARCHING AND DISTRIBUTING INFORMATION ABOUT FUNDING PROGRAMS

An often-expressed issue from private industry and entrepreneurs was that there are no funding mechanisms available that can be used to support applied R&D, product development, market research, or other aspects of commercializing promising technologies. Organizers researched grant opportunities from online resources like:

- Small Business Innovation Research Grants
  www.sbirhelpdesk.com
- The National Science Foundation's "My NSF"
  enewsletterhttp://www.nsf.gov/mynsf/
- USDA Cooperative State Research, Education and Extension Service
  http://www.csrees.usda.gov/
- Grants.gov www. Grants.gov
- State grant programs,
  e.g. List of Venture and Equity Funds in Iowa
  www.iowalifechanging.com/business/downloads/equityfunds.doc
- State grant programs,
  e.g. Entrepreneurial Ventures Assistance
  http://www.iowalifechanging.com/business/eva.html


LINKAGES
Connecting Technology & Business
Welding systems fuse technology
CASE STUDY

Linkages newsletter sent quarterly to area industry. Besides case studies of technology application in industry, the publication also highlighted research at various institutions of higher learning.

- University Assistance programs, e.g. Iowa State University Company Assistance Programs http://www.iprt.iastate.edu/assistance/index.html

After learning about local companies' needs and researching grant programs, staff were not only able to link up companies and people who responded by working together, but were also able to inform these collaborators about funding programs that, if applied for and awarded, could support some of the cost of their project work. One of these linkages resulted in the award to Iowa State University and collaborators of a $2.4 million applied research and development grant (See page 5 of Linkages newsletter at www.newventurestechtransfer.com/newsletters/linkages07.pdf). See another example of this type of project in the case study on page 1 of the Linkages newsletter at www.newventurestechtransfer.com/newsletters/linkages08.pdf.

CREATING AN INNOVATIVE COMMUNITY NEWSLETTER

An innovative community newsletter called Linkages was created as part of the AgTech project. This type of publication is most easily distributed by email. Linkages contained the following elements:

- Case studies that showed how local companies and entrepreneurs benefited from commercializing or adopting a new technology, or the benefits of joint ventures for the purposes of applied R&D or product development;
- Descriptions of high impact (with regards to enhancing local economic development) applied R&D at regional universities, national laboratories or private industry research centers;
- Descriptions of applied research funding programs currently or soon to be open for proposal submission;
- Dates of upcoming technology screening panels and seminars.

CONCLUSION

Starting and growing a regional innovative community is well worth the effort. In the space of three years on a budget of $600,000 from a National Science Foundation grant, the NewVentures AgTech Initiative was instrumental in generating over $6.3 million in technology development investment, product/process improvement, additional product sales, and jobs. This includes nearly $1 million in additional earnings to workers and the creation of an estimated 25 jobs in the advanced manufacturing and life sciences sectors. The wages were above the regional and state wages and the companies expect to continue to grow their businesses, adding revenues and jobs over the next five years.